Interdisciplinary Systems for Global Management
Vol. 2 (2026), No. 1, pp. 70-83
DOI: https://doi.org/10.55578/isgm.2603.005

ARTICLE

The Influence of Diverse Boards on the Corporate Social Responsibility of Indian Companies

Deepa Sharma [1*]

[1] *Department of Commerce, Faculty of Humanities, Social Sciences and Liberal Arts, Sikkim Manipal University, Gangtok, Sikkim, India*

[*]Corresponding author. Email: deepa.sharma@smu.edu.in

Received: 19 March 2026, Accepted: 26 March 2026, Published: 27 March 2026

Abstract

Diversity on board is essential to the successful application of CSR initiatives. Businesses can enhance their decision-making procedures and better serve stakeholder demands by cultivating diverse leadership. The study analyses the impact of diversity of boards of directors on Indian companies' corporate social responsibility performance of 540 companies listed on the National Stock Exchange of India from April 2012 to March 2021. The data relating to CSR has been extracted from the Bloomberg database and other variables have been taken from the CMIE Prowess database. Built on a fixed effect panel regression analysis, this study discovers that the board diversity of Indian enterprises has a mixed impact on their CSR performance. The study also analyses the effect of board diversity on the environment, social and governance scores separately and presents the findings of the study. The paper explains how a diverse board affect corporate social responsibility in the Indian setting, where CSR spending and the elements of board diversity like the presence of women directors and independent directors is mandated by the law. The paper also makes suggestions and recommendations based on the findings.

Keywords: Corporate Social Responsibility; Board gender diversity; Independent director; Board size; CEO duality

1. INTRODUCTION

The role of a company in undertaking and promoting social matters has become precedented since the importance placed on sustainability has increased in the present scenario [1]. This has led to the Board of Directors (BOD) of a firm placing more importance on matters concerning the social responsibility of companies. BOD possesses sizeable control and responsibility that influence a company's decision-making process [2]. Most descriptions of CSR focus on corporate conduct but the individuals inside organizations are truly responsible for developing, implementing, maintaining, or avoiding such policies and practices [3].

The importance of disclosing CSR information has led to a strong response from the academic community in terms of research aimed at understanding the key factors influencing enterprises' decisions to report on CSR. This is a consequence of corporate governance controls and the way a firm is overseen and governed [4]. A diversified team of board of directors in various demographic variables like age, sex, ethnicity, etc., can be advantageous to adopting different CSR policies by a firm [5]. The deliberations about CSR activities are greatly affected by different corporate governance practices like Board Gender Diversity (BGD), Board independence (BI), CEO duality (CEOD) and Board Size (BS). When the board is gender diverse and there is presence of women directors on a company's board, it entails improved communications with stakeholders, which improves relationships with them [2]. The women directors are expected to be more sympathetic in their policies concerning employees, communities, and other philanthropic contributions [6]. The BOD, specifically independent directors, recognize the prospective of making lasting investments in environmental challenges and are more interested in the company's

CSR policies [7]. CEOD impacts a firm's practice towards CSR, as when the same person holds position as a firm's CEO and the Chairman of the BOD, they have considerable power enabling them to make certain decisions which shape a company's sustainability performance [8] Larger boards are more diverse, with directors from a range of stakeholder groups and this diversity aids the board in understanding and meeting the claims of various stakeholders [9].

There have been attempts to measure the influence of various board characteristics on the CSR of firms in different studies. Still there is a need and scope to do this analysis in Indian context. The studies in the Indian context have usually taken a smaller sample size to analyse this relation. Also, the current study measures the influence of different board characteristics on CSR performance as well as analyzing the impact on the environment, social and governance score separately which gives additional insights in the field of the study. In addition to that, it becomes imperative to reconsider and address the relationship, as studies have given conflicting and inconsistent results from the analysis in the past. The present study extends the literature on the effect of BGD, BI, CEOD and BS on the CSR practices of a firm by taking ESG score calculated by Bloomberg, a third-party rating agency, as its measure and improves the sample by taking 540 companies listed on the National Stock Exchange of India (NSE) for a 10-year period.

