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# Can CSR mechanisms spur GRI adoption and restore its lost value relevance?

Monomita Nandy<sup>1</sup>  
Brunel University  
Brunel Business School  
Kingston Lane, Uxbridge,  
Middlesex UB8 3PH, UK  
Contact No: +44 (0) 1895268300  
Email: [Monomita.nandy@brunel.ac.uk](mailto:Monomita.nandy@brunel.ac.uk)

Cemil Kuzey  
Arthur J. Bauernfeind College of Business, Murray State University, Murray, Kentucky, USA  
Email: [cemilkuzey@gmail.com](mailto:cemilkuzey@gmail.com)

Ali Uyar  
CERIIM, Excelia Business School, France  
Email: [aliuyar@hotmail.com](mailto:aliuyar@hotmail.com)

Suman Lodh  
Middlesex University  
Middlesex University Business School  
The Burroughs, Hendon, London  
NW4 4BT, UK  
Contact No: +44 (0) 2084115584  
Email: [s.lodh@mdx.ac.uk](mailto:s.lodh@mdx.ac.uk)

Abdullah S. Karaman  
College of Engineering and Technology, American University of the Middle East, Kuwait  
Email: [Abdullah.Karaman@aum.edu.kw](mailto:Abdullah.Karaman@aum.edu.kw)

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<sup>1</sup> Corresponding Author

## **Abstract**

**Purpose:** This paper focuses exclusively on the drivers and consequences of Global Reporting Initiative (GRI) adoption in sustainability reports with a particular focus on corporate social responsibility (CSR) mechanisms.

**Design/methodology /approach:** The sample includes 63 countries with 4,625 unique firms in these countries and 29,054 firm-year observations between 2002 and 2019. The empirical methodology is logistic and linear regression analyses with country and year fixed effects.

**Findings:** The findings show that CSR committees and executive CSR compensation stimulate firms' GRI adoption. Furthermore, while GRI adoption enhanced firm value in the earlier period of 2002-2010, it weakened firm value in the later period between 2011-2019 implying a loss of value relevance. However, the moderating effect of CSR committees and executive CSR compensation on GRI adoption has led to higher firm value in recent times. A more in-depth investigation of polluting versus non-polluting sectors and weak and strong institutional environments reveals both convergence and divergence respectively among these sub-samples. The results are robust to alternative samplings, alternative methodology, and endogeneity concerns.

**Originality:** It is not clear in the literature if CSR committees will adopt the GRI for sustainability reporting (SR) because of any incentive. Thus, we examine if the CSR committee and executive CSR compensation can play a direct role in GRI adoption and play a moderating role between GRI adoption and firm value. Moreover, whether GRI adoption and its value relevance might change across periods, sectors (polluting versus non-polluting), and varying institutional environments (investor protection) are addressed in this study.

**Research limitations/implications:** The main limitations of the study are the binary nature of key variables, such as CSR committee, executive CSR compensation, and GRI adoption, due to the availability of binary data but not continuous data.

**Practical Implications:** Firms allocate substantial funds for SR and following GRI guidelines; hence, the findings guide them on how to ensure the return on this investment.

**Social implications:** Shareholders who particularly pursue socially responsible investment can shape their investment portfolios in firms that engage with sustainability reporting and GRI adoption practices.

**Keywords:** Global Reporting Initiative (GRI), corporate social responsibility (CSR), CSR committee, executive compensation, firm value

## 1. Introduction

In 2018, the then CEO of the Global Reporting Initiative (GRI), Tim Mohin<sup>2</sup> mentions during an interview that sustainability reporting (SR) is a new normal. Over the years, there has been increasing pressure on corporations to share the impact of their social responsibility initiatives on financial performance with their shareholders and all business stakeholders (Boiral and Henry, 2017). As a result, a large number of global companies decides to adopt the GRI for SR. For example, by 2020, the global adoption of the GRI, as an effective tool of SR, has increased to 96% from the 37% reported during its inception period in 1999 (Jain et al., 2021). The main reasons for the rapid increase in popularity of the GRI in SR are because this comprehensive reporting standard is highly transparent, and any SR following the standard is easily comparable (Diouf and Boiral, 2017). The rapid adoption of the GRI across global companies for SR is extensively discussed in the research. However, past research has proved the superiority of the GRI after comparing it with other forms of SR followed by companies prior to the introduction of the GRI in 1999 (Kuzey and Uyar, 2017). There is no doubt that the adoption of the GRI allows companies to efficiently communicate their strategies to outside stakeholders regarding non-financial activities (Schadewitz and Niskala, 2010). However, there are conflicting views about the implication of the adoption of the GRI for financial performance (Yang et al., 2021). Thus, there is still a need for a better understanding of how corporate SR can improve firm value.

Corporate social responsibility (CSR) is a complex corporate governance process that involves extensive strategic initiatives by board members and executives of the firm, but it has not been discussed in detail in the academic literature (Cosma et al., 2021; Radu and Samili, 2022). With the publication of Howard Bowen's book on the social responsibilities of the businessman, the definition of CSR has started changing. According to modern CSR, corporations are required to balance their responsibility toward shareholders and the environment and society (Laskar and Maji, 2016). Thus, it is evident that CSR is essential for the sustainable survival of firms. In 1987, when

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<sup>2</sup> <https://www.cpajournal.com/2018/07/23/sustainability-reporting-becomes-the-new-normal/> (accessed 27 December 2021).

the World Commission on Environment and Development published the Brundtland Report, the corporate world started examining the link between SR and firm performance (Malarvizhi and Matta, 2016). The demand from corporate stakeholders for a firm's social responsibility started growing over years. The components of the sustainability control system of a corporation and its impact on firm performance started attracting attention in the corporate governance literature (Mahmoudian et al., 2020). Thus, the need for comprehensive SR and the adoption of the GRI has gained importance in practice.

It is a common corporate practice to have a specific task-related board committee for efficient board monitoring. Adopting CSR and, therefore, creating awareness and communicating related innovations to the business stakeholder is a strategic decision that is the responsibility of the board or more precisely, a specific board committee (Oh et al., 2018). Thus, most big companies have a dedicated CSR committee to take the responsibility of introducing CSR and assist the firm to adopt the globally accepted SR standards to translate the investment in CSR to increased firm value (Kılıç et al., 2021b). In other words, the characteristics of the board committee affect the environmental and social performance of firms (de Villiers et al., 2011). Moreover, existing literature presents a debate around executive CSR compensation as an incentive for CSR achievements (e.g., Kolk and Perego, 2014). Some companies that have ranked higher on the Dow Jones Sustainability Index for five consecutive years do not use CSR compensation as an incentive because of a weak link between environmental targets and environmental performance (Russo and Harrison, 2005). Though the use of CSR targets cannot automatically produce better CSR performance (Maas, 2018). So, the adoption of CSR-related targets in executive compensation can lead to a higher number of CSR initiatives (Flammer et al., 2019). It is also notable that large companies increasingly tie executive compensation to CSR achievements<sup>3</sup>. However, it is not clear in prior literature if the CSR committee will adopt the GRI for SR because of any incentive, e.g., executive CSR compensation (Derchi et al., 2021).

Thus, to address the above-mentioned research gap in the literature on CSR and SR, we examine if the CSR committee and executive CSR compensation can play a direct role in GRI adoption and moderate the relationship between GRI adoption and firm value. Besides, although prior literature on financial reporting has documented the GRI adoption or its value-enhancing role

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<sup>3</sup> Half of FTSE 100 companies link executive pay to ESG targets, available at <https://www.ft.com/content/609eae5e-1576-4081-9340-5d5001b5b02e> (accessed 20 June 2022).

(Yang et al., 2021) in a generic way, there is still a gap in our knowledge about how GRI adoption and its value relevance can change across periods, sectors (polluting versus non-polluting), and varying institutional environments (investor protection). We address these perspectives in further tests after the main analysis.

Based on 29,054 data points collected from the Thomson Reuters Eikon for 63 countries, we found that the corporate CSR mechanisms (CSR committees and executive CSR compensation) signal firms' GRI adoption. The GRI adoption enhances firm value in the earlier period of the sample (2002-2010), but the impact becomes weaker in the later period between 2011-2019 implying a loss of value relevance of SR. Moreover, we find that both the CSR mechanisms play a moderating role in GRI adoption, which leads to a higher firm value in the recent period. The results hold when we re-run the analysis on alternative samples, test different relevant methodologies, and check the possibility of endogeneity.

Our empirical findings contribute to the academic literature on SR. We establish a significant relevance of GRI adoption on firm value in a cross-country setup across polluting and non-polluting industries. In addition, the governance mechanism, which consists of the CSR committee together with the executive CSR compensation, gives a new direction for scholars to consider in the discussion of value relevance in GRI adoption. The practical relevance of the study is far-reaching. Tying up executive CSR compensation with the corporation's CSR strategies makes it possible to reduce the conflict of interest among executives and shareholders in the adoption of SR standards, which in turn enhances CSR performance across countries. Our paper shows that practitioners should explore ways or mechanisms to enrich the signaling ability of GRI-based SR and to ensure positive market stakeholder reaction. The drivers and consequences of GRI adoption in sustainability reports allow firms to focus particularly on CSR mechanisms (Derchi et al., 2021). Adoption of the GRI will generate socio-economic benefits for a country. Moreover, policymakers and regulators will find new factors to consider in their corporate policies related to SR. The findings of this study will allow firms' decision-makers to identify possible trade-off opportunities between the costs and benefits associated with GRI adoption for the betterment of society. By testing the role of contingencies in the hypothesized relationships, we suggest future studies consider this role in the implications of SR for firm value, such as considering the substitutability or complementarity of internal and external governance mechanisms.

In the next section, we explain the theoretical underpinning of the hypotheses discussed in this study. Later, we discuss the research methodology and the empirical findings. Finally, we summarize the implication of the findings, and the contribution of the study, followed by the limitations, and we suggest possible future studies based on the current study.

## **2. Theoretical framework and hypotheses**

CSR is the focal point in the firm's sustainable ecosystem. There are different standards for SR, and stakeholders of firms have various motivations for reporting their sustainability initiatives (Al-Shaer et al., 2021; Simmons et al., 2018). Though there is no consensus about which SR standard to follow, the GRI is widely adopted mainly because of its comprehensiveness and comparability features (Narula et al., 2021). However, firms in environmentally sensitive industries (e.g., energy firms) prefer to follow GRI reporting guidelines to get external assurance (Karaman et al., 2021). The higher comparability feature of GRI reporting allows firms to gain competitive advantages in the financial market (Dong and Xu, 2016; Yu et al., 2017). Furthermore, the comprehensive features of the GRI help the business stakeholders to form a complete picture of the socio-economic responsibility of the company, which enables them to capitalize on their image and reputation (Bolton et al., 2011).

