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ORIGINAL ARTICLE

Board Responsibility for Irresponsibility: The Link Between Board Structure and Corporate Scandals

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Abstract Based on an international data set that comprises over 6,100 companies located in 44 countries in the years 2002–2018, this paper analyzes the relation between corporate scandals and board structures besides further firm-related, political, nation-level economic, and cultural variables. We identify board structure variables that are positively associated with a firm's corporate scandals, namely high CSR efforts and busy board members. There are also variables that are negatively associated with this kind of behavior, namely qualified and skilled boards. No clear evidence can be determined from a board's gender diversity, independent board members, and board size.

Keywords ESG controversies · Corporate controversies · Board structure · Corporate scandals · Within-between model · Hybrid regression model

1 Introduction

The term corporate social responsibility (CSR) is attracting increasing attention and has been studied from a practical and academic point of view for many years. Following Renneboog et al. (2008), CSR is understood as business activities that focus on the improvement of social welfare but not necessarily at the cost of profits or shareholder value. Furthermore being socially responsible entails not only the idea of doing "good" but also includes responsibility for avoiding "bad" in terms

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of illegal, unethical, as well as social irresponsible behavior (see Lin-Hi and Müller 2013). Prior work demonstrates that social irresponsible behavior results in direct negative consequences for both, i.e. companies and stakeholders, such as losses in market value (see Karpoff et al. 2005) as well as damage to reputation (see Grappi et al. 2013).

Therefore, in line with Kotchen and Moon (2012), an increase in irresponsible or unethical behavior of companies also tends to be associated with an increase in CSR activities, indicating that companies may try to offset corporate irresponsible behavior with social responsible behavior.

Moreover, other authors investigate further potential drivers and motivations of companies to engage in CSR (see Ioannou and Serafeim 2012; Liang and Renneboog 2017; Reverte 2009).

Following Arora and Dharwadkar (2011) and Aouadi and Marsat (2018), we regard corporate social responsibility and corporate social irresponsibility (CSI) as two separate concepts and not as two opposite categories. CSR rather has a future orientation, whereas CSI is related to rather short-term and immediate activities and incidents. More concrete, Dorfleitner et al. (2022) state that high CSR efforts, displayed by high ESG ratings, are linked to higher levels of CSI. Therefore, corporate scandals should not be simply regarded as negative CSR performance and findings regarding CSR cannot easily be inverted. Rather, these two notions should be seen as separate concepts, implying that companies are able to perform well or poor in each of them separately. Thus, a company can exhibit very good CSR ratings (good CSR) and still be involved into scandals (poor CSI), which Dorfleitner et al. (2022) call *Janus-phenomenon*, and vice versa. Moreover, it is also possible that a company performs good or bad in both categories at the same time. As a result, lots of research questions regarding corporate scandals remain unanswered.

In recent years, academic literature has begun to focus on the occurrence of CSR-related controversies[1]. Since some scandals are not only directly linked to economic damage to the respective company but also result in far-reaching and grave environmental damage (see Deepwater Horizon explosion), the topic of corporate ethical behavior concerns economists and is therefore worthy of extensive study.

Following the study of Dorfleitner et al. (2022), the occurrence of corporate scandals requires two prerequisites: First, the irresponsible or unethical behavior of a company. Second, the process of societal disclosure including the perception, disapproval, and the publication of this behavior. Furthermore, the authors identify various political, cultural, as well as country- and firm-related variables that are associated with companies' involvement in corporate scandals.

Since many scandals result from unethical or morally questionable decisions by executives, it is necessary to examine the relation between the board, being the entity supervising the executives, and scandals from an academic point of view.

[1] Note that in colloquial language, the notion of controversy still comprises two legitimate opposite perspectives, while the term scandal refers much more to deplorable behavior and additionally needs the unethical behaviour in combination with societal disclosure (Dorfleitner et al. 2022). Nevertheless, in this article we use both terms interchangeably, which is inspired by the Refinitiv controversies score methodology.

More precisely, this work focuses on the linkage of board structure variables with the occurrence of corporate scandals. Even Jain and Zaman (2020) investigate the relation between board structure and corporate social irresponsibility and identify board-level governance conditions to reduce irresponsible behaviors.

This paper differs from their work in several ways. To be more concrete, their data set only comprises US companies and is very limited due to a relatively small sample size implying a possible selection bias. The dataset used in this work comprises by far more observations, even if we restrict it to US companies. Furthermore, no political, country-related, or cultural variables are considered, which play a big role in explaining corporate social responsibility (see Ioannou and Serafeim 2012) as well as corporate social irresponsibility (see Dorfleitner et al. 2022).

2 Theoretical development

In this section, we hypothesize how board level determinants may be positively or negatively associated with the likelihood of a company to be involved in a corporate scandal.

In accordance with agency theory (see Jensen 1986), the preferred projects from managers not always reveal maximized shareholder value. Moreover, agency cost theory hypothesizes that individuals—in this case managers—can make self-serving decisions (i.e. empire building), which decreases shareholder value as a result of decreasing disclosure quality (see Jensen 1986; Levinson 2004). In particular, corporate scandals are often linked to negative implications, like significant price losses as well as ongoing lawsuits and fines and thus harm many of their stakeholder groups (see Fauser and Utz 2021). Such unpredictable risks are something most investors want to avoid as much as possible.

Following McKendall et al. (1999), the choice of a corporation to adapt illegal behavior depends on the the effectiveness of control mechanisms. However, not every scandal necessarily involves illegal behavior, but every scandal is perceived as unethical or immoral and therefore violates ethical and moral standards.

A company's board holds the authority and responsibility to advise executives and monitor the decision-making process (see Adams and Ferreira 2007) and therefore plays a major role in detecting patterns and indications, that may lead to corporate scandals. Additionally, more effective boards may also establish more effective corporate governance.

Linking these aspects to the corporate scandal model of Dorfleitner et al. (2022), we generally assume more effective boards to detect and prevent unethical and irresponsible corporate behavior, which is the first prerequisite of a scandal, and therefore lower the occurrence of corporate scandals.

Inspired by Jain and Zaman (2020), we examine various board characteristics and formulate a priori expectations.

Board Size To perform their duties, a board must be capable of providing enough resources, which entails in particular an engagement of enough members on the board (Gaur et al. 2015). Moreover, from a stakeholder theory perspective (Freeman

et al. 2004), larger boards may ensure that the interests of various stakeholder groups are covered and considered (Gaur et al. 2015).

According to Zahra and Pearce (1989) larger boards basically improve the quality of a company's actions by combining multiple perspectives based on diverse education, background, and skills. Additionally Cheng (2008) finds that companies with larger boards exhibit lower variability of their corporate performance, which may be based on increasing negotiation effort to reach consensus and also a lower probability for decisions that differ from a centrist position (Husted and de Sousa-Filho 2019). Moreover, through increasing number of board members, the ability of CEO domination of the board will be reduced (Zahra and Pearce 1989), which may also pertain to aspects of agency costs.

Furthermore, Jizi et al. (2014) illustrate that board size positively affects a firm's CSR disclosure, which may be an indicator of good public communication, even regarding corporate misconduct. Moreover, by running a meta-analysis Zubeltzu-Jaka et al. (2020) find a positive effect of board size on a firm's corporate social performance. However, since corporate social responsibility and corporate social irresponsibility, as one necessary prerequisite of a corporate scandal, are not two perfectly inverse concepts (Arora and Dharwadkar 2011; Aouadi and Marsat 2018), the relation of board size and corporate scandals remains open.

A further strength of academic literature examines the relation between board size and firm risk (see e.g. Coles et al. 2008; Wang 2012) and indicates a negative relation. Since corporate scandals are one possible aspect of idiosyncratic risk, firms less willing to take these risks may also exhibit a farsighted decision-making process and thus reduce the risk of being involved in a corporate scandal.