The next section provides the literature survey followed by data and research designs. The subsequent sections present the analysis followed by findings and conclusion.

2. LITERATURE REVIEW

Studies have discovered that board characteristics and CSR practices are intertwined. The relationship yields a favorable correlation between good-quality corporate governance and corporate social responsibility (CSR) since it encourages investors and shareholders to fund socially conscious initiatives.

"Social Responsibilities of the Businessman" a book by Bowen [10] laid a base for and is largely credited with initiating the official academic study of contemporary CSR. CSR has been conceptualized in varied ways over the last several decades and various views to CSR separate CSR into three stages-philanthropy (1950s -1960s), regulated CSR (1970s-1980s) and 1990s to present, instrumental/strategic CSR. The developments in theory in the late 1960s escalated the literature in CSR research to include a surge in the definitions of CSR. CSR can take many different shapes and is frequently used as an umbrella word [11] and there is a lack of settled definition of CSR [12] In the 1950s, the first official definitions of CSR given by [10] made it abundantly evident that business had a larger societal role that included "obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society". Carroll introduced the Pyramid of CSR, which soon received widespread popularity and became a textbook staple taught to management students around the world, marking the beginning of the 1990s with what may well be regarded as a milestone for CSR. He suggested that comprehensive CSR consists of four different types of social obligations: "economic, legal, ethical and philanthropic" [13]. At the beginning of the millennium, Dahlsrud utilised keyword coding to identify five important CSR themes. He drew on 37 different CSR definitions, many of which came from state actors and non-governmental organizations (NGOs) outside of mainstream industry and the academy. social, economic, environmental, stakeholder, and voluntariness [12].

There are different theoretical constructs that explain the impact of different corporate governance mechanisms viz BGD, BI, CEOD and BS on the CSR practices of a firm. Firstly, the effect of BGD on CSR has been explained using various theories. According to the agency theory, BGD increases the effectiveness of managers by increasing oversight of management's opportunistic behavior and minimizing agency issues which in turn improves the CSR of companies [14]. In addition, the "Stakeholder theory" [15] and "Resource dependence theory" [16], suggests that BGD tends to raise the pressure on the company to implement a variety of socially and environmentally responsible practices to meet stakeholder expectations. Additionally, legitimacy [17] and neo-institutional theories [18] support the idea that having female directors on the board enhances a company's reputation and goodwill by increasing its accountability and commitment to society and the environment. The gender social role theory states that a women's sensitivity and sense of community to environmental concerns is higher as

compared to males [19]. As a result, they portray an increased sense of community, ethics, and social welfare. The upper echelons theory also propounds that depending on the female gender position which is different from males in terms of their values and personal attributes, make them more ethical so boards having more female perform better socially [20]. Secondly, the agency theory also explains the influence of board independence on the CSR of firms. The presence of independent directors minimizes the information asymmetry by better disclosure which might lower the disputes between the managers and stakeholders which might motivate them to engage more in the CSR conduct [21].The "Stakeholder theory" also propounds that the independent directors are absorbed on catering to the welfares of the stakeholders since they are more stakeholder leaning as their concerns may be different from the inside directors who may be more oriented towards their personal gain [22]. Thirdly, CEOD which demonstrates whether chairman of the board and the CEO position in an organization is held by one person or is separate. If such is the case, it may inhibit the managers from executing their monitoring activity [23]. The agency theory posits that since CEOD gives the CEO greater control, it gives them the entitlement to engage in activities which are not in in line with the stakeholders' interests which may lead to them being less focused on sustainable practices. Fourthly, the effect of BS on CSR explained from the lens of agency theory posits that a larger BS aids in decision-making by way of bringing in diverse ideas which leads to better organizational performance [24]. A larger board also includes a variety of directors who portray the interest of different groups of stakeholders and such a board will be orientated to think about the welfare of the community and society [25]. In contrast directors in a small board work hard and must put their best effort to the company [26].