The structure and composition of the board are extensively discussed in literature about its role in CSR performance and SR (Burke et al., 2019). However, recent studies explaining the relationship between corporate governance and CSR have highlighted the importance of the CSR committee (Oh et al., 2018). Prior literature on corporate governance and CSR discusses CEOs' interest in CSR, but there is a higher possibility that CEOs may not have sustainability leadership and lack broader sustainability-related knowledge (Peters et al., 2019). Thus, we identify a need for an upper echelon view of the top management team in any successful adaptation of SR. Any firm that has a CSR committee is sending a clear signal to the outside stakeholders about their positive attitude towards sustainability issues (Amran et al., 2014). We find evidence that the signal receiver assesses the CSR quality of the firm based on the signal shared by the company (Bergh et al., 2014). So, paying equal importance to financial and non-financial factors in the business model enhances signaling and improves engagement with stakeholders, which in turn, supports the application of the signaling and stakeholder theory in practice. The existing literature is inconclusive about how GRI adoption for SR by the CSR committee could be value-relevant for their stakeholders (Pucheta-

Martínez et al., 2019). When a company has a CSR committee, there is a high possibility of a collective initiative of the top management committee supporting a more complete CSR engagement and reporting via the GRI instead of an individual CEO's efforts, and thus, we develop the following hypothesis:

**H1:** Having a CSR committee stimulates GRI adoption in sustainability reports.

One major tool to mitigate agency conflicts between shareholders and executives is incentive-based compensation (Derchi et al., 2021). There is evidence of executive incentive in the attainment of the firm's long-term CSR targets (Al-Shaer and Zaman, 2019). However, the findings regarding executive incentives in the CSR performance literature are inconclusive because only very recent studies have started considering the CSR committee and begun exploring its link with executive CSR compensation (Peters et al., 2019). Over the years, integrating CSR criteria into executive compensation has become increasingly popular, as such schemes provide an incentive for the executives to take steps to improve their CSR performance; this forms a close link between executives and their stakeholders, and the interests of both parties start converging in the near future (Tsang et al., 2021). According to the upper echelon theory, firm performance reflects executive performance (Hambrick and Mason, 1984); instead of focusing on one particular CEO, the theory considers a combined impact of the executives. Additionally, in the context of signaling theory, we observe a stronger signal about the positive CSR attitude of companies to their stakeholders, as the signal can be delivered by the executive committee rather than by an individual CEO (Peters et al., 2019). The positive association between GRI adoption and CSR performance is already established in the literature and practice (see, Yang et al., 2021). With the growing importance of CSR, the board governance focuses on protecting the interest of their business stakeholders as demanded by stakeholder theory (Kılıç et al., 2021b). Corporations are investing in establishing sustainability committees to take care of their CSR strategies (Burke et al., 2019). The underlying intuition of stakeholder theory is to reduce the information asymmetry between a firm and its stakeholders. With the existence of an executive committee, we expect fewer agency problems, as top executives may aim to achieve the same objective as their company. Hence, when the executive committee is motivated to do CSR, we expect a higher motivation for the same SR. Thus, we would expect to observe an impetus from the CSR committee for adopting the GRI not only to improve CSR performance (Malarvizhi and Matta, 2016) but also for SR. However, before communicating to their



stakeholders about their CSR performance, firms need to adopt certain standards for SR, which allow stakeholders to compare a firm's non-financial performance with that of the firm's peers (Jain et al., 2021). Usually, there is a causal relationship between CEO incentives and CSR performance (Velte, 2019). CSR contracting has the potential to fulfill the stakeholders' higher demand by compensating for institutional voids (Flammer et al., 2019). However, this is not evident in the literature about the impact of the aforementioned causal relationship in GRI adoption and if the incentive could be the executive CSR compensation. Based on the above argument we test the following hypothesis:

**H2:** Executive CSR compensation stimulates GRI adoption in sustainability reports.

With the increasing demand for a firm to engage in social and sustainable activities, researchers have started to ask why a firm needs to be sustainable (Campbell, 2007). Similarly, some firm executives begin sharing additional non-financial information with their investors, customers, and creditors to positively influence their financial performance. It turns out to be a new norm for firms to report their sustainability activities to signal the company's good intentions and so attract investors and other stakeholders (Berthelot et al., 2012). According to the stakeholder theory proposed in 1984, the performance of the firm can improve when the managers' and the stakeholders' interests are aligned with each other (Freeman, 2010). Firms started observing an exponential increase in their firm value when they start effectively signaling and communicating their sustainable strategies with external stakeholders (Laskar and Maji, 2016). For example, a firm that behaves responsibly toward the environment or has other sustainable goals should incorporate the legal requirements into its operational strategy (Kim et al., 2018). However, at the same time, according to the underlying requirement of stakeholder theory, the firm needs to perform stakeholder communication management to share its CSR initiatives to generate a higher value for the firm (Li et al., 2020). In addition, to share the firms' actual CSR activities, the stakeholders aim to assess the true intention of the firms regarding CSR. Through the lens of signaling theory, we observe the firm intentionally keeps signaling the positive attributes to their stakeholders to generate higher firm value (Connelly et al., 2011). The positive association between SR and firm value holds in emerging countries (Kuzey and Uyar, 2017; Orazalin and Mahmood, 2019). However, the world economy observed a need for comprehensive and easily comparable standards to be followed by firms to allow SR. Indeed, the expression of interest in a globally accepted standard for SR came from a range of

industries and countries (Chen et al., 2015). The worldwide adoption of the GRI cannot be linked only to the higher awareness of sustainability by the corporate world. In fact, firms tend to observe an increase in their value after adopting the GRI (Marimon et al., 2012). In reality, the firm value can increase when it can signal a true and fair view of its business responsibility to its stakeholders (Chen et al., 2015). Thus, the GRI plays an instrumental role for corporations in the diffusion of CSR information in the network of stakeholders through SR (Jain et al., 2021). To understand how the GRI-based SR could affect the firm value, we test the following hypothesis:

**H3:** GRI adoption in sustainability reports increases firm value.

The importance of the GRI receives attention in several countries after the United National Environment Programme in 1999. Firms prefer the GRI to other standards mainly because its comprehensive nature is useful for SR (Orazalin and Mahmood, 2019). In addition, the GRI allows firms to signal to their stakeholders about their intentions regarding CSR and to report their genuine sustainability approach instead of the pressure of reporting based on good and bad parameters (Fuente et al., 2017). The adoption of the GRI needs the corporate board to have extensive interest in CSR (Uyar et al., 2021). Following the concept of the upper echelon theory, we argue that the executive committee is responsible for the CSR activities instead of one executive. The executive committee is interested in increasing the firm value, and thus, there is a higher possibility of them together adopting the GRI for SR. An efficient corporate board always prefers to keep its business stakeholders informed about their financial and non-financial strategies and policies to signal their strategic move towards the long-term sustainable value of the firm (Godos-Díez et al., 2018). However, the decision about CSR and the diffusion of the related information to outsiders in an efficient manner is not dependent on the individual characteristics of the board members (Dixon-Fowler et al., 2017). The responsibility for reducing information asymmetry with external stakeholders and maximizing the attainment opportunity of CSR is well explained by various attributes of the board (Cui et al., 2018). In the recent literature, we find important discussions about the contribution of the CSR committee to the attainment of a higher level of CSR performance (Uyar et al., 2021). It is evident that in firms where there is a CSR committee, the non-financial activities of firms are assured because of the better quality of CSR (Ballou et al., 2018). The motive for having a dedicated CSR committee is well explained by the underlying strategic intuition of stakeholder theory. The CSR committee and its members are responsible for giving a strong signal to external

stakeholders about the firm's responsibility towards society and the environment. The CSR committee also introduces relevant policies and applies a strategic approach in presenting SR by linking it to firm value for the long term (del Mar Alonso-Almeida et al., 2014). In the signaling process of CSR intention by the firm, there is a high chance that the CSR committee may adopt the GRI to explain the firm value to the external stakeholder (Kılıç et al., 2021b). Thus, we propose the following hypothesis:

**H4:** CSR committee moderates the association between GRI adoption and firm value.

The increasing demand from corporate stakeholders about the firm's orientation towards CSR expects a coordinated effort of the executives of the firm; the stakeholders expect quality information from the company when the executives are part of a committee. In the corporate world, executive compensation is linked with firm performance (Nandy et al., 2021), and we find evidence in the recent literature on executive CSR compensation (Uyar et al., 2021). In addition, the compensation committee links CSR targets with CSR compensation (Al-Shaer and Zaman, 2019). Thus, there is a high possibility that the incentive to achieve a firm's CSR target positively influences the firm's CSR performance. Higher CSR achievement levels lead to SR engaging external stakeholders in the firm's value creation model (Yang et al., 2021). In other words, investors have a positive attitude towards firms with better CSR, especially when the CSR achievement by executives is linked with their compensation (Brown-Liburd, and Zamora, 2015), as the investors, who are the primary stakeholders of the firm, get assurance that the managers as a committee are leading the business towards a sustainable future. However, there are mixed findings about the relationship between executive CSR compensation and company performance (Maas, 2018). Usually, the country-level institutional set-up influences the stakeholders' orientation, which, in turn, affects the success of the CSR initiatives taken by executives and the related performance (Liao et al., 2021). Thus, in countries with weaker stakeholder orientation, we find evidence of higher executive CSR compensation (Tsang et al., 2021). In such instances, executives' long-term pay is positively associated with long-term CSR performance (Velte, 2019). The positive association between executive CSR compensation and firm performance provides enough scope for the firm to adopt a transparent SR strategy (Radu and Smaili, 2022). In other words, we can find a motivation for the firm to adopt the GRI as an SR tool. Thus, we examine the following hypothesis:

**H5:** Executive CSR compensation moderates the association between GRI adoption and firm value.

### **3. Research methodology**

This section includes our various approaches to data analysis. Initially, the data is retrieved, cleaned, and prepared for analysis. In the next phase, the raw data is subject to data preprocessing. In the univariate analysis, the variables are summarized based on descriptive statistics and frequency analysis. The correlation analysis presents the Pearson correlation coefficient. In addition, our baseline model includes the country-year fixed-effects regression analysis. As robustness tests, we apply an alternative methodology, conduct sub-sample tests, and follow an alternative analysis method to address endogeneity concerns.

#### *3.1. Variables*

In this study, following previous studies, the firm CSR mechanisms are represented by two binary variables, namely, the CSR committee (SustComm) and the executive CSR compensation (ExCompen) (Mahmoudian et al., 2020; Uyar et al., 2021). The data on CSR mechanisms and financial variables are retrieved from the Thomson Reuters Eikon database. Although prior studies have used board structure proxies (i.e., size, independence, and diversity), recent studies use CSR mechanisms (e.g., CSR committee and executive CSR compensation) to capture the firms' growing CSR practices (Radu and Smaili, 2022). To examine whether firms adopt GRI guidelines in crafting sustainability reports, we followed the recent trend in the literature and used a binary variable to specify GRI adoption (Kılıç et al., 2021b). Firm value is measured by Tobin's Q (TobinQ) measured by the market capitalization of firms plus the book value of liabilities scaled by the book value of total assets (Cummins et al., 2006; Chen et al., 2020; Kusnadi, 2019). We adopt Tobin's Q as a proxy of firm value, as it better reflects firms' growth opportunities and investor reaction, which is very compatible with the notion of how the GRI is perceived in the stock market (Cummins et al., 2006; Rubera and Droge, 2013). The three sets of control variables used in the analysis are board characteristics, namely, board size (Bsize) and CEO duality (CEOduality); firm's financial characteristics, namely, firm size (Fsize), return on assets (ROA), leverage, and current ratio (CRatio); and ownership structure, namely, free float percentage (FFloat) (Karaman et al., 2018; Kılıç et al., 2021b; Kuzey and Uyar, 2017). While board size is considered an important factor in the functioning of the board mechanism, such as in reaching a consensus and making decisions

(Cheng, 2008), CEO duality/power is found to be harmful to CSR disclosure (Muttakin et al., 2018). Moreover, larger, more liquid, and better performing firms are exposed to greater public scrutiny and may have a higher level of financial and human resources to allocate for SR, and financial leverage might stimulate firms to be more transparent to meet contractual obligations (Bhuiyan and Nguyen, 2020; Karaman et al., 2018; Kuzey and Uyar, 2017). Finally, ownership structure can reflect shareholders' expectations of firms' opaqueness or transparency (Gamerschlag et al., 2011; Karaman et al., 2018). The variables are listed and defined in Table 1.