Moreover, a company's board can be seen as a team and therefore share characteristics and dynamics with other kinds of teams or groups (Murphy and McIntyre 2007). In this regard, the benefits of large boards could be influenced by the disadvantages of larger groups regarding poor coordination, less flexibility, as well as bad communication (see De Andres et al. 2005; Lipton and Lorsch 1992; Jensen 1993), which could be linked to an increased occurrence of corporate scandals. Further research also shows that smaller boards tend to be more effective and to reduce free-riding risks (see Yermack 1996; Ahmed et al. 2006) while others find positive impacts of board size on firm efficiency (Huang et al. 2011).

In summary, although the evidence is not conclusive, we expect companies with larger boards to exhibit farsighted decision-making by combining various viewpoints, which ultimately is correlated with increasing board efficiency. As a result, companies with larger boards could be less frequently involved in scandals.

Hypothesis 1 *Companies with larger boards are less likely to be involved in a corporate scandal.*

Board expertise In order to be effective, a board needs, in addition to sufficient members, qualified members who are able to perform their duties properly (Gaur et al. 2015).

Previous literature mainly focuses on the relation of board member education and firm performance (see Darmadi 2013; Gaur et al. 2015; Bathula 2008). The results

of these studies are quite divergent. While some authors find positive influences (see Darmadi 2013; Gaur et al. 2015), others find negative tendencies on performance (see Bathula 2008). However, even if board qualification seems to influence firm characteristics in different ways, literature which focuses on the relation between board qualification and corporate scandals is rare.

Corporate scandals often show unforeseen and long-term effects and therefore even unpredictable risks for the company as well as for stakeholders. In line with Khanna et al. (2014), higher-educated directors are more effective at monitoring and providing advice. In particular financial experts on a company's board are expected to recognize risks (see Harris and Raviv 2008) that will not pay off and advise executives to avoid them (see Minton et al. 2014). Thus, we expect more qualified boards with a high level of expertise to be more effective in terms of monitoring and avoiding unethical corporate behavior, which ultimately lowers the involvement of their company in corporate scandals.

Hypothesis 2 *Companies with qualified and skilled boards are less likely to be involved in a corporate scandal.*

Board diversity In addition to board size and qualification, aspects of diversification may also be associated with the effectiveness of board practices, for example by adding various viewpoints and ultimately influencing decision-making and monitoring processes. In this article, we examine two dimensions of diversity among board members: On the one hand, board gender diversity in terms of female share and on the other hand, the number of independent board members.

Female directors Board gender diversity[2] can bring new perspectives and skills to a company's board (Anderson et al. 2011). The majority of academic literature regarding board gender diversity focuses on its effect on corporate financial performance (see Lückerath-Rovers 2013; Campbell and Mínguez-Vera 2008; Carter et al. 2003) and mostly find a positive relationship. However, further strands of literature examine the relation between board gender diversity and corporate social performance and reveal mixed results. Some researchers have found evidence for a positive relationship (see Post et al. 2011; Boulouta 2013; Hafsi and Turgut 2013; Webb 2004; Mallin and Michelon 2011; Naciti 2019), while others found no evidence for a relationship (see Coffey and Wang 1998; Rodriguez-Dominguez et al. 2009; Manita et al. 2018). In particular Velte (2016), when examining German and Austrian companies, finds a positive impact of women on board on ESG performance.

Some authors indicate that women on boards improve decision-making and provide more effort on monitoring (see Adams and Ferreira 2009). But following Adams and Ferreira (2007), this needs not be an advantage, since tougher monitoring may lead managers to be less willing to share information. This lack of communication may be associated with a decrease in board effectiveness and consequently tend to increase the occurrence of scandals.

[2] In line with academic literature, we measure board gender diversity, sometimes also called gender heterogeneity, as the proportion of women on a company's board (see e.g. Anderson et al. 2011).

However, several authors emphasize that women are in general underrepresented in boardrooms (see Claringbould and Knoppers 2007; Orbach 2017; Chapple and Humphrey 2014). So in case of a small portion of women directors, aspects of tokenism needed to be taken into account (Torchia et al. 2011; Bennouri et al. 2018).

The relation between corporate social irresponsibility and female board members is seldom discussed in academic literature. However, early studies find that more diverse boards reduce irresponsible behavior (see Godfrey et al. 2020; Jain and Zaman 2020). Therefore, we expect firms with high levels of female board members to be less likely involved in corporate scandals.

Furthermore, academic literature emphasizes a positive relation of gender-diverse boards and board effectiveness (see Adams and Ferreira 2009; Bear et al. 2010). Finally, this may be related to a decrease in unethical or irresponsible behavior and therefore lower the occurrence of scandals.

Thus, we expect a negative relation between women on boards and corporate scandals.

Independent directors In addition to female directors, independent board members are another aspect of board diversity. In contrast to inside directors, none of these independent directors have executive functions, nor should there exist any further relation (e.g. private or business) to the company (Husted and de Sousa-Filho 2019).

According to Gordon (2006), independent board members tend to improve public disclosure as well as compliance with laws, which may ultimately influence the occurrence of corporate scandals. Moreover, independent directors also add different perspectives (Husted and de Sousa-Filho 2019) and exhibit greater concern about charitable aspects of corporate responsibility (Ibrahim et al. 2003; Husted and de Sousa-Filho 2019), in comparison to inside board members. Besides, another strand of academic literature emphasizes that more independent boards are tougher in terms of monitoring (see e.g., Adams and Ferreira 2007; Adams et al. 2010). While some authors examine the influence of independent directors on CSP or CSR disclosure (see e.g., Johnson and Greening 1999; Fernández-Gago et al. 2018) and predominately find a positive relationship, the influence of independent directors on corporate scandals is rarely discussed in academic literature.

All in all, since more independent boards add additional perspectives, an improvement of information disclosure, and are also prone to tougher and thus more effective monitoring, we expect a higher level of independent directors to lower the occurrence of corporate scandals.

Hypothesis 3a *Firms with high levels of female board members are less likely to be involved in a corporate scandal.*

Hypothesis 3b *Firms with high levels of independent board members are less likely to be involved in a corporate scandal.*

Busy board members Besides board characteristics like size or expertise, the issue of busy board members, who hold multiple member affiliations, may also affect the behavior of companies and the involvement in corporate scandals. According

to Fich and Shivdasani (2012), there is an inverse relation between busy boards and firm performance, comprising market-to-book ratio as well as operating profitability, when the majority of outside directors hold three or more directorships. However, Field et al. (2013) find evidence that newly public companies benefit from "overboarded" directors since they offer unique advantages in terms of a high level of connection and experience. Ferris et al. (2020) confirm both of these findings and additionally publish that multiple directorships are negatively associated with female directors.

Previous literature also shows that large parts of unethical and eventually illegal activities within a business are attributed to a lack of board oversight (see Murphy and Schlegelmilch 2013). Additionally, as proposed by Ormiston and Wong (2013), boards should remain vigilant to prevent leaders – if they are high on moral identity symbolization – in particular to become involved in unethical behaviors. This may become difficult or fail as a result of busy board members.

However, even if a busyness of directors may be a sign of personal expertise (see Fama and Jensen 1983), a high level of "overboarded" members may be related to a decrease in board efficiency and consequently weaken decision-making processes. In summary, we expect busy boards to encourage the occurrence of a corporate scandal.