**[Insert Table 1 here]**

### 3.2. *Sample*

The sample includes 63 countries with a total of 4,625 unique firms in these countries and 29,054 firm-year observations<sup>4</sup>. The research sample period considers SR between 2002 and 2019 to check whether GRI guidelines are adopted or not. The sample period starts with 2002, as it is the initial year for which GRI adoption data exist in the Thomson Reuters Eikon database,<sup>5</sup> and it ends with 2019 since that is the most recent year in the database when we start to retrieve the data. We apply various data screening processes to the raw data set before testing the research hypotheses (Hair et al., 2019). The initial descriptive statistics results indicate that some of the research variables have heavy skewness with the extreme values in the tails with a significantly large variability around the mean values. Therefore, TobinQ, Bsize, ROA, Leverage, and CRatio are winsorized at one percent of both the lower and upper tails by replacing the extreme values with their winsorized counterpart values (Cox, 2006).

In the next stage, we conduct a multivariate outlier detection process. The Minimum Covariance Determinant (MCD) method, a more robust approach than the Mahalanobis distance, is performed to examine the significant outliers (Verardi and Dehon, 2010); 21 significant multivariate outliers are detected and subsequently removed from the research sample. The final sample size of 29,054 firm-year observations is used in our analysis.

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<sup>4</sup> The sample distribution is obtainable from the authors; we could not include it in the paper due to the word-count limit of the journal.

<sup>5</sup> We should also note that the first version of GRI was published in 2000, and hence, firms disclosed their first GRI-based sustainability reports in the early 2000s (Greiling et al., 2015; Parsa et al., 2018).

In addition, we analyze the missing data. The ratios of the firm-year missing observations are TobinQ – 0.47%, Bsize - 0.19%, Fsize – 0.15%, ROA – 0.53%, Leverage – 0.15%, CRatio – 2.60%, and FFloat – 0.70%. Missing values with a ratio of less than 5% are inconsequential, which supports our above analysis (Schafer, 1999).

In the final data screening phase, the variables with the missing values were imputed even if the ratio was small and could be inconsequential. The Markov Chain Monte Carlo (MCMC) method is used to impute these variables based on linear regression for scaling the variables.

The sample distribution based on sector and the year are presented in Table 2. The percentage of the firm-year observations in sectors is as follows: Financials – 18.75%, Industrials – 18.11%, Consumer cyclicals – 13.85%, Basic materials – 12.57%, Consumer non-cyclicals – 8.35%, Technology – 7.46%, Energy, 6.65%, Utilities – 5.86%, Healthcare – 5.10%, and Telecommunications services – 3.28%. The sample distribution based on years indicates that observations range between 0.13% in 2002 and 15.25% in 2019 with a steady increase in the size of the observation in each year.

**[Insert Table 2 here]**

### *3.3. Empirical methodology*

Three groups of research models are proposed in this research paper. The country-year fixed-effects (FE) regression analysis was performed to investigate the research models to alleviate the possible time-variant endogeneity issues (Nunn, 2007; Feenstra et al., 2013; Schons and Steinmeier, 2016; Rjiba et al., 2020).

*Logistic regression analysis:* Following Karaman et al. (2021), the first group of the research models incorporates country-year FE logistic regression analysis as the dependent variable is binary categorical data. The formulation of the research models is presented in equation (1). In this equation, we tested the effect of SustComm and ExCompen on GRI adoption (to test H1 and H2) as well as the effect of ExCompen on SustComm existence (not hypothesized). The dependent variables are SustComm and GRI represented by the term “ $Y_i$ ”; ExCompen and SustComm are the independent testing variables while Bsize, CEOduality, Fsize, ROA, Leverage, CRatio, FFloat, country effect, and year effect are the independent control variables. The independent testing and

the control variables are represented by the term “ $X_i$ ”. In Equation (1), “ $u_i$ ” is the regular error term. The effect of ExCompen is examined when the dependent variable is SustComm while the effects of ExCompen and SustComm are examined when the dependent variable is GRI.

$$P(Y_i = 1 | X_i) = F(\beta_0 + \beta_1 X_i + u_i) \quad i=1, \dots, N; \quad \text{where } F=e^z/(1+e^z) \text{ is the logistic (distribution) function.} \quad (1)$$

*Linear regression analysis:* Following Chang et al. (2019), the second group of the research models is subject to the country-year FE regression analysis with the continuous numerical dependent variable. The formulation of the research models is presented in Equation (2) below. In this model, we test the direct effect of GRI adoption on TobinQ (to test H3). The dependent variable is TobinQ represented by “ $y_i$ ” term. The independent testing variable is GRI while the independent control variables are Bsize, CEOduality, Fsize, ROA, Leverage, CRatio, FFloat, country effect, and year effect. The independent testing variable as well as the control variables are represented by the “ $X_i$ ” term in Equation (2). In Equation (2), the regular error term is represented by the “ $\epsilon_i$ ” term. Three sub-samples based on three time periods were used in the analysis: 2002-2019, 2002-2010, and 2011-2019. The research models are analyzed using these three time periods to explore if there were any variations in the GRI adoption across these periods.

$$y_i = \alpha + \beta X_i + \epsilon_i \quad i=1, \dots, N \quad (2)$$

*Moderation analysis:* The third group of the research models incorporated a moderation analysis, which test the moderating role of SustComm and ExCompen on the relationship between GRI adoption and TobinQ (to test H4 and H5). Hayes’s (2017) moderation analysis approach using a Stata module developed by Jose (2013) is used to test the research hypotheses regarding the moderation analysis. In Equation (3), TobinQ is the dependent variable represented by the “ $y_i$ ” term; GRI is the independent testing variable represented by the “ $x_{1i}$ ” term; SustComm and ExCompen are the moderating variables represented by the “ $M_i$ ” term; and the “ $x_{2i}$ ” term represents the independent control variables as before.

$$y_i = \alpha + \beta_1 x_{1i} + \beta_2 M_i + \beta_3 (x_{1i} * M_i) + \beta_4 x_{2i} + \epsilon_i \quad i= 1, \dots, N \quad (3)$$

Robust standard errors that are heteroscedasticity-consistent are reported in the results of the analyses by using the Huber Sandwich Estimator (Huber, 1967; White, 1980). The implementation of robust standard errors can alleviate the risk of heteroscedasticity issues (Wooldridge, 2020).

### *3.4. Multicollinearity*

The multicollinearity analysis is performed to determine if there is a significant correlation between the independent research variables. The results indicate that the values of variance inflation factor (VIF) range between 1.02 and 1.81. The values of VIF are significantly lower than the suggested cut-off value of 10 (Neter et al., 1996; Kennedy, 2008; Hair et al., 2019). Therefore, there is no risk of multicollinearity issues among the independent variables of the research models.

## **4. Empirical findings**

### *4.1. Descriptive statistics*

The descriptive statistics of the research variables are presented in Table 3. The results show that the existence of GRI, Sustcomm, ExCompen, and CEOduality are 62%, 73%, 30%, and 33% respectively. Moreover, the average of TobinQ is 1.64 ranging from 0.62 and 9.36 with a relatively small variability of 1.15 around the mean value.

**[Insert Table 3 here]**

### *4.2. Correlation analysis*

The linear bivariate correlation analysis of the research variables is reported in Table 4. The SustComm and ExCompen have a significant and positive linear correlation with GRI ( $p < 0.05$ ) while SustComm and ExCompen have a significant and negative linear correlation with TobinQ ( $p < 0.05$ ). Finally, there is a significant and positive linear correlation between SustComm and ExCompen ( $p < 0.05$ ).

**[Insert Table 4 here]**

### *4.3. Baseline analysis*



The country-year FE logistic regression analysis is reported in Table 5. The results show that ExCompen ( $p < 0.01$ ) has a significant and positive relationship with SustComm (Column #1), and GRI (Column #3). Also, SustComm ( $p < 0.01$ ) has a significant and positive relationship with GRI (Column #2). Finally, ExCompen and SustComm are included in the analysis simultaneously (Column #4). The results indicate that both ExCompen ( $p < 0.01$ ) and SustComm ( $p < 0.01$ ) have a significant and positive relationship with GRI. Thus, H1 and H2 are both supported by the empirical findings implying that having both a CSR committee and executive CSR compensation stimulate GRI adoption in sustainability reports. Furthermore, we tested reverse causality running from GRI to ExCompen (Column #5) and found that GRI adoption predicts ExCompen ( $p < 0.01$ ).

**[Insert Table 5 here]**

Table 6 reports the results of the country-year FE regression analysis (Column #1-3). The research models were analyzed under three different periods, specifically, 2002-2019, 2002-2010, and 2011-2019, to explore whether there was a change in the value relevance of GRI across periods. We found GRI ( $p < 0.01$ ) has a significant and positive relation with TobinQ during 2002-2010. However, GRI ( $p < 0.10$ ) has a weak significant and negative relationship with TobinQ during 2011-2019, and there is no significant relationship between the same variables when the sample period is 2002-2019. Thus, the results show the importance of considering different periods separately in studies related to GRI adoption. Hence, while H3 is supported between 2002 and 2010, it is not supported between 2002-2019 and 2011-2019. This implies that GRI adoption in sustainability reports increases firm value in the earlier period, but not in the latter period.

The findings of the moderation analysis with country-year fixed-effects by incorporating SustComm and ExCompen as moderators are presented in Table 6 (Column #4-7). The results are reported for two different periods: 2002-2019 and 2011-2019. We performed a moderation analysis for these periods since GRI is insignificant and significantly negative in these periods, respectively. Hence, the moderating role of SustComm and ExCompen on the relationship between GRI and TobinQ was analyzed to see whether having a sustainability committee and executive CSR compensation helps to translate GRI adoption to firm value in these periods. The results reveal that the interaction variables, GRI\*SustComm ( $p < 0.01$ ) and GRI\*ExCompen ( $p < 0.01$ ), have a significant and positive association with TobinQ for both the 2002-2019 and 2011-2019 time periods. Thus, SustComm and ExCompen are significant moderating variables when translating GRI

adoption to firm value, which confirms H4 and H5 respectively. This implies that the CSR committee and executive CSR compensation moderate the association between GRI adoption and firm value.

**[Insert Table 6 here]**

The moderating roles of SustComm and ExCompen are illustrated by the simple plots of the interaction variables in Figures 1, 2, 3, and 4. The plots illustrate that the interactions are significant. Both the existence of SustComm and ExCompen have a positive slope on the relationship between GRI and TobinQ. Specifically, when SustComm and ExCompen exist, the GRI has a positive impact on TobinQ (slopes are positive), whereas when they do not exist, the GRI has a negative impact on TobinQ (slopes are negative).

**[Figure 1 here]**

**[Figure 2 here]**

**[Figure 3 here]**

**[Figure 4 here]**

#### *4.4. Robustness checks and further tests*

The results obtained from the baseline research models were checked using various robustness tests. Toward this end, several further analyses were performed by excluding the financial sector, excluding the US-based firms, performing an alternative regression analysis, incorporating one firm-year lag of the independent testing variables, excluding firm-year observations of South Africa (2011 and later), and of India (2015 and later) to consider their regulations mandating SR, dividing the sample into polluting versus non-polluting industries, and considering the institutional quality (i.e., the strength of investor protection) of the countries that the firms were affiliated to<sup>6</sup>.

First, the financial sector was excluded from the research sample due to the possibility of exposure to different regulations (Hamrouni et al., 2020). The results concerning the first group of

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<sup>6</sup> The outputs of the robustness tests are obtainable from the authors; we could not include them in the paper due to the word-count limit of the journal.

the research model indicate that ExCompen ( $p < 0.01$ ) has a significant positive relationship with SustComm. Also, ExCompen ( $p < 0.01$ ) and SustComm ( $p < 0.01$ ) have a significant positive relationship with GRI.

The results of the second and the third group of the research models excluding the financial sector show that GRI ( $p < 0.01$ ) has a significant positive relationship with TobinQ only for the 2002-2010 period. Both interaction variables including GRI\*SustComm ( $p < 0.01$ ) and GRI\*ExCompen ( $p < 0.01$ ) have a significant and positive relationship with TobinQ for both the 2002-2019 and 2011-2019 periods, which is consistent with the baseline analysis.

Second, the US-based firms were excluded from the research samples due to them being the most dominant country in the sample, which may make the results misleading. The proposed models were re-run using the new alternative sub-sample excluding US-based firms. The results of the first group of research models are compatible with the baseline analyses.

The results of the second and the third group of the research models excluding US-based firms reveal that GRI ( $p < 0.01$ ) has a significant positive relationship with TobinQ for the 2002-2010 period while GRI has a significant and negative relationship with TobinQ for both 2002-2019 ( $p < 0.10$ ) and 2011-2019 ( $p < 0.01$ ) periods. Thus, the exclusion of US firms from the sample produced stronger negative effects of GRI on firm value for the 2002-2019 and 2011-2019 periods. Furthermore, both interaction variables including GRI\*SustComm ( $p < 0.01$ ) and GRI\*ExCompen ( $p < 0.01$ ) have a significant and positive relationship with TobinQ for both the 2002-2019 and 2011-2019 periods.

Third, an alternative logistic regression estimator was used for examining the first group of the research models by using the random-effects (RE) logistic regression analysis. The results remained the same as the previous test.

We used an alternative regression analysis to examine the second research model using a Two-Stage Least Squares (2SLS) regression analysis. The one firm-year lag of GRI as the independent testing variable and the industry-level average of GRI excluding focal firm, GRI(t-1) and GRI(IndAve), were used as the instrumental variables since they could be correlated with the endogenous variables but could not be correlated with the error term (Wooldridge, 2010,

Wooldridge, 2020; Ngare et al., 2014; Bellemare, et. al., 2017, Godos-Díez et al., 2018). The 2SLS regression analysis could alleviate the endogeneity and omitted variable bias risks (Angrist and Krueger, 2001; Sun & Yu, 2015; Cui et al., 2018; Wooldridge, 2020). The results of the first stage, second stage, Wu-Hausman test of endogeneity, the test of overidentifying restriction, and weak instrument tests are reported in the output. Accordingly, the Durbin-Wu-Hausman test (Null Hypothesis: The regressors are exogenous) shows that the regressors were endogenous, which indicates that the 2SLS approach could be used. The Sargan test of overidentifying restriction revealed that all the instruments were valid. Moreover, the values of the test of weak instruments based on the F-value for the joint significance of instruments were significantly greater than the rule of thumb of 10, which indicates that the instruments were not weak (Stock et al., 2002). The results reveal that GRI ( $p < 0.01$ ) has a significant positive relationship with TobinQ for the 2002-2010 period while GRI ( $p < 0.01$ ) has a significant negative relationship with TobinQ for the 2011-2019 period.

In addition, one firm-year lag of the independent testing variables was included the second and third groups of the research models. The result reveals that GRI(t-1) has a significant and positive relationship with TobinQ for the 2002-2010 period ( $p < 0.01$ ). Moreover, both the interaction variable of GRI(t-1)\*SustComm(t-1) and of GRI(t-1)\*ExCompen(t-1) have a significant and positive relationship with TobinQ for both the 2002-2019 ( $p < 0.01$ ) and 2011-2019 ( $p < 0.01$ ) periods.

Firm-year observations associated with India and South Africa were dropped since these two countries enacted regulations mandating sustainability reporting (i.e., India<sup>7</sup>) and assurance (i.e., South Africa<sup>8</sup>) starting from 2015 and 2011 respectively. The results confirm the baseline results for Models 1, 2, and 3 validating the corporate CSR mechanism's direct role on GRI adoption and the moderating role between GRI adoption and firm value.

We conducted a further test to check whether the findings varied between polluting and non-polluting industries by classifying Energy, Basic Materials, Utilities, and Industrials as polluting sectors and the remaining sectors within the sample as non-polluting sectors (Clarkson et al., 2011;

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<sup>7</sup> See Dharmapala and Khanna (2018) and Hickman et al. (2021).

<sup>8</sup> See King III (2009) and Kılıç et al. (2021a).

Radu and Smaili, 2022). The results confirm the baseline results for Models 1, 2, and 3 for both groups of industries.

Finally, following Kılıç et al. (2021a), we tested whether the institutional quality (i.e., the strength of investor protection) of the countries that firms are affiliated with play a role in the hypothesized links in the study. For this purpose, High and Low sub-samples were generated based on the median of the Strength of Investor Protection score. Here, High denotes the countries which have Investor Protection scores greater than or equal to the median, and Low denotes the countries with a score less than the median. The analysis output does not indicate any significant difference between High and Low investor protection countries for the direct relationship between corporate CSR mechanisms and GRI adoption when we consider the full sample period. However, while the GRI augmented firm value in High investor protection countries between 2002-2010 (in line with the baseline), there is no significant relationship between GRI and firm value in Low investor protection countries in the overall period and between 2002-2010 and 2011-2019. Besides, what is striking is that corporate CSR mechanisms have a much stronger moderating effect between GRI and firm value in Low investor protection countries than in High investor protection countries. Thus, it appears that internal CSR mechanisms play a substitutive role for insufficient institutional mechanisms.

## **5. Discussion and conclusion**

The academic literature and practice discuss the suitability of different SR standards (Romero et al., 2019). Even though there is no generally accepted SR standard, we find that the GRI is mostly adopted by firms from different countries (Narula et al., 2021); hence, we focus on GRI adoption in this study. Although it has been conceptually argued that the GRI promises some benefits for sustainability reporters, there is a research gap in the literature regarding a comprehensive study based on a cross-country sample investigating the drivers and consequences of GRI adoption. Furthermore, although the effect of board structure on sustainability reporting has been extensively investigated, CSR committees' and executive CSR compensation's direct and moderating effect on SR's value relevance for shareholders has yet to be explored. Thus, in this research, we attempt to draw the attention of firms and research scholars to explain how CSR mechanisms could facilitate GRI adoption, which in turn is reflected in firm value. To explore whether the GRI is value-relevant in the earlier and recent periods, we divide the sample period of

2002-2019 into two periods, specifically, 2002-2010 and 2011-2019, and we run the analyses, which reveal interesting outcomes. Furthermore, we deepen the investigation by running the analyses for polluting versus non-polluting sectors and weak and strong institutional environments.

The results indicate that executives receiving CSR compensation play a role in establishing the CSR committee. Furthermore, CSR committees and executive CSR compensation are two significant drivers of GRI adoption in sustainability reports. With this finding, we extend prior sector-specific studies which found that the CSR committee stimulates CSR performance and reporting in the energy and hospitality sectors (Shahbaz et al., 2020; Kılıç et al., 2021b) respectively. This result confirms the validity of the upper echelons theory by supporting the monitoring power of the CSR committee in SR (Hambrick and Mason, 1984; Hambrick, 2007). Moreover, GRI adoption does not enhance firm value over the whole sample period; it enhances firm value in the earlier period of 2002-2010 but weakens firm value in the later period between 2011-2019, thus implying a loss of value relevance. This result contributes to the existing inconclusive literature on the firm value implications of GRI; for example, while Karaman et al. (2018) find an insignificant outcome in the airline sector, Kuzey and Uyar (2017) and Yang et al. (2021)<sup>9</sup> document positive significant outcomes in emerging markets. Hence, the finding partially confirms the signaling theory in connecting SR to firm performance via the GRI (Yang et al., 2021).

Considering our results in conjunction with those of past studies suggests future studies take into account contextual factors in exploring the value relevance of GRI adoption. The findings of the study are supported by the underlying concept of stakeholder theory. In countries with weaker institutions, the stakeholder orientation is weaker (Tsang et al., 2021). Thus, there is a possibility of finding an insignificant relationship between firm value and GRI adoption. Nevertheless, with the help of the moderating effect of CSR committees and executive CSR compensation, GRI adoption leads to a higher firm value in the whole sample period as well as in the recent period, which supports the application of weaker stakeholder orientation. Considering direct associations and moderating effects together, we infer that although the signaling ability of the GRI is maintained in the earlier period, it is weakening in the latter period. However, upper echelons associated with CSR compensate lost signaling power of the GRI. Thus, the interaction effect outlines the interplay

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<sup>9</sup> While Yang et al. (2021) proxied firm outcome with profitability, Karaman et al. (2018) and Kuzey and Uyar (2017) adopted TobinQ, as in our study.

between the signaling and the upper echelons theories. This finding expands on a recent study that found executive CSR compensation to have a mediating effect between CSR committees and CSR performance (Radu and Smaili, 2022). Our findings verify that both executive CSR compensation and the CSR committee align management's interests with those of stakeholders by bringing a more organized and long-term perspective to SR based on the GRI (del Mar Alonso-Almeida et al., 2014; Al-Shaer and Zaman, 2019). Hence, the value-generating ability of the GRI is accentuated with an upper echelon team and policy rather than managers' individual efforts (Dixon-Fowler et al., 2017). Furthermore, having a weak institution leads to weaker stakeholder orientation and a different executive CSR compensation pattern compared to stronger institutional countries. A further test shows that the signaling capacity of the GRI supported by the upper echelons is more apparent in poor institutional environments. Thus, in countries with weaker stakeholder power, we find evidence of a greater executive CSR compensation impact on the signaling ability of the GRI (Tsang et al., 2021). This implies that CSR contracting fulfills institutional voids in communicating with stakeholders (Flammer et al., 2019). Hence, we suggest future studies consider the role of contingencies in the firm value implications of SR. Finally, country-level institutional quality proxied by the strength of investor protection was found to play a significant role in the value relevance of GRI adoption and corporate CSR mechanisms' role in the GRI-value relevance relationship. More specifically, corporate CSR mechanisms play a stronger moderating role between the GRI and firm value in low investor protection countries than in high investor protection countries suggesting a substitutive role between internal CSR mechanisms and institutional mechanisms.