Hypothesis 4 *Firms with busy board members are more likely to be involved in a corporate scandal.*

CSR efforts on board level: CSR committee CSR committees, which are also called sustainability or ethics committees, reveal the willingness of a company to improve its corporate behavior (see Mallin and Michelon 2011). While most academic literature focuses on the relation between CSR committees and corporate social performance (see Mallin and Michelon 2011; Eberhardt-Toth 2017; Baraibar-Diez and D Odriozola 2019), only few studies investigate the effects between CSR committees and corporate social irresponsibility. Jain and Zaman (2020) as well as Fu et al. (2020) find evidence for a negative relation between the existence of CSR committees and social irresponsible behavior.

Nevertheless, Dorfleitner et al. (2022) find that companies with high levels of ESG also tend to show high levels of corporate social irresponsible behavior, an effect they call the Janus phenomenon. In this regard, Velte (2016) illustrates a positive relation between the implementation of a CSR committee and ESG performance. Since the implementation of a CSR committee displays a further aspect of a firm's ESG efforts, one could expect a similar relationship between the existence of a CSR committee and corporate irresponsible behavior.

Furthermore, following Kotchen and Moon (2012), companies may try to offset irresponsible behavior with socially responsible activities. Thus, one potential reason for a company to establish a CSR committee may lie in former irresponsible behavior. Indeed, if this is the case then the relation is to be considered to be coined by reverse causality.

Another argument may be that companies with high ESG scores, which quantify the success of CSR efforts, may also be measured by higher standards regard-

ing corporate behavior, making it easier for them to become involved in scandals. Furthermore, a CSR committee may increase the monitoring intensity of managers and therefore disclose unethical corporate behavior. Thus in comparison to variables that affect board effectiveness through preventing unethical corporate behavior, we expect a CSR committee to predominantly affect aspects of societal disclosure, which is the second prerequisite of a corporate scandal (Dorfleitner et al. 2022). As a consequence, in line with Adams and Ferreira (2007), managers may be less inclined to share information, decreasing the ability of a board to monitor effectively.

Taking all aspects into account, arguments for a positive relation outweigh those for a negative relation. Thus, we expect that CSR efforts on the board level are positively related to the occurrence of irresponsible behavior.

Hypothesis 5 *Firms with high CSR efforts on the board level are more likely to be involved in a corporate scandal.*

3 Data & Methodology

3.1 Sample and Data collection

For our analyses, we combine information from various data providers (e.g. Refinitiv Eikon, Refinitiv Datastream, World Bank) to obtain a global panel dataset. Our data universe provides information from over 6,100 companies located in 44 countries over the period of 2002–2018. The largest percentage of the observed firms are located in the USA (about 36%). Furthermore, large portions of companies in our dataset are based in the United Kingdom, Japan, Canada, Australia, Hong Kong, China as well as European countries. Table 1 provides an overview of all company-related variables and Table 2 comprises nation-level and economic variables in our dataset, including a detailed definition.

3.1.1 Dependent variables to quantify corporate scandals

To measure and evaluate firms' corporate scandals, a comparable rating metric is necessary. Therefore, as a proxy for corporate scandals, we use the *Refinitiv Controversies score*, which is a comprehensive scoring methodology that assesses negative ESG media stories captured by well-established media sources such as Thomson Reuters, Bloomberg, and Wallstreet Journal. This score is computed as an inverse percentile ranking that considers the number of scandals (i.e. value in the formular below) that occur during a firm's fiscal year. The calculation is based on Eq. (1).

$$\text{score} = \frac{\#\text{ comp. with a worse value} + \frac{\#\text{ comp. with the same value included current one}}{2}}{\#\text{ comp. with a value}} \quad (1)$$

Table 1 Definitions, measurements, data sources, and related hypotheses of company-related variables

Category	Variable	Measurement	Source	Hypothesis
Board variables	Board size	Total number of board members	Datastream	H1
	Board skills	Percentage of members on the board who have either a strong financial background or an industry-specific background	Datastream	H2
	Board structure diversification	Percentage of female board members	Datastream	H3a
	Board independent members	Percentage of independent board members	Datastream	H3b
	Board member affiliations	Average number of other corporate affiliations for the board members	Datastream	H4
	CSR sustainability committee	Dummy variable. Takes the value 1 if the company has a CSR committee or team, otherwise 0	Datastream	H5
Firm variables – CSR reputation	ESG score	Environmental, social, governance performance	Datastream	
Other firm variables	Size	Logarithm of total assets	Datastream	
	Analyst coverage	Total number of analysts providing forecasts regarding earnings per share	I/B/E/S	
	Cash	The sum of cash and short-term investments divided by total assets	Datastream	
	Leverage	Long-term debt to total assets ratio	Datastream	
	Capex	Capital expenditure divided by total assets times 100	Datastream	
	Earnings variability	Standard deviation of net income before extra items/preferred dividends of the previous five years over total assets	Datastream	
	Price volatility	Average annual stock price movement to a high and low from a mean price for each year	Datastream	
	Return on assets	Earnings before interest, taxes, and depreciation over total assets	Datastream	

Table 2 Definitions, measurements, data sources and related hypotheses of nation-level and economic variables

Category	Variable	Measurement	Source
Political variables	Legislative and corruption	Evaluates regulatory quality, government effectiveness, and absence of corruption	World Bank
	Political participation	Measurement of voice and accountability	World Bank
	Political stability	Likelihood of destabilization or overthrowal of a government	World Bank
Country variables	Herfindahl-Hirschman index (HHI)	Measurement of nation-level market competitiveness	World Bank
	KOF Globalisation index (KOFGI)	Indicates a country's degree of globalization with regard to economic, social, and political dimensions	KOF Swiss Economic Institute
	Growth domestic product (GDP)	Annual growth rate of the gross domestic product	Datastream
	World Press Freedom index (WPI)	Measurement for the degree of freedom of the press	RSF Reporters without borders
National culture variables	Power distance index	Extent to which unequally distributed power is accepted and expected.	Hofstede (2001); Hofstede et al. (2010)
	Individualism vs. collectivism	Integration of individuals into social groups	Hofstede (2001); Hofstede et al. (2010)
	Uncertainty avoidance index	Social tolerance for ambiguous situations	Hofstede (2001); Hofstede et al. (2010)
	Masculinity and femininity	Gender-specific role patterns within a cultural community	Hofstede (2001); Hofstede et al. (2010)

In addition, this rating is benchmarked on the respective industry group[3]. The rating is calculated based on 23 concrete ESG controversy topics, e.g. controversies surrounding environmental impact or related to tax fraud (see Refinitiv 2021). The *Refinitiv Controversies score* ranges from one to one hundred. The occurrence of scandals has a negative impact on the score of the involved company. Therefore, the more scandals a firm exhibits, the lower its *Controversies score*. Furthermore, scandals that entail ongoing legislation disputes as well as lawsuits may also affect the subsequent years and the impact of these scandals may still be accounted for in gradings of later years. Consequently, this contributes to a distinction in the magnitude of scandals. Companies without any controversies get a score of 100. Refinitiv also already basically takes the market capitalization of the companies and

[3] For a more detailed description see Refinitiv (2021) https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/esg-scores-methodology.pdf.

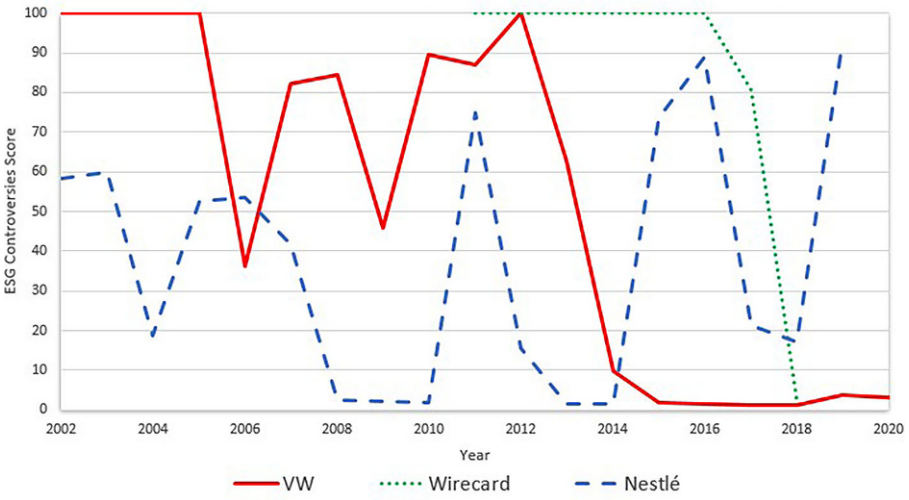

Fig. 1 Controversies score examples

the associated media attention into account, when calculating the overall sum of a firm's controversies (see Refinitiv 2021).