Overall, the results are robust to alternative samplings, such as the exclusion of the financial sector and the US from the sample, alternative methodology, endogeneity concerns addressed by 2SLS and lag-value independent variables, mandatory regulations of India and South Africa, and polluting versus non-polluting sectors.

## **6. Implications and future research avenues**

The results support the theoretical foundations of the study, namely, upper echelons, signaling, and stakeholder theories. In line with upper echelons theory, upper-level CSR configurations, such as establishing a CSR committee and embedding CSR into an executive compensation package, stimulate GRI adoption of firms in SR. While SR is increasingly becoming a dominant non-financial reporting form for firms, providing a complete environmental and socio-

economic engagement has become essential. Hence, rather than a randomly formatted SR, the GRI may help firms capture all aspects of sustainability engagement. Hence, in line with stakeholder and signaling theories, we observe that the stakeholders (i.e., the market) get the signal (i.e., CSR uptake of the firms) and value it and react with a higher market value. Hence, GRI adoption carries a strong signaling power in terms of stimulating firms to be more balanced concerning sustainability engagement and reporting. The findings also confirm that upper-level CSR configuration even strengthens the signaling power of GRI at a time when the GRI alone loses its signaling effect.

The findings suggest implications for firms, shareholders, and executives as well as CSR committees and the GRI. Firms allocate substantial funds for SR and for following GRI guidelines; hence, the findings guide them on how to ensure the return on this investment. They are advised to mobilize an executive compensation policy and configure a CSR team for a more systematic SR following the GRI framework as well as for developing policies for communicating with shareholders about the merits of GRI adoption. It appears that executives rewarded with CSR compensation establish CSR committees to delegate CSR tasks and derive value based on those tasks. Although GRI per se generates value for firms in earlier periods, it loses its relevance in more recent periods. Thus, it is imperative to configure corporate mechanisms to convince stockholders of its contribution to firms.

By tracking the findings of the study, shareholders who particularly pursue socially responsible investment can shape their investment portfolios in those firms that engage with SR and GRI adoption practices. However, the findings imply that investors may growingly consider GRI adoption in sustainability reports per se as cost incurrence and thus unnecessary unless the firm configures an executive compensation package and committee associated with CSR practices. This signals that shareholders seek corporate mechanisms to ensure that SR and GRI adoption are the outputs of such mechanisms and are a corporate strategy. Moreover, the findings imply that executives and CSR committees undertake critical roles in corporate sustainability disclosure in line with the GRI and translate this engagement to greater market performance. More importantly, these two firm CSR mechanisms' roles in generating greater market value out of GRI adoption are more observable in low investor protection countries. Hence, they are the key to fostering firms' structured SR and leveraging this structured report to attract interest from investors, particularly in a weak institutional environment. This implies that internal CSR mechanisms perform a complementary role arising from poor institutional mechanisms. Thus, it is imperative for firms to consider



institutional mechanisms in shaping their corporate CSR structure. This finding also implies that policymaking is closely associated with the value relevance of SR such that stockholders' reaction is contingent upon the tradeoff between external and internal governance bodies. The lack of significant variations regarding industrial affiliations implies that firms shape corporate CSR mechanisms regardless of sectoral tendencies or priorities; shareholders do not mind sectoral affiliation while attributing value to GRI-based SR. Thus, industry-specific studies should not be considered an appropriate benchmark by other researchers. Next, the result implies that the GRI is increasingly losing its value relevance compared to earlier periods. Hence, this change across periods sparks some queries regarding the still usefulness of the GRI framework and indicates that the GRI needs to update the guidelines on time and should issue a supporting guideline for how firms can better embed pillars of the framework into operations and take advantage of it. Moreover, within the growing SR literature and practice, our study shows firms how to generate value out of SR by triangulating a CSR mechanism-SR via the GRI market value considering the contingencies. Finally, the findings suggest there are social implications, too. The economic performance and social engagement of firms are intertwined currently whereas previously, the focus was solely on economic performance. Thus, firms are expected to behave in a more responsible way to society and to express themselves in this respect. Hence, our study shows firms how to ensure efficient communication with society for the benefit of the firm.

Similar to all studies, this study also has certain limitations. The first limitation of the study arises from the binary nature of the key variables, such as CSR committee, executive CSR compensation, and GRI adoption, due to the availability of binary data but not continuous data. The second limitation is that the GRI variable does not specify the version of the GRI framework adopted; the data source indicates only whether any GRI framework is adopted or not. This did not allow us to deepen our investigation around the value relevance of the version of the GRI framework being used. These limitations could be overcome by manual data collection regarding the type of GRI version, the extent of GRI adoption, the extent of executive compensation, and CSR committee composition for small-scale studies such as local ones. The third limitation is that the findings could be affected by the large sample size, which has 29,054 data points. Thus, the validity of the findings on a small-scale sample, for a specific industry, or a specific country/context, might require caution and further justification. The study identifies a shift in the value relevance of the GRI; thus, this finding suggests it would be useful to conduct an exploratory qualitative study that investigates why

such a shift exists and why the GRI has lost its relevance in recent periods. Another future study could explore other internal and external contingencies that possibly moderate between the GRI adoption and firm value, such as ownership structures and market regulations.

## References

- Al-Shaer, H. and Zaman, M. (2019), “CEO compensation and sustainability reporting assurance: Evidence from the UK”, *Journal of Business Ethics*, Vol. 158, pp. 233–252.
- Al-Shaer, H., Albitar, K. and Hussainey, K. (2021), “Creating sustainability reports that matter: an investigation of factors behind the narratives”, *Journal of Applied Accounting Research*, Vol. 23 No. 3, pp. 738-763.
- Amran, A., Lee, S. P. and Devi, S. S. (2014), “The influence of governance structure and strategic corporate social responsibility toward sustainability reporting quality”, *Business Strategy and the Environment*, Vol. 23 No. 4, pp. 217-235.
- Angrist, J. D. and Krueger, A. B. (2001), “Instrumental variables and the search for identification: From supply and demand to natural experiments”, *Journal of Economic Perspectives*, Vol. 15 No. 4, pp. 69-85.
- Ballou, B., Chen, P. C., Grenier, J. H. and Heitger, D. L. (2018), “Corporate social responsibility assurance and reporting quality: Evidence from restatements”, *Journal of Accounting and Public Policy*, Vol. 37 No. 2, pp. 167-188.
- Bellemare, M. F., Masaki, T. and Pepinsky, T. B. (2017), “Lagged explanatory variables and the estimation of causal effect”, *The Journal of Politics*, Vol. 79 No. 3, pp. 949-963.
- Bergh, D. D., Connelly, B. L., Ketchen, D. J. and Shannon, L. M. (2014), “Signalling theory and equilibrium in strategic management research: An assessment and a research agenda”, *Journal of Management Studies*, Vol. 51, pp. 1334–1360
- Berthelot, S., Coulmont, M. and Serret, V. (2012), “Do Investors Value Sustainability Reports? A Canadian Study”, *Corporate Social Responsibility and Environmental Management*, Vol. 19 No. 6, pp 355–363.
- Bhuiyan, M. B. U. and Nguyen, T. H. N. (2020), “Impact of CSR on cost of debt and cost of capital: Australian evidence”, *Social Responsibility Journal*, Vol. 16 No. 3, pp. 419-430.
- Boiral, O. and Henri, J. F. (2017), “Is sustainability performance comparable? A study of GRI reports of mining organizations”, *Business & Society*, Vol. 56 No. 2, pp. 283-317.
- Bolton, S.C., Kim, R.C.-H., O’Gorman, K.D. (2011), “Corporate social responsibility as a dynamic internal organizational process: a case study”, *Journal of Business Ethics*, Vol. 101, pp. 61–74.

- Brown-Liburud, H. and Zamora, V. L. (2015), “The role of corporate social responsibility (CSR) assurance in investors’ judgments when managerial pay is explicitly tied to CSR performance”, *Auditing: A Journal of Practice & Theory*, Vol. 34 No. 1, pp. 75-96.
- Burke, J. J., Hoitash, R. and Hoitash, U. (2019), “The heterogeneity of board-level sustainability committees and corporate social performance”, *Journal of Business Ethics*, Vol. 154 No. 4, pp. 1161-1186.
- Campbell, J. (2007), “Why Would Corporations Behave in Socially Responsible Ways? An Institutional Theory of Social Responsibility”, *Academy of Management Review*, Vol. 32 No. 3, pp. 946–967.
- Chang, K., Shim, H. and Yi, T. D. (2019), “Corporate social responsibility, media freedom, and firm value”, *Finance Research Letters*, Vol. 30, pp. 1-7.
- Chen, L., Feldmann, A. and Tang, O. (2015), “The relationship between disclosures of corporate social performance and financial performance: Evidence from GRI reports in manufacturing industry”, *International Journal of Production Economics*, Vol. 170, pp. 445-456.
- Chen, Y. L., Chuang, Y. W., Huang, H. G. and Shih, J. Y. (2020), “The value of implementing enterprise risk management: Evidence from Taiwan’s financial industry”, *The North American Journal of Economics and Finance*, Vol. 54, 100926.
- Cheng, S. (2008), “Board size and the variability of corporate performance”, *Journal of Financial Economics*, Vol. 87 No. 1, pp. 157-176.
- Clarkson, P. M., Li, Y., Richardson, G. D. and Vasvari, F. P. (2011), “Does it really pay to be green? Determinants and consequences of proactive environmental strategies”, *Journal of Accounting and Public Policy*, Vol. 30 No. 2, pp. 122–144.
- Connelly, B. L., Certo, S. T., Ireland, R. D. and Reutzel, C. R. (2011), “Signaling theory: A review and assessment”, *Journal of Management*, Vol. 37, pp. 39–67.
- Cosma, S., Leopizzi, R., Nobile, L & Schwizer, P. (2021), “Revising the non-financial reporting directive and the role of board of directors: a lost opportunity?”, *Journal of Applied Accounting Research*, Vol. 23 No. 1, pp. 207-226.
- Cox, N. (2006), *WINSOR: Stata module to Winsorize a variable*. Statistical Software Components S361402, Boston College Department of Economics.
- Cui, J., Jo, H. and Na, H. (2018), “Does corporate social responsibility affect information asymmetry?”, *Journal of Business Ethics*, Vol. 148 No. 3, pp. 549-572.

- Cummins, J. D., Lewis, C. M. and Wei, R. (2006), “The market value impact of operational loss events for US banks and insurers”, *Journal of Banking & Finance*, Vol. 30 No. 10, pp. 2605-2634.
- de Villiers, C., Naiker, V. and van Staden, C. J. (2011), “The effect of board characteristics on firm environmental performance”, *Journal of Management*, Vol. 37 No. 6, pp. 1636–1663.
- del Mar Alonso-Almeida, M., Llach, J. and Marimon, F. (2014), “A closer look at the ‘Global Reporting Initiative’ sustainability reporting as a tool to implement environmental and social policies: A worldwide sector analysis”, *Corporate Social Responsibility and Environmental Management*, Vol. 21 No. 6, pp. 318-335.
- Derchi, G. B., Zoni, L. and Dossi, A. (2021), “Corporate social responsibility performance, incentives, and learning effects”, *Journal of Business Ethics*, Vol. 173 No. 3, pp. 617-641.
- Dharmapala, D. and Khanna, V. (2018), “The impact of mandated corporate social responsibility: Evidence from India’s Companies Act of 2013”, *International Review of Law and Economics*, Vol. 56, pp. 92-104.
- Diouf, D. and Boiral, O. (2017), “The quality of sustainability reports and impression management: A stakeholder perspective”, *Accounting, Auditing & Accountability Journal*, Vol. 30 No. 3, pp. 643-667.
- Dixon-Fowler, H. R., Ellstrand, A. E. and Johnson, J. L. (2017), “The role of board environmental committees in corporate environmental performance”, *Journal of Business Ethics*, Vol. 140 No. 3, pp. 423-438.
- Dong, S., Xu, L. (2016), “The impact of explicit CSR regulation: evidence from China’s mining firms”, *Journal of Applied Accounting Research*, Vol. 17, pp. 237–258.
- Feenstra, R. C., Hong, C., Ma, H. and Spencer, B. J. (2013), “Contractual versus non-contractual trade: The role of institutions in China”, *Journal of Economic Behavior & Organization*, Vol. 94, pp. 281-294.
- Flammer, C., Hong, B. and Minor, D. (2019), “Corporate governance and the rise of integrating corporate social responsibility criteria in executive compensation: Effectiveness and implications for firm outcomes”, *Strategic Management Journal*, Vol. 40 No. 7, pp. 1097–1122.
- Freeman, R. E. (2010), *Strategic management: A stakeholder approach*, Cambridge university press.

- Fuente, J. A., García-Sánchez, I. M. and Lozano, M. B. (2017), “The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information”, *Journal of Cleaner Production*, Vol. 141, pp. 737-750.
- Gamerschlag, R., Möller, K. and Verbeeten, F. (2011), “Determinants of voluntary CSR disclosure: empirical evidence from Germany”, *Review of Managerial Science*, Vol. 5 No. 2, pp. 233-262.
- Godos-Díez, J. L., Cabeza-García, L., Alonso-Martínez, D. and Fernández-Gago, R. (2018), “Factors influencing board of directors’ decision-making process as determinants of CSR engagement”, *Review of Managerial Science*, Vol. 12 No. 1, pp. 229-253.
- Greiling, D., Traxler, A. A. and Stötzer, S. (2015), “Sustainability reporting in the Austrian, German and Swiss public sector”, *International Journal of Public Sector Management*, Vol. 28 No. 4/5, pp. 404-428.
- Hair Jr, J. F., Black, W. C., Babin, B. J. and Anderson, R. E. (2019), *Multivariate data analysis*. Cengage Learning.
- Hambrick, D. C. (2007), “Upper echelons theory: An update”, *Academy of Management Review*, Vol. 32 No. 2, pp. 334-343.
- Hambrick, D. C. and Mason, P. A. (1984), “Upper echelons: The organization as a reflection of its top managers”, *Academy of Management Review*, Vol. 9 No. 2, pp. 193-206.
- Hamrouni, A., Uyar, A. and Boussaada, R. (2020), “Are corporate social responsibility disclosures relevant for lenders? Empirical evidence from France”, *Management Decision*, Vol. 58 No. 2, pp. 267-279.
- Hayes, A. F. (2017), *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, Guilford publications.
- Hickman, L. E., Iyer, S. R. and Jادیyappa, N. (2021), “The effect of voluntary and mandatory corporate social responsibility on earnings management: Evidence from India and the 2% rule”, *Emerging Markets Review*, Vol. 46, 100750.
- Huber, P.J. (1967), “The behavior of maximum likelihood estimates under nonstandard conditions”, *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*, pp. 221–233.

- Jain, A., Islam, M. A., Keneley, M. and Kansal, M. (2021), “Social contagion and the institutionalisation of GRI-based sustainability reporting practices”, *Meditari Accountancy Research*, in press, <https://doi.org/10.1108/MEDAR-06-2020-0917>.
- Jose, P. E. (2013), *Doing statistical mediation and moderation*, New York: The Guilford Press.
- Karaman, A. S., Kilic, M. and Uyar, A. (2018), “Sustainability reporting in the aviation industry: worldwide evidence”, *Sustainability Accounting, Management and Policy Journal*, Vol. 9 No. 4, pp. 362-391.
- Karaman, A. S., Orazalin, N., Uyar, A. and Shahbaz, M. (2021), “CSR achievement, reporting, and assurance in the energy sector: Does economic development matter?”, *Energy Policy*, Vol. 149, 112007.
- Kennedy, P. (2008), *A Guide to Econometrics*, 6th ed. Malden, MA: Blackwell Publishing.
- Kılıç, M., Kuzey, C. and Uyar, A. (2021a), “An international investigation on assurance of integrated reports: Institutions, assurance quality, and assurers”, *Journal of International Accounting, Auditing and Taxation*, Vol. 42, 100360.
- Kılıç, M., Uyar, A., Kuzey, C. and Karaman, A. S. (2021b), “Drivers and consequences of sustainability committee existence? Evidence from the hospitality and tourism industry”, *International Journal of Hospitality Management*, Vol. 92, 102753.
- Kim, K. H., Kim, M. and Qian, C. (2018), “Effects of corporate social responsibility on corporate financial performance: A competitive-action perspective”, *Journal of Management*, Vol. 44 No. 3, pp. 1097–1118.
- King III (2009), “King Report on Governance for South Africa 2009. Institute of Directors in Southern Africa”, Available at: [https://cdn.ymaws.com/www.iodsa.co.za/resource/resmgr/king\\_iii/King\\_Report\\_on\\_Governance\\_fo.pdf](https://cdn.ymaws.com/www.iodsa.co.za/resource/resmgr/king_iii/King_Report_on_Governance_fo.pdf) (Accessed June 15, 2018).
- Kolk, A. and Perego, P. (2014), “Sustainable bonuses: Sign of corporate responsibility or window dressing?”, *Journal of Business Ethics*, Vol. 119 No. 1, pp. 1–15.
- Kusnadi, Y. (2019), “Political connections and the value of cash holdings”, *Finance Research Letters*, Vol. 30, pp. 96-102.
- Kuzey, C. and Uyar, A. (2017), “Determinants of sustainability reporting and its impact on firm value: Evidence from the emerging market of Turkey”, *Journal of Cleaner Production*, Vol. 143, pp. 27-39.

- Laskar, N. and Maji, S. G. (2016), “Disclosure of corporate social responsibility and firm performance: evidence from India”, *Asia-Pacific Journal of Management Research and Innovation*, Vol. 12 No. 2, pp. 145-154.
- Li, Z., Liao, G. and Albitar, K. (2020), “Does corporate environmental responsibility engagement affect firm value? The mediating role of corporate innovation”, *Business Strategy and the Environment*, Vol. 29 No. 3, pp. 1045-1055.
- Liao, C. H., San, Z., Tsang, A., and Yu, L. (2021), “Board reforms around the world: The effect on corporate social responsibility”, *Corporate Governance: An International Review*, Vol. 29 No. 5, 496-523.
- Maas, K. (2018), “Do corporate social performance targets in executive compensation contribute to corporate social performance?”, *Journal of Business Ethics*, Vol. 148 No. 3, pp. 573–585.
- Mahmoudian, F., Nazari, J. A. and Herremans, I. M. (2020), “Sustainability control system components, reporting and performance”, *Corporate Governance: The International Journal of Business in Society*, Vol. 22 No. 4, pp. 633-652.
- Malarvizhi, P. and Matta, R. (2016), “Link between Corporate Environmental Disclosure and Firm Performance”–Perception or Reality?”, *The British Accounting Review*, Vol. 36 No. 1, pp. 107-117.
- Marimon, F., del Mar Alonso-Almeida, M., del Pilar Rodríguez, M. and Alejandro, K. A. C. (2012), “The worldwide diffusion of the global reporting initiative: what is the point?”, *Journal of Cleaner Production*, Vol. 33, pp. 132-144.
- Muttakin, M. B., Khan, A. and Mihret, D. G. (2018), “The effect of board capital and CEO power on corporate social responsibility disclosures”, *Journal of Business Ethics*, Vol. 150 No. 1, pp. 41-56.
- Nandy, M., Lodh, S., Wang, J., and Kaur, J. (2021), “Does lobbying of firms complement executive networks in determining executive compensation?”, *International Journal of Finance & Economics*, Vol. 26 No. 3, pp. 4137-4162.
- Narula, S., Puppala, H., Kumar, A., Federico, G.F., Dwivedy, M., Prakash, S. and Talwar, V. (2021), “Applicability of industry 4.0 technologies in the adoption of global reporting initiative standards for achieving sustainability”, *Journal of Cleaner Production*, Vol. 305, 127141.



- Neter, J., Kutner, M. H., Nachtsheim, C. J. and Wasserman, W. (1996), *Applied linear statistical models*, (4th Edition), Chicago, IL: IRWIN: 385-388.
- Ngare, E., Nyamongo, E. M. and Misati, R. N. (2014), “Stock market development and economic growth in Africa”, *Journal of Economics and Business*, Vol. 74, pp. 24-39
- Nunn, N. (2007), “Relationship-specificity, incomplete contracts, and the pattern of trade”, *The Quarterly Journal of Economics*, Vol. 122 No. 2, pp. 569-600.
- Oh, W.-Y., Chang, Y. K., and Kim, T.-Y. (2018), “Complementary or substitutive effects? Corporate governance mechanisms and corporate social responsibility”, *Journal of Management*, Vol. 44 No. 7, pp. 2716–2739.
- Orazalin, N., and Mahmood, M. (2019), “Determinants of GRI-based sustainability reporting: evidence from an emerging economy”, *Journal of Accounting in Emerging Economies*, Vol. 10 No. 1, pp. 140-164.
- Parsa, S., Roper, I., Muller-Camen, M. and Szigetvari, E. (2018, March), “Have labour practices and human rights disclosures enhanced corporate accountability? The case of the GRI framework”, *Accounting Forum*, Vol. 42, No. 1, pp. 47-64.
- Peters, G. F., Romi, A. M., and Sanchez, J. M. (2019), “The influence of corporate sustainability officers on performance”, *Journal of Business Ethics*, Vol. 159 No. 4, pp. 1065-1087.
- Pucheta-Martínez, M. C., and Gallego-Álvarez, I. (2019), “An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues”, *Corporate Social Responsibility and Environmental Management*, Vol. 26 No. 3, pp. 612-627.
- Radu, C. and Smaili, N. (2022), “Alignment Versus Monitoring: An Examination of the Effect of the CSR Committee and CSR-Linked Executive Compensation on CSR Performance”, *Journal of Business Ethics*, Vol. 180, pp. 145–163.
- Rjiba, H., Jahmane, A. and Abid, I. (2020), “Corporate social responsibility and firm value: Guiding through economic policy uncertainty”, *Finance Research Letters*, Vol. 35, 101553.
- Romero, S., Ruiz, S. and Fernandez-Feijoo, B. (2019), “Sustainability reporting and stakeholder engagement in Spain: Different instruments, different quality”, *Business Strategy and the Environment*, Vol. 28 No. 1, pp. 221-232.