To discuss concrete examples, we consider the Controversies score of VW, Wirecard, and Nestlé in Fig. 1. Taking the graph of VW into account, one can easily see a sharp drop of the score around the year 2016, when dieselgate became public. VW's score then remains on a lower level, since the negative implications of this huge scandal also affected the following years. Even Wirecard sharply drops in the scoring metric in the year 2018, when the Financial Times scandal became publicly known.

Besides an investigation of the *Controversies score*, which naturally depends on the quantile-based rating methodology, we add a second and more basic approach to investigate corporate scandals. In doing so we use the absolute number of corporate scandals (#*scandals*) as the dependent variable. This count variable is also based on the previously mentioned 23 ESG-scandal categories and sums up the number of scandals in each of the categories for each firm in one respective year.

It is worth noting that Refinitiv, as an ESG data provider, has sometimes been accused of correcting its data ex-post. However, this allegation does not apply to our investigation as it may rather improve the quality of the historical data. Furthermore, we do not examine the performance of an investment strategy based on ESG information, which is clearly dependent on timely data quality.

3.1.2 Independent variables

Dorfleitner et al. (2022) already identify various policy, society, culture, and firm characteristics which are linked to the occurrence of corporate scandals. Therefore, we use these variables as a starting point for our regressions and add further board-

level determinants. The selection of the board variables is inspired by Jain and Zaman (2020).

Board variables To examine the influence of board structure on scandals, we add further variables that evaluate the board of a company regarding size, the level of expertise, gender diversity, the level of occupancy and distribution of personal resources (time, power, interest), as well as board level CSR efforts.

In detail, *Board size* reveals the total number of board members and is therefore an appropriate quantity to investigate Hypothesis 1. The variable *Board skills* displays the percentage of board members who have either a strong financial or an industry-specific background. Consequently, it is a highly suitable parameter to measure the level of qualification and expertise of a company's board (see Hypothesis 2). In this work, we consider board diversity on the one hand as the proportion of women on board (i.e. gender diversity) and on the other hand as the amount of independent board members. Therefore, a suitable measure to quantify board gender diversity, as discussed in Hypothesis 3a, is the *Board structure diversification* variable, which indicates the percentage of female board members. Moreover, we add the *Board independent members* variable, to examine Hypothesis 3b.

In order to measure to what extent board members invest personal resources and interest in the respective company and to indicate the level of board busyness as considered by Hypothesis 4, we investigate the *Board member affiliations* variable which measures the average number of other corporate affiliations of board members. To measure the willingness of a firm to extend CSR efforts on the board level, we add the *CSR sustainability committee* dummy variable which takes value 1 if a company has a CSR committee or team and 0 otherwise. It is therefore suitable for the examination of Hypothesis 5.

Firm-related control variables Additionally, we include the variable *ESG score*[4] from Refinitiv to quantify a company's overall ESG performance, which is shown to play a major role in the involvement of corporate scandals (see Dorfleitner et al. 2022). Since the Refinitv controversies score methodology only incorporates three basic firm size categories (large, mid, and small), we use the variables *Size* as well as *Analyst coverage* as a proxy for visibility and media attention, since scandals are derived from global media sources. Further firm-related variables to measure capital structure are *Cash* and *Leverage*. The capital expense of a company is measured by the *Capex* variable. Aspects of idiosyncratic firm risk are covered by the variables *Earnings variability* and *Price volatility*. Finally, as a quantity for firm performance, we add the variable *Return on assets (ROA)*.

Political control variables To consider the impact of country-specific political settings and effects we use the *Worldwide governance indicators (WGI)* from World Bank[5]. But as the totality of these governance indicators shows a strong level of collinearity, it cannot simultaneously be used in regression analyses. The variables *Legislative and corruption*, *Political participation*, and *Political stability* are results of a principal component analysis (PCA) to obtain a set of political variables that

[4] For a more detailed description also see Refinitiv (2021) https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/esg-scores-methodology.pdf.

[5] See http://info.worldbank.org/governance/wgi/.

Table 3 Descriptive statistics

Statistic	Mean	St. Dev.	Min	Median	Max
Controversies score	90.84	22.71	1.00	100.00	100.00
#scandals	0.47	2.00	0.00	0.00	111.00
Board size	10.06	3.29	1.00	10.00	36.00
Board skills	55.36	23.39	0.00	55.56	100.00
Board structure diversification	14.03	12.05	0.00	12.5	100.00
Board independent members	60.71	26.08	0.00	66.67	100.00
Board member affiliations	1.09	0.89	0.00	0.91	14.75
CSR sustainability committee	0.49	0.50	0.00	0.00	1.00
ESG score	42.87	20.16	0.11	40.97	95.21
Size	15.33	1.52	8.68	15.31	21.41
Analyst coverage	12.62	8.12	1.00	11.00	56.00
Cash	0.14	0.15	0.00	0.09	1.03
Leverage	0.22	0.18	0.00	0.20	3.88
Capex	5.82	7.40	–6.41	3.90	226.60
Earnings variability	0.05	0.13	0.00	0.02	7.19
Price volatility	28.39	9.84	5.90	26.79	81.13
Return on assets	0.11	0.18	–14.84	0.11	8.90
Legislative and corruption	0.79	0.71	–2.56	0.96	2.57
Political participation	0.38	0.64	–2.87	0.52	1.26
Political stability	–0.10	0.57	–3.23	–0.06	1.29
Herfindahl-Hirschman index	0.10	0.12	0.03	0.06	0.71
KOF Globalisation index	80.04	7.00	58.00	81.51	90.98
Gross domestic product	2.26	2.18	–9.13	2.30	25.16
World press freedom index	19.35	16.90	–10.00	17.00	136.00
Power distance index	46.64	15.28	11.00	40.00	104.00
Individualism vs. collectivism	72.11	23.97	13.00	89.00	91.00
Uncertainty avoidance index	52.60	19.03	8.00	46.00	112.00
Masculinity and femininity	60.52	15.75	5.00	62.00	95.00

This table presents the mean, standard deviation, median, minimum, and maximum values of all variables of the full data set (N=38,997). All variables are as described in Tables 1 and 2.

can be applied in our statistical analyses. These three variables measure and evaluate aspects of regulatory quality, government effectiveness, rule of law, and control of corruption (*Legislative and corruption*), voice and accountability (*Political participation*), as well as political stability and absence of violence (*Political stability*).

Further country-related control variables Next to political and cultural dimensions, we include the variables *Herfindahl-Hirschman index, KOF Globalisation index, Gross domestic product,* and *World press freedom index* to cover aspects of market competitiveness, the degree of globalization, the overall economic growth, as well as the freedom of the press which potentially affect the occurrence of corporate scandals.

National culture control variables To reflect geographical and country-specific influences on ethical standards and prevailing societal norms as well as corporate behavior, we add the renowned Hofstede cultural dimensions (Hofstede 2001;

Hofstede et al. 2010), namely *Power distance index, Individualism vs. collectivism, Uncertainty avoidance index,* and *Masculinity and femininity* to our dataset. With the aid of these variables, we are able to investigate cross-cultural differences (Beekun and Westerman 2012) and implement them in our cross-country analyses.