- Rubera, G. and Droge, C. (2013), "Technology versus design innovation's effects on sales and Tobin's Q: the moderating role of branding strategy", *Journal of Product Innovation Management*, Vol. 30 No. 3, pp. 448-464.
- Russo, M. V. and Harrison, N. S. (2005), "Organizational design and environmental performance: Clues from the electronics industry", *Academy of Management Journal*, Vol. 48 No. 4, pp. 582-593.
- Schadewitz, H. and Niskala, M. (2010), "Communication via responsibility reporting and its effect on firm value in Finland", *Corporate Social Responsibility and Environmental Management*, Vol. 17 No. 2, pp. 96-106.
- Schafer, J. L. (1999), "Multiple imputation: a primer", *Statistical methods in medical research*, Vol. 8 No. 1, pp. 3-15.
- Schons, L. and Steinmeier, M. (2016), "Walk the talk? How symbolic and substantive CSR actions affect firm performance depending on stakeholder proximity", *Corporate Social Responsibility and Environmental Management*, Vol. 23 No. 6, pp. 358-372.
- Shahbaz, M., Karaman, A. S., Kilic, M. and Uyar, A. (2020), "Board attributes, CSR engagement, and corporate performance: What is the nexus in the energy sector?", *Energy Policy*, Vol. 143, 111582.
- Simmons Jr, J. M., Crittenden, V. L. and Schlegelmilch, B. B. (2018), "The Global Reporting Initiative: do application levels matter?", *Social Responsibility Journal*, Vol. 14 No. 3, pp. 527-541.
- Stock, J. H., Wright, J. H. and Yogo, M. (2002), "A survey of weak instruments and weak identification in generalized method of moments", *Journal of Business & Economic Statistics*, Vol. 20 No. 4, pp. 518-529.
- Sun, L. and Yu, T. R. (2015), "The impact of corporate social responsibility on employee performance and cost", *Review of Accounting and Finance*, Vol. 14 No. 3, pp. 262-284.
- Tsang, A., Wang, K. T., Liu, S. and Yu, L. (2021), "Integrating corporate social responsibility criteria into executive compensation and firm innovation: International evidence", *Journal of Corporate Finance*, Vol. 70, 102070.
- Uyar, A., Kuzey, C., Kilic, M. and Karaman, A. S. (2021), "Board structure, financial performance, corporate social responsibility performance, CSR committee, and CEO duality:

- Disentangling the connection in healthcare”, *Corporate Social Responsibility and Environmental Management*, Vol. 28 No. 6, pp. 1730-1748.
- Velte, P. (2019), “Do CEO incentives and characteristics influence corporate social responsibility (CSR) and vice versa? A literature review”, *Social Responsibility Journal*, Vol. 16, pp. 1293–1323.
- Verardi, V. and Dehon, C. (2010), “Multivariate outlier detection in Stata”, *The Stata Journal*, Vol. 10 No. 2, pp. 259-266.
- White, H. (1980), “A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity”, *Econometrica*, Vol. 48 No. 4, pp. 817–838.
- Wooldridge, J. M. (2010), *Econometric Analysis of Cross Section and Panel Data*, MIT press.
- Wooldridge, J. M. (2020), *Introductory Econometrics: A Modern Approach*, 7th ed. Boston: Cengage.
- Yang, Y., Orzes, G., Jia, F. and Chen, L. (2021), “Does GRI sustainability reporting pay off? An empirical investigation of publicly listed firms in China”, *Business & Society*, Vol. 60 No. 7, pp. 1738-1772.
- Yu, H.-C., Kuo, L. and Kao, M.-F. (2017), “The relationship between CSR disclosure and competitive advantage”, *Sustainability Accounting, Management and Policy Journal*, Vol. 8 No. 5, pp. 547-570.

**Table 1: List of research variables**

| Variable   | Description   |
|------------|---|
| GRI        | Global Reporting Initiative framework adoption in sustainability reports which is denoted by 1 if adopted and 0 if not adopted.     |
| TobinQ     | Firm value proxy measured by the total of market capitalization and book value of liabilities scaled by book value of total assets. |
| SustComm   | Sustainability/CSR team/committee existence which is denoted by 1 if exists and 0 if it does not.                                   |
| ExCompen   | Executive CSR compensation existence which is denoted by 1 if exists and 0 if it does not.  |
| Bsize      | Board size measured by number of directors on board.  |
| CEOduality | CEO duality (i.e., CEO chairs the board simultaneously) existence which is denoted by 1 if exists and 0 if it does not.             |
| Fsize      | Firm size measured by natural logarithm of total assets.  |
| ROA        | Return on assets measured by earnings before interest and tax scaled by total assets.   |
| Leverage   | Total liabilities scaled by total assets.   |
| CRatio     | Current ratio measured by current assets scaled by current liabilities.   |
| FFloat     | Free float percentage of shares held by stockholders.   |

**Table 2: Sample distribution**

| Variable | Category                    | Frequency     | Percent       |
|----------|-----------------------------|---------------|---------------|
| Sector   | Basic Materials             | 3,653         | 12.57         |
|          | Consumer Cyclicals          | 4,025         | 13.85         |
|          | Consumer Non-Cyclicals      | 2,427         | 8.35          |
|          | Energy                      | 1,933         | 6.65          |
|          | Financials                  | 5,448         | 18.75         |
|          | Healthcare                  | 1,481         | 5.10          |
|          | Industrials                 | 5,262         | 18.11         |
|          | Technology                  | 2,168         | 7.46          |
|          | Telecommunications Services | 953           | 3.28          |
|          | Utilities                   | 1,704         | 5.86          |
|          | <i>Total</i>                | <i>29,054</i> | <i>100.00</i> |
| Year     | 2002                        | 38            | 0.13          |
|          | 2003                        | 82            | 0.28          |
|          | 2004                        | 141           | 0.49          |
|          | 2005                        | 226           | 0.78          |
|          | 2006                        | 290           | 1.00          |
|          | 2007                        | 640           | 2.20          |
|          | 2008                        | 902           | 3.10          |
|          | 2009                        | 1,154         | 3.97          |
|          | 2010                        | 1,492         | 5.14          |
|          | 2011                        | 1,762         | 6.06          |
|          | 2012                        | 1,983         | 6.83          |
|          | 2013                        | 2,123         | 7.31          |
|          | 2014                        | 2,217         | 7.63          |
|          | 2015                        | 2,355         | 8.11          |
|          | 2016                        | 2,594         | 8.93          |
|          | 2017                        | 3,034         | 10.44         |
|          | 2018                        | 3,589         | 12.35         |
|          | 2019                        | 4,432         | 15.25         |
|          |                             | <i>Total</i>  | <i>29,054</i> |

**Table 3: Descriptive statistics**

| Variable   | Obs    | Mean  | Std. Dev. | Min   | Max    |
|------------|--------|-------|-----------|-------|--------|
| GRI        | 29,054 | 0.62  | 0.48      | 0.00  | 1.00   |
| TobinQ     | 29,054 | 1.64  | 1.15      | 0.62  | 9.36   |
| SustComm   | 29,054 | 0.73  | 0.44      | 0.00  | 1.00   |
| ExCompen   | 29,054 | 0.30  | 0.46      | 0.00  | 1.00   |
| Bsize      | 29,054 | 10.95 | 3.51      | 4.00  | 21.00  |
| CEOduality | 29,054 | 0.33  | 0.47      | 0.00  | 1.00   |
| Fsize      | 29,054 | 23.02 | 1.71      | 14.61 | 29.10  |
| ROA        | 29,054 | 0.08  | 0.07      | -0.37 | 0.36   |
| Leverage   | 29,054 | 0.61  | 0.21      | 0.05  | 1.16   |
| CRatio     | 29,054 | 1.63  | 1.19      | 0.25  | 12.90  |
| FFloat     | 29,054 | 74.83 | 26.06     | 0.00  | 100.00 |

**Table 4: Correlation analysis**

| Variables    | 1       | 2       | 3       | 4       | 5       | 6      | 7       | 8       | 9       | 10     | 11 |
|--------------|---------|---------|---------|---------|---------|--------|---------|---------|---------|--------|----|
| 1 GRI        | 1       |         |         |         |         |        |         |         |         |        |    |
| 2 TobinQ     | -0.080* | 1       |         |         |         |        |         |         |         |        |    |
| 3 SustComm   | 0.285*  | -0.046* | 1       |         |         |        |         |         |         |        |    |
| 4 ExCompen   | 0.079*  | -0.025* | 0.165*  | 1       |         |        |         |         |         |        |    |
| 5 Bsize      | 0.160*  | -0.137* | 0.101*  | -0.043* | 1       |        |         |         |         |        |    |
| 6 CEOduality | 0.013*  | 0.040*  | 0.025*  | -0.041* | 0.084*  | 1      |         |         |         |        |    |
| 7 Fsize      | 0.230*  | -0.313* | 0.142*  | 0.057*  | 0.448*  | 0.106* | 1       |         |         |        |    |
| 8 ROA        | -0.045* | 0.624*  | -0.018* | 0.020*  | -0.108* | 0.038* | -0.256* | 1       |         |        |    |
| 9 Leverage   | 0.072*  | -0.182* | 0.045*  | 0.051*  | 0.227*  | 0.020* | 0.468*  | -0.254* | 1       |        |    |
| 10 CRatio    | -0.077* | 0.164*  | -0.050* | -0.049* | -0.139* | 0.015* | -0.248* | 0.124*  | -0.495* | 1      |    |
| 11 FFloat    | -0.023* | -0.016* | 0.114*  | 0.200*  | -0.037* | 0.112* | 0.063*  | -0.002  | 0.040*  | 0.021* | 1  |

\*  $p < 0.05$

**Table 5: Country-Year Fixed-Effects Logistic Regression Analysis (1<sup>st</sup> model)**

| Independent variables | (1)<br>SustComm      | (2)<br>GRI           | (3)<br>GRI           | (4)<br>GRI           | (5)<br>ExCompen      |
|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| ExCompen              | 0.76***<br>(19.34)   |                      | 0.57***<br>(16.09)   | 0.44***<br>(11.88)   |                      |
| SustComm              |                      | 1.42***<br>(42.31)   |                      | 1.38***<br>(41.00)   |                      |
| GRI                   |                      |                      |                      |                      | 0.61***<br>(16.99)   |
| Bsize                 | 0.025***<br>(4.60)   | 0.035***<br>(6.85)   | 0.037***<br>(7.45)   | 0.035***<br>(6.74)   | 0.0048<br>(0.78)     |
| CEOduality            | 0.061*<br>(1.74)     | -0.033<br>(-1.00)    | -0.014<br>(-0.43)    | -0.027<br>(-0.83)    | -0.092**<br>(-2.41)  |
| Fsize                 | 0.32***<br>(25.88)   | 0.30***<br>(26.14)   | 0.34***<br>(30.44)   | 0.29***<br>(24.90)   | 0.22***<br>(18.00)   |
| ROA                   | 1.34***<br>(6.15)    | 0.82***<br>(3.85)    | 1.10***<br>(5.31)    | 0.81***<br>(3.76)    | 0.59**<br>(2.56)     |
| Leverage              | -0.51***<br>(-5.73)  | -0.87***<br>(-10.05) | -0.91***<br>(-10.86) | -0.85***<br>(-9.81)  | -0.27***<br>(-2.98)  |
| CRatio                | -0.069***<br>(-5.19) | -0.062***<br>(-4.69) | -0.073***<br>(-5.63) | -0.058***<br>(-4.40) | -0.070***<br>(-4.72) |
| FFloat                | 0.0039***<br>(5.27)  | 0.0015**<br>(2.08)   | 0.0020***<br>(2.84)  | 0.0012<br>(1.60)     | 0.0050***<br>(6.38)  |
| Constant              | -9.32***<br>(-16.11) | -6.43***<br>(-11.16) | -7.13***<br>(-12.80) | -6.08***<br>(-10.54) | -9.73***<br>(-12.13) |
| Country effect        | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Year effect           | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| N                     | 29,020               | 29,015               | 29,015               | 29,015               | 28,877               |
| $\chi^2$ -stat.       | 4868.13***           | 7226.63***           | 5588.77***           | 7370.02***           | 9053.85***           |