In opposition to all remaining variables in our dataset, Hofstede's cultural dimensions are time-invariant as they display long-term developments of national culture which only fluctuate over generations.

3.1.3 Summary Statistics

To obtain a large international data universe for further analysis, we include all companies for which all of the observed variables are available. All currency-dependent variables are converted into US dollars. The dataset considers delisted or insolvent firms until the last available rating or financial information to preserve our results from influences of a potential survivorship bias. Table 3 shows the descriptive statistics of our dataset.

3.2 Methodology

The dataset in this study is subject to different structures and frequencies. While the board structure variables, as well as firm-, political-, and country-related variables are calculated on a yearly basis, Hofstede's cultural dimensions are time-invariant. We examine the variance inflation factor (VIF) values based on an OLS regression model, to verify for potential multicollinearity between variables in our dataset. The outcome indicates no linear relations for any of our variables. Following Dorfleitner et al. (2022), we concentrate on considering changes over time and between the companies. To evaluate both, within and between effects, simultaneously in one model, our calculations rely on a hybrid regression model (see Allison 2009; Schunck 2013). Moreover, this model additionally allows us to capture time-invariant effects between individuals, which vanish when using standard fixed effects models. This hybrid model is basically defined by

$$y_{it} = \beta_0 + \beta_1(x_{it} - \bar{x}_i) + \beta_2 c_i + \beta_3 \bar{x}_i + \mu_i + \epsilon_{it}. \tag{2}$$

In this regression model, y_{it} indicates the dependent variable for an individual i at time t, x_{it} denotes a variable that varies over both, individuals and time. In contrast, the variable c_i varies only over individuals. Furthermore, $\bar{x}_i$ represents the mean of the x_{it} for a fixed i over time t. Aside from that, μ_i denotes an error term and random intercept, ϵ_{it} symbolizes a noise variable. This hybrid regression model (2) provides the opportunity to estimate the within effect (estimated from β_1) and the between effect (β_3) in single models at the same time, while keeping time-invariant effects (β_2) that would disappear in a fixed-effects regression.

Note that the within part of the hybrid regression model partly captures aspects of firm-level endogeneity. However, as usual, this model cannot provide causal evidence. In this work, we focus on correlations between corporate scandals and board

characteristics. We leave a deeper and more detailed insight into causal evidence of these linkages to further research.

Inspired by Dorfleitner et al. (2022), we also add another and even more basic approach when examining the dependent variable *#scandals*. This count variable exhibits the value zero with non-trivial frequency since most of the captured firms are not involved in any corporate scandal. In summary, the distribution of this variable clearly shows left-censored characteristics. For our analyses, we, therefore, use a Tobit regression model with clustered standard errors to examine time-dependent relationships between the observed variables (Tobin 1958).

4 Results

The results of the hybrid, as well as Tobit regression model, are presented in Table 4. At first, we analyze the results of the hybrid regression, which uses the contemporary[6] *Controversies score* as a dependent variable. The results comprise the within and between effects, i.e. effects of changes over time are examined by the within results, whereas the between coefficients of the regression compare the cross-section of firms.

When considering the variable *Board size*, we observe a positive and significant coefficient in the within part as well as a negative and significant effect in the between part of the hybrid regression. This indicates that an increase of *Board size* over time is correlated with an increase of the *Controversies score* whereas companies with larger boards tend to have a lower *Controversies score* than companies with fewer board members.

Coles et al. (2008) publish a negative relation between board size and firm risk. Therefore, we attribute the observed within coefficient to a more future-oriented and farsighted decision-making process, which is also associated with a decrease in the risk of being involved in corporate scandals. Moreover, one possible explanation for the negative between effect could be the following. Since scandals could generate a high level of attention very quickly, fast and efficient crisis management by the company concerned is important. In line with prior studies (see De Andres et al. 2005; Lipton and Lorsch 1992; Jensen 1993), large boards also face disadvantages of larger groups regarding poor coordination, less flexibility, as well as communication issues which may reduce board efficiency and correlate with a higher likelihood of corporate scandals. Overall, we find mixed evidence regarding *Board size* and, therefore, at this stage, we cannot confirm Hypothesis 1.

The *Board skills* variable exhibits a positive and strongly significant coefficient in the within and the between part of the hybrid regression. Both results are significant at the 1% level, which illustrates that there is a positive relationship between *Board skills* and the *Controversies score*.

One explanation for this observation might be intuition since board members with strong financial or industry-specific backgrounds may assess more fully the risks of behavior that potentially leads to corporate scandals. This would correspond to the

[6] This means that the independent variables are not lagged.

Table 4 Hybrid and Tobit regression – results of the full data set

	Hybrid regression *Dependent variable: Controversies score*				Tobit regression *#scandals*	
	Within effects		Between effects			
Variable	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Board size	0.1989***	0.0738	–0.1771**	0.0710	0.0513*	0.0273
Board skills	0.0294***	0.0067	0.0417***	0.0105	–0.0116***	0.0029
Board structure diversification	0.01836	0.0161	–0.0353*	0.0192	0.0148***	0.0056
Board independent members	0.0048	0.0110	–0.0258**	0.0113	0.0041	0.0036
Board member affiliations	0.1560	0.9636	–0.7780***	0.2550	0.1714**	0.0695
CSR sustainability committee	–1.3086***	0.3851	–0.4278	0.5277	0.3468**	0.1538
ESG score	–0.0772***	0.0133	–0.1100***	0.0143	0.0389***	0.0049
Size	–2.0933***	0.3421	–3.9283***	0.1816	1.9399***	0.1891
Analyst coverage	–0.0483	0.0321	–0.1804***	0.0299	0.0863***	0.0145
Cash	–0.6327	1.6140	–5.6932***	1.3883	3.7156***	0.7623
Leverage	1.0586	1.1904	4.4882***	1.0664	–1.2303***	0.4323
Capex	0.0565***	0.0219	–0.0358	0.0283	0.0016	0.0086
Earnings variability	–1.1932	1.4695	–3.0684**	1.4796	1.8704***	0.4497
Price volatility	–0.2233***	0.0286	–0.2184***	0.0218	0.0514***	0.0101
Return on assets	2.5578***	0.7522	–1.7939	1.3776	0.7452	0.4666
Legislative and corruption	4.4120***	1.3030	2.6439***	0.5700	–0.6565***	0.1849
Political participation	1.7063	1.4985	2.4572***	0.8621	–0.3347	0.2375
Political stability	0.2738	0.9040	2.0216***	0.4983	–0.5092**	0.2277
Herfindahl-Hirschman index	–1.7587	8.8861	0.1356	1.6143	0.2997	0.5826
KOF Globalisation index	–0.4852***	0.1356	0.0123	0.0487	–0.0334	0.0212
Gross domestic product	–0.0837	0.0606	–0.0229	0.2033	–0.0219	0.0433
World press freedom index	0.0694***	0.0160	0.1606***	0.0399	–0.0114	0.0074
PDI			0.0529**	0.0233	–0.0344**	0.0136
IDV			–0.1080***	0.0190	0.0484***	0.0088
MAS			–0.0660***	0.0152	0.0218***	0.0054
UAI			0.0413***	0.0147	–0.0144**	0.0073
Yeardummies						yes
Clustered S.E. firm level						yes
Pseudo R^2 (total)	0.32					

This table shows the results derived from the within-between regression and Tobit regression based on the full sample. Coefficients of within-regression (β_1) and between-regression (β_2 and β_3) results, standard errors, and pseudo R^2 are reported upon. All variables are as described in Tables 1 and 2. ***, **, and * indicate a significance level of 1%, 5%, and 10% respectively.

findings of Coles et al. (2008) which indicate a negative relation between board size and firm risk.

Furthermore, the results also indicate that firms with higher-skilled boards tend to have significantly better *Controversies scores* than competitors with lower-skilled boards. One possible reason for this finding may be that companies with less skilled board members may consider unethical practices to gain competitive advantages or to prevent competitive disadvantages. In sum, we find evidence that companies with high values of *Board skills* are less likely to be involved in corporate scandals. Therefore, our results support Hypothesis 2.

To examine Hypothesis 3a, we investigate the *Board structure diversification* indicating the percentage of female board members. The coefficient of the within effect is positive but insignificant, while the between effect reveals a negative and significant value. Previous literature finds a negative association between higher gender diversity and firm-level corporate social irresponsibility (see Jain and Zaman 2020), which also tends to be evident from the within part of the results. However, when comparing between firms, the regression indicates a negative value. One possible explanation may be the following. As already published by McCabe et al. (2006), there are no differences in the overall perceptions of ethical behaviors between sexes, but there are differences in the perception of the strength of unethical actions (i.e. bribery), namely women perceive bribery as significantly less ethical than males. Furthermore, Valentine and Rittenburg (2007) demonstrate that females tend to exhibit greater intentions to act more ethically.

As a result, increasing gender diversification may increase monitoring efforts. Following Adams and Ferreira (2009), tougher monitoring may lead managers to be less willing to share information. This entrenchment effect may therefore achieve exactly the opposite effect as unsupervised roguish managers may be associated with an increase of corporate irresponsible behavior.

Besides, another aspect cannot be ignored. Since only very few observations in our data set exhibit a *Board structure diversification* value above 50, we classify the board of directors as a male-dominated profession (in the style of Cumming et al. 2015). Therefore, women board members are often outnumbered and thus may face difficulties in asserting themselves against their male counterparts on board as well as management levels.

Thus, we attribute the observed effect not only to the discrepancy in the perception of unethical actions which in turn comes along with the detection and open communication of questionable behavior but also to rather fewer chances of assertiveness of female board members against entrenchment effects of roguish managers. All in all, we could not confirm Hypothesis 3a and even find first evidence of a rather opposing relationship.

Besides, the *Board independent members* exhibits an insignificant within-coefficient, while the between effect reveals a negative and significant value on the 5%-level. Previous literature highlights that more independent boards are tougher with respect to monitoring (Adams and Ferreira 2007; Adams et al. 2010), which may again cause executives to withhold information and thus lead to ripple effects that ultimately can lower board efficiency. In summary, we cannot confirm Hypothesis 3b and find first evidence of an opposing relationship.

Considering the *Board member affiliations* variable, we observe evidence in favor of Hypothesis 4, since the coefficients of the between effect show a negative and significant value on the 1%-level. Therefore, an increasing number of other corporate affiliations of board members is correlated with a decrease in the *Controversies score*.

One possible explanation may be that board members with high numbers of corporate affiliations have difficulty following each of their posts with maximum attention and commitment. Therefore, companies with high *Board member affiliations* values are more likely to become involved in scandals compared to competitors with less numerous *Board member affiliations*.

Whilst considering the *CSR sustainability committee* as a measure for the willingness to extend CSR efforts on the board level, we detect the following results. The coefficient of the *CSR sustainability committee* variable reveals a negative and significant value on 1% level, which indicates that there is a negative relationship between *CSR sustainability committee* and the *Controversies score* as well as a negative but insignificant between effect. In line with Dorfleitner et al. (2022), one possible explanation may be that companies tend to rely on an insurance-like effect of high levels of CSR values and therefore the incentive for ethical behavior also decreases. Even Dorfleitner et al. (2020) find evidence for a similar relation when examining the relationship between corporate social performance and corporate financial performance in a portfolio context. In summary, we find evidence that despite a CSR committee companies with good CSR reputations are more likely to be involved in corporate scandals, which indicates evidence in favor of Hypothesis 5.

Regarding firm, political, country, and cultural variables, our findings are in line with Dorfleitner et al. (2022) but shall not be elaborated in detail in this paper. To put the most important findings in a nutshell, on the one hand, companies with good CSR ratings (*ESG score*), good capital structure (high *Cash* and low *Leverage*), as well as riskier (*Price volatility* and *Earnings variability*), larger (*Size*), and high-attention (*Analyst coverage*) companies as well as companies located in countries with high *IDV* and *MAS* values exhibit lower *Controversies score* values and are therefore more likely to become involved in corporate scandals.

On the other hand, companies that are located in countries with strong political conditions (*Legislative and corruption*, *Political participation* and *Political stability*) as well as in cultures with high *Power distance index* and *Uncertainty avoidance index* values are less likely to be involved in a corporate scandal.

When focusing on the number of scandals, it is important to note that all signs are inverted regarding their interpretation. Generally, the results are in line with our previous and most striking findings: The *Board skills* variable exhibits a negative and strongly significant coefficient and also the *Board member affiliations* as well as the *CSR sustainability committee* coefficient is positive and significant and therefore indicate further evidence in favor of Hypotheses 2, 4, and 5. Regarding *Board size* we observe a positive and weak significant coefficient, which shows that the opposite sign of the within and between coefficients in the hybrid regression boils down to a positive overall coefficient when examining *#scandals*. This indicates that overall—in opposite to Hypothesis 1—larger boards rather tend to exhibit more scandals than smaller ones. Besides, *Board structure diversification* variable also exhibits a positive and significant coefficient, which further indicates a rather opposing

relationship of Hypothesis 3a. Again, no evidence in favor of Hypothesis 3b could be found in these results, which in fact indicates evidence for an opposing relationship. No evidence can be derived from the *Board independent members* variable and therefore we cannot confirm Hypothesis 3b.

5 Robustness

To judge the robustness of our results, we run some further regressions. First, to test whether some of our variables reveal evidence for u-shaped relations, we add quadratic predictor variables for *Board size, Board skills, Board structure diversification*, and *Board member affiliations* and run the hybrid regression again. Since none of these variables show significant coefficients in both, i.e. predictor and quadratic predictor variables, we find no evidence for u-shaped relations. As there are no new insights from these results, we do not report them in this paper.

As another robustness test, we divide our data sample into a small board sample ($<$ 10 members) and a large board sample ($\geq$ 10 members) and run the hybrid regression again to investigate whether some of the observed effects rely on board size. The results are displayed in Table 5. Regarding the *Board size* variable, we detect a positive and significant coefficient from the within results of the large board sample while the within coefficient of the small board sample is positive but insignificant. Both between effects are insignificant, which we contribute to rather small differences between the entities in the respective samples. All in all, the evidence of the *Board size* variable is not conclusive. Therefore we continue to reject Hypothesis 1. Taking the *Board skills* variable into account, the within and between coefficient in the large board sample and the between effect from the small board sample are positive and significant. Thus, we again detect supporting evidence in favor of Hypothesis 2. When considering the *Board structure diversification* and *Board independent members*, we observe negative and significant between coefficients in the large board sample and no significant coefficients in the small board sample. Therefore, since the results are not conclusive, we reject both, Hypothesis 3a and Hypothesis 3b. The *Board member affiliations* reveals a strongly significant and negative coefficient of the between effect in both, large and small board samples. Surprisingly, the coefficient of the within effect of the large board sample is positive and significant on 10% level, whereas the respective coefficient of the small board sample is negative and insignificant. One possible explanation may be that large boards are able to compensate for the effect of decreasing attention and commitment. Thus, this observed effect is particularly strong for small boards. All in all, we continue to support Hypothesis 4 but add that this effect applies especially to smaller boards. Regarding *CSR sustainability committee*, the results in both samples are in line with previous results and therefore we again find supporting evidence that companies with high CSR efforts are more likely to become involved in corporate scandals.