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Table 6: Country-Year Fixed-Effects Regression analysis (2<sup>nd</sup> and 3<sup>rd</sup> models)**

| Independent variables | (1)                  | (2)                   | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  |
|-----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                       | TobinQ               | TobinQ                | TobinQ               | TobinQ               | TobinQ               | TobinQ               | TobinQ               |
| Time period           | 2002-2019            | 2002-2010             | 2011-2019            | 2002-2019            | 2002-2019            | 2011-2019            | 2011-2019            |
| GRI                   | -0.0049<br>(-0.44)   | 0.11***<br>(5.33)     | -0.025*<br>(-1.94)   | -0.064***<br>(-3.21) | -0.029**<br>(-2.30)  | -0.096***<br>(-4.03) | -0.061***<br>(-4.15) |
| SustComm              |                      |                       |                      | -0.060***<br>(-3.61) |                      | -0.073***<br>(-3.78) |                      |
| ExCompen              |                      |                       |                      |                      | -0.15***<br>(-7.40)  |                      | -0.17***<br>(-7.67)  |
| GRI*SustComm          |                      |                       |                      | 0.091***<br>(3.88)   |                      | 0.11***<br>(3.90)    |                      |
| GRI*ExCompen          |                      |                       |                      |                      | 0.12***<br>(4.98)    |                      | 0.15***<br>(5.88)    |
| Bsize                 | 0.0079***<br>(4.36)  | -0.00056<br>(-0.19)   | 0.0099***<br>(4.72)  | 0.0077***<br>(4.28)  | 0.0079***<br>(4.40)  | 0.0098***<br>(4.65)  | 0.010***<br>(4.79)   |
| CEOduality            | 0.029**<br>(2.45)    | -0.028<br>(-1.28)     | 0.045***<br>(3.31)   | 0.029**<br>(2.46)    | 0.030**<br>(2.56)    | 0.045***<br>(3.32)   | 0.047***<br>(3.42)   |
| Fsize                 | -0.14***<br>(-34.86) | -0.090***<br>(-12.23) | -0.15***<br>(-33.10) | -0.14***<br>(-34.51) | -0.14***<br>(-34.22) | -0.15***<br>(-32.75) | -0.15***<br>(-32.61) |
| ROA                   | 9.41***<br>(123.02)  | 7.45***<br>(51.75)    | 9.76***<br>(112.20)  | 9.40***<br>(122.94)  | 9.40***<br>(123.01)  | 9.75***<br>(112.15)  | 9.75***<br>(112.18)  |
| Leverage              | 0.52***<br>(16.89)   | 0.32***<br>(5.13)     | 0.53***<br>(15.56)   | 0.52***<br>(16.94)   | 0.52***<br>(16.84)   | 0.54***<br>(15.63)   | 0.53***<br>(15.58)   |
| CRatio                | 0.088***<br>(18.27)  | 0.058***<br>(5.93)    | 0.092***<br>(17.06)  | 0.088***<br>(18.20)  | 0.087***<br>(18.10)  | 0.091***<br>(16.99)  | 0.091***<br>(16.88)  |
| FFloat                | -0.00015<br>(-0.59)  | -0.0021***<br>(-4.32) | 0.000071<br>(0.25)   | -0.00013<br>(-0.52)  | -0.000083<br>(-0.33) | 0.000093<br>(0.33)   | 0.00014<br>(0.50)    |
| Constant              | 2.62***<br>(13.30)   | 2.97***<br>(15.44)    | 2.72***<br>(17.79)   | 2.64***<br>(13.35)   | 2.58***<br>(13.09)   | 2.75***<br>(17.95)   | 2.70***<br>(17.65)   |
| Country effect        | Yes                  | Yes                   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Year effect           | Yes                  | Yes                   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| N                     | 29,054               | 4,965                 | 24,089               | 29,054               | 29,054               | 24,089               | 24,089               |
| R <sup>2</sup>        | 0.47                 | 0.53                  | 0.47                 | 0.47                 | 0.47                 | 0.47                 | 0.47                 |
| F-stat.               | 291.74***            | 87.49***              | 271.09***            | 285.52***            | 286.35***            | 264.71***            | 265.67***            |

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

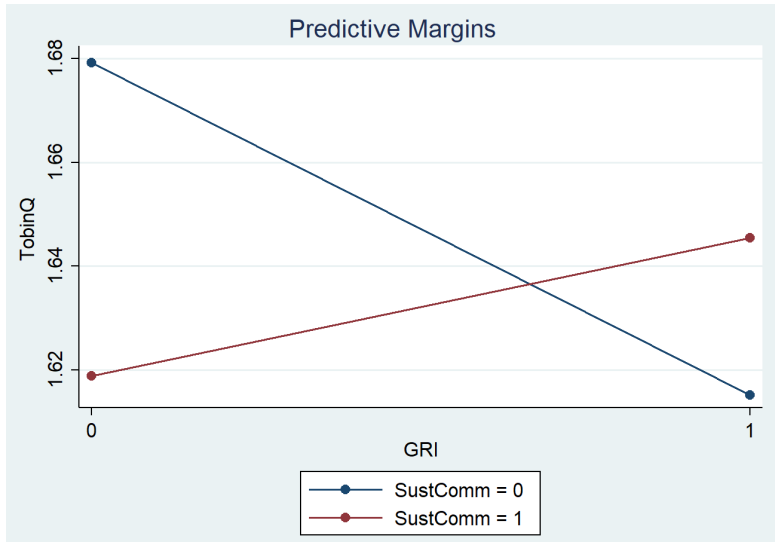


Fig 1: GRI\*SustComm (Table 6, Column#4, Time Period: 2002-2019)

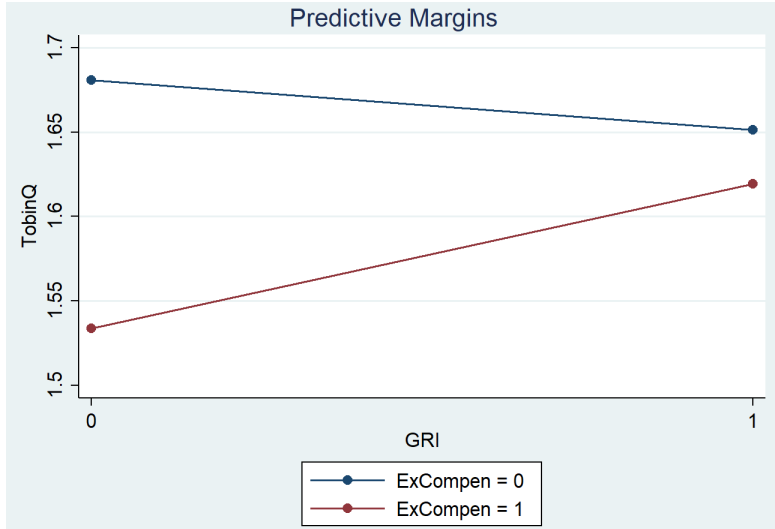


Fig 2: GRI\*ExCompen (Table 6, Column#5, Time Period: 2002-2019)



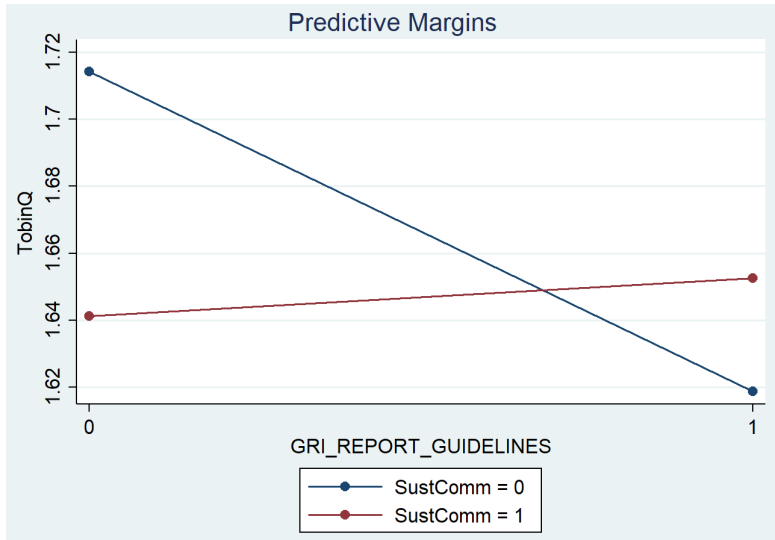


Fig 3: GRI\*SustComm (Table 6, Column #6, Time Period: 2011-2019)

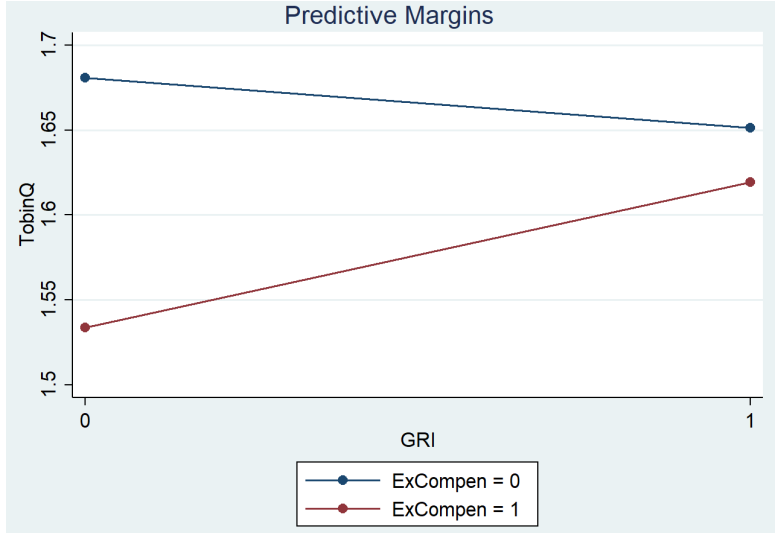


Fig 4: GRI\*ExCompen (Table 6, Column #7, Time Period: 2011-2019)