As further robustness checks, we also separately investigate the linkage of board characteristics with corporate scandals across US, European, and Asian companies. The results are displayed in Table 6.

Table 5 Hybrid regression – results of the small and large board data sets

	Large board				Small board			
	Within effects		Between effects		Within effects		Between effects	
Variable	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Board size	0.2908**	0.1172	–0.1591	0.1363	0.1971	0.1726	0.0763	0.1653
Board skills	0.0449***	0.0109	0.0413**	0.0178	0.0046	0.0088	0.0388***	0.0106
Board structure diversification	0.0312	0.0282	–0.0625*	0.0344	0.0060	0.0198	–0.0213	0.0191
Board independent members	–0.0035	0.0200	–0.0472**	0.0193	0.0005	0.0132	–0.0086	0.0116
Board member affiliations	0.6038*	0.3108	–0.8867**	0.4203	–0.1147	0.2725	–0.7794***	0.2593
CSR sustainability committee	–1.3000**	0.5951	–0.5561	0.8428	–1.8240***	0.5252	–0.3701	0.5494
ESG score	–0.0829***	0.0205	–0.1126***	0.0223	–0.0525***	0.0186	–0.0676***	0.0156
Size	–2.7389***	0.5918	–5.5088***	0.2990	–1.4097***	0.4446	–2.4766***	0.2050
Analyst coverage	–0.0120	0.0487	–0.1450	0.0459	–0.1160**	0.0458	–0.2082***	0.0335
Cash	–1.0677	2.9321	–7.5413***	2.6857	–1.1544	1.8983	–2.4882*	1.3617
Leverage	2.8821	2.0698	5.4829***	1.8338	–0.1378	1.4495	2.4527**	1.0863
Capex	0.0634	0.0483	–0.1450**	0.0565	0.0529**	0.0229	0.0593**	0.0272
Earnings variability	–3.2551	3.3178	–7.9436*	4.3070	–0.0118	1.5630	–1.4943	1.3293
Price volatility	–0.2092***	0.0478	–0.2556***	0.0382	–0.2060***	0.0376	–0.1850***	0.0222
Return on assets	4.6040***	1.5542	–6.2307*	3.4628	1.1379	0.8328	–0.3462	1.1634

Table 5 (Continued)

	Large board				Small board			
	Within effects		Between effects		Within effects		Between effects	
Variable	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Legislative and corruption	3.4637*	2.0254	3.9039***	0.8412	4.1271**	1.8531	1.8559***	0.6521
Political participation	–0.2102	2.2686	3.6535***	1.2530	3.7605*	2.1742	1.0633	0.9585
Political stability	–0.3417	1.3990	3.2268***	0.7628	0.4732	1.2704	1.3082**	0.5509
Herfindahl-Hirschman index	2.8787	14.1430	0.6728	2.6336	–16.0651	11.9755	0.7028	1.7548
KOF Globalisation index	–0.5231***	0.2005	–0.1293	0.0793	–0.4820**	0.2050	0.0547	0.0522
Gross domestic product	–0.0058	0.0908	0.1552	0.2907	–0.2242***	0.0847	0.0450	0.2005
World press freedom index	0.0919***	0.0234	0.2030***	0.0553	0.0522**	0.0232	0.1016**	0.0404
PDI			0.0583*	0.0352			0.0257	0.0290
IDV			–0.0667**	0.0317			–0.0932***	0.0209
MAS			–0.1108***	0.0244			–0.0392**	0.0169
UAI			0.0647***	0.0228			0.0341*	0.0176
Pseudo R^2 (total)	0.36				0.24			

This table shows the results derived from the within-between regression based on subsample of small and large boards. Coefficients of within-regression (β_1) and between-regression (β_2 and β_3) results, standard errors, and pseudo R^2 are reported upon. All variables are as described in Tables 1 and 2. ***, **, and * indicate a significance level of 1%, 5%, and 10% respectively.

Table 6 Tobit model – results of US, Europe, and Asia subsamples

	Dependent variable: #scandals					
	US		Europe		Asia	
Variable	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Board size	0.0109	0.0584	0.0727	0.0500	0.1054***	0.0385
Board skills	–0.0174***	0.0042	0.0122***	0.0043	0.0025	0.0068
Board structure diversification	0.0294***	0.0107	–0.0042	0.0083	–0.0066	0.0141
Board member affiliations	–0.0332	0.1238	0.0178	0.1205	0.3961***	0.1309
Board independent members	–0.0214**	0.0088	0.0069	0.0057	0.0167	0.0110
CSR sustainability committee	0.3899	0.2451	0.1285	0.2670	0.5366*	0.2970
ESG score	0.0369***	0.0068	0.0451***	0.0136	0.0285***	0.0087
Size	2.0764***	0.2512	2.2158***	0.4882	1.4001***	0.2070
Analyst coverage	0.1263***	0.0239	0.0418	0.0273	0.0721***	0.0187
Cash	4.4927***	1.1814	3.4571**	1.5702	1.3991	0.9752
Leverage	–0.5256	0.5658	–2.4588**	0.9809	–1.1622	1.0346
Capex	–0.0064	0.0142	0.0321	0.0238	0.0351**	0.0175
Earnings variability	2.1375***	0.6007	4.6129**	1.9695	11.3230***	3.5671
Price volatility	0.0474***	0.0130	0.0611***	0.0217	0.0350*	0.0180
Return on assets	1.6405*	0.9649	0.3361	0.7264	1.4942	1.0080
Legislative and corruption	–6.1947***	1.6048	–0.1787	0.4800	–0.5349**	0.2429
Political participation	–7.9711***	1.9717	–1.2487	0.7786	0.1891	0.2261
Political stability	–3.1055***	1.0808	–0.0555	0.3056	–0.6927**	0.3253
Herfindahl-Hirschman index	–31.9093	21.2748	–12.3549	9.0430	21.9221*	11.5365
KOF Globalisation index	0.0803	0.1658	0.2355***	0.0735	0.1105***	0.0322
Gross domestic product	0.4557***	0.0782	0.0322	0.0408	0.0706	0.0473
World press freedom index	–0.2334***	0.0288	–0.0187	0.0150	–0.0105	0.0079
Clustered S.E. firm level	yes		yes		yes	
Observations	13,821		9,355		8,063	

This table shows the results derived from the Tobit regression based on US, Europe, and Asia subsamples. Coefficients and standard errors of the Tobit regression are reported upon. All variables are as described in Tables 1 and 2. ***, **, and * indicate a significance level of 1%, 5%, and 10% respectively.

As the biggest portion of firms in our dataset is located in the US, it can be seen that our results are largely influenced by US companies. However, the effects of board size and member affiliations are mainly found in Asian countries. Apart from one isolated coefficient (*Board skills*), no evidence can be gained from considering solely in European countries. This may be due to the fact that European firms are facing various legal requirements that may influence a company's board composition and therefore also the overall results. We leave a deeper insight into this task for future research.

Table 7 Tobit model – results of scandal subpillars

	Dependent variable:					
	#E-scandals		#S-scandals		#G-scandals	
Variable	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Board size	–0.0345	0.0348	0.0589**	0.0268	–0.0050	0.0154
Board skills	–0.0083	0.0059	–0.0108***	0.0028	–0.0041**	0.0020
Board structure diversification	–0.0144	0.0103	0.0171***	0.0057	0.0031	0.0054
Board member affiliations	0.0735	0.1403	0.1513**	0.0703	0.1024**	0.0485
Board independent members	0.0009	0.0069	0.0038	0.0037	–0.00001	0.0028
CSR sustainability committee	1.4300***	0.3282	0.3033*	0.1562	–0.0337	0.1219
ESG score	0.0206**	0.0093	0.0379***	0.0047	0.0110***	0.0037
Size	1.4788***	0.1951	1.8623***	0.1752	0.7060***	0.0586
Analyst coverage	–0.0230	0.0178	0.0870***	0.0151	0.0328***	0.0065
Cash	–5.0064***	1.3535	3.7439***	0.7875	1.4502***	0.3222
Leverage	–1.4871*	0.7629	–1.2960***	0.4495	0.1424	0.2972
Capex	0.0647***	0.0092	0.0018	0.0090	–0.0330***	0.0098
Earnings variability	0.9040***	0.3309	1.6360***	0.4135	0.2938	0.2914
Price volatility	0.0583***	0.0157	0.0357***	0.0093	0.0595***	0.0056
Return on assets	0.0121	0.9488	1.3831**	0.5712	–0.4920**	0.2272
Legislative and corruption	–0.3085	0.2783	–0.6370***	0.1867	–0.3474*	0.1901
Political participation	–0.0180	0.3598	–0.3669	0.2364	0.0216	0.2886
Political stability	–0.6726**	0.2655	–0.4815**	0.2327	–0.2721*	0.1594
Herfindahl-Hirschman index	3.6705***	0.9953	–0.3275	0.5956	1.4505***	0.5335
KOF Globalisation index	0.0016	0.0341	–0.0368*	0.0215	–0.0240	0.0172
Gross domestic product	–0.0530	0.0767	–0.0319	0.0421	0.0038	0.0426
World press freedom index	0.0023	0.0131	–0.0125*	0.0075	0.0014	0.0076
PDI	–0.0006	0.0150	–0.0342**	0.0139	–0.0236**	0.0102
IDV	0.0247**	0.0123	0.0451***	0.0090	0.0279***	0.0057
MAS	–0.0015	0.0085	0.0203***	0.0054	0.0111**	0.0047
UAI	–0.0091	0.0092	–0.0125*	0.0074	–0.0077	0.0055
Yeardummies	yes		yes		yes	
Clustered S.E. firm level	yes		yes		yes	
Observations	33,701		38,646		38,646	

This table shows the results derived from the Tobit regression based on the full sample. Coefficients and standard errors of the Tobit regression are reported upon. All variables are as described in Tables 1 and 2. ***, **, and * indicate a significance level of 1%, 5%, and 10% respectively.

Table 8 Tobit model – results of free and not or partly free countries subsamples

	Dependent variable: #scandals			
	Free		Partly/not free	
Variable	Coefficient	S.E.	Coefficient	S.E.
Board size	0.0374	0.0312	0.0502	0.0327
Board skills	–0.0137***	0.0030	0.0039	0.0051
Board structure diversification	0.0151**	0.0061	–0.0073	0.0105
Board member affiliations	0.0752	0.0750	0.2002**	0.0878
Board independent members	–0.0020	0.0040	0.0064	0.0079
CSR sustainability committee	0.3642**	0.1633	0.6172***	0.2264
ESG score	0.0428***	0.0054	0.0095	0.0070
Size	2.0606***	0.2036	0.8632***	0.1226
Analyst coverage	0.0920***	0.0163	0.0423***	0.0139
Cash	3.7316***	0.8117	1.3824*	0.7578
Leverage	–1.4434***	0.4647	–0.5083	0.8087
Capex	–0.0065	0.0094	0.0369***	0.0125
Earnings variability	1.6215***	0.4192	6.0735**	2.5459
Price volatility	0.0691***	0.0111	–0.0051	0.0147
Return on assets	0.7239	0.4798	1.4258**	0.6994
Legislative and corruption	–1.3625***	0.3335	–0.7869***	0.2619
Political participation	–2.6572***	0.7582	–0.3896	0.2632
Political stability	–0.9450***	0.3151	0.1738	0.2587
Herfindahl-Hirschman index	0.5931	0.7224	2.2392	2.6465
KOF Globalisation index	–0.0588**	0.0239	0.0749	0.0480
Gross domestic product	–0.0002	0.0252	0.0386	0.0354
World press freedom index	–0.0517***	0.0079	–0.0046	0.0073
PDI	–0.0624***	0.0227	–0.0382*	0.0227
IDV	0.0591***	0.0119	0.0787***	0.0177
MAS	0.0105	0.0066	0.0089	0.0350
UAI	–0.0039	0.0142	–0.0158	0.0129
Clustered S.E. firm level	yes		yes	
Observations	33,404		5,242	

This table shows the results derived from the Tobit regression based on subsample of free and not or partly free countries. Coefficients and standard errors of the Tobit regression are reported upon. All variables are as described in Tables 1 and 2. ***, **, and * indicate a significance level of 1%, 5%, and 10% respectively.

As a next step, we separately investigate the number of scandals regarding the three ESG pillar categories environmental (E), social (S), and governance (G). The results are shown in Table 7.

Considering scandals regarding the S pillar the results are in line with our previous findings. However, it must be noted, that by far most scandals are counted in the social subcategory and therefore this pillar clearly dominates the overall results. When examining the relation between board characteristics and environmental scandals[7], only the coefficient of the *CSR sustainability committee* exhibits a positive

[7] Note: the sample size in some subsamples needed to be cut down because of singularities.

and significant value. Regarding governance scandals, *Board skills* reveals a negative and significant value, while the coefficient of *Board member affiliations* is positive and significant. Overall, we again detect further supporting evidence in favor of our most striking findings (Hypotheses 2, 4, and 5).

Finally, we investigate the linkage of board characteristics with the number of corporate scandals across levels of political freedom. For this sake, we divide our data into companies located in free and not or partly free countries[8]. Since most firms in our data universe are located in free countries, it can be seen that our results are largely influenced by those companies. However, the effects of member affiliations and the existence of a CSR committee can also be found in the partly or not free subsample.

6 Conclusion

In this paper, we examine an international data set that comprises over 6,100 companies located in 44 countries and associated measurements for socially irresponsible behavior, board structures, as well as further firm-related, political, nation-level economic, and cultural variables from 2002 to 2018.

We investigate the correlation of various board structure parameters, namely size, qualification and skills, gender diversity, busyness, and ESG efforts with the occurrence of corporate scandals. The results show that we can identify board variables that are positively associated as well as variables that are negatively associated with a firm's irresponsible corporate behavior. On the one hand, firms associated with high CSR efforts (measured by the existence of a *CSR sustainability committee*) as well as high levels of *Board member affiliations* are more likely to become involved in a corporate scandal. On the other hand, companies with high levels of *Board skills* are less likely to be involved in a corporate scandal. No clear evidence could be determined from *Board structure diversification* and *Board independent members* and *Board size*.

One potential limitation of this study lies in the fact that controversies scores, the number of scandals as well as most of our variables are only calculated once per year. Future research could focus on more detailed short-, medium-, and long-term effects as well as on a closer investigation of the influence of board characteristics regarding specific countries and cultures. In addition, the results of this research are dependent on the accuracy of the documented data sources. With regard to ESG scores, it is well known that different data providers may not rate the same company in the same way. However, in our context, ESG scores are only used as a control variable. Therefore, the impact of this effect on our results should not be severe.

Naturally, the hybrid regression and Tobit model provide correlation evidence for the results and cannot prove causality. We leave a deeper and more detailed insight to further research by recommending an experimental-based approach.

[8] The classification is based on Global Freedom Scores from Freedom House. For more details, see https://freedomhouse.org/countries/freedom-world/scores.

Our work provides enhanced aspects towards the influence of board structure on the occurrence of corporate scandals. Additionally, we implement new approaches and ideas to extend existing literature of corporate social irresponsibility, still holding promising potential for further research.

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