3. Hypotheses Development

Interest in women representation on BGD has grown significantly among CSR specialists and policymakers in recent years [27]. Gender diversity had a favorable impact on CSR, when it was analyzed alongside top management team diversity [28]. Increased BGD dramatically lessen the constraining impact of concealment culture on the amount of CSR disclosure [29]. Women can enhance the implementation of CSR and company success since empirical research have shown that they are more motivated to engage in charitable and philanthropic activities [30]. The women are likely to make decisions that are to a greater extent socially sentient than men do [31]. Additionally, there are several recent studies that have identified positive effect of BGD on CSR [29,32]. Hence when boards are gender diverse, the social responsibility of a business organisation improves. Contrary to this opinion, studies have found insignificant [33]and a negative effect [34-36] of BGD on the CSR performance of firms. Furthermore, it was examined that [37] women lacked the authority or capabilities necessary to affect the organization's decision-making process.

After the thorough literature review, is can be observed that there is a mixed relationship, predominantly positive, albeit some negative as well. Based on the reasoning posited above and the earlier empirical findings, the study proposes two hypotheses:

H1a- There is a significant positive impact of BGD on the CSR of Indian firms.

H1b- There is a significant positive impact of BGD on the Environmental, Social, and Governance scores related to CSR of Indian firms.

BI was found to have a positive influence on the CSR expenditure in the context of Nigerian firms where they analyzed by dividing sample into two categories. They found a positive effect of BI on CSR during pre-covid scenario and insignificant impact post covid 19 [38]. BI had a favourable impact on the CSR disclosure in Italian perspective based on non-financial companies. Based on a study of 76 non-financial companies in the Indian Context, Pareek [25] found a significant positive impact of BI on the CSR activities and suggested to include more independent directors on the board. A favourable impact of BI on the CSR was also found in case of studies conducted in Mexican companies [39] and by other studies [40,41]. Contrarily, a significant negative impact of board independence on CSR was found in case of Indian companies [25] based on analysing 500 non-financial companies as sample from National Stock Exchange of India. Board independence was found to be negatively impacting the CSR in case of Nigerian firms [42]. A study of 210 observations in the context of Jordan, Daoud & Kharabsheh [43] also found a negative effect of BI on CSR. There are articles that have found negative but insignificant impact

of board independence [42]. Depending on the mixed empirical evidence of board independence on the CSR, we suggest the following hypothesis:

H2a- There is a significant impact of BI on the CSR of Indian firms.

H2b- There is a significant impact of BI on the Environmental, Social, and Governance scores related to CSR of Indian firms.

CEOD is an important corporate governance feature that affects decision making specifically relating to CSR practices as a result of the concentration of executive power [44]. The studies have found no noteworthy impact of CEOD on CSR [8]. Numerous studies have realised unfavourable effect of CEOD on CSR. CEOD was found to be weakening the relationship between environmental dynamics and CSR. CEOD yielded a negative association [45] with the sustainability practices of firm listed in Pakistan Stock Exchange [23]. There are related studies that have garnered the negative association [45-47]. Based on the theoretical background mostly based on Agency theory and the recent empirical studies we propose the following hypothesis.

H3a-There is a significant negative impact of CEOD on the CSR of Indian firms.

H3b- There is a significant negative impact of CEOD on the Environmental, Social, and Governance scores related to CSR of Indian firms.

With respect to the empirical studies that have researched the effect of BS on CSR, we have found mixed results. BS did not have substantial impact on CSR expenditure for period before and after in case of banks in Nigeria [38]. An unfavorable impact of BS on the CSR activities was realized by [25] in case of 76 non-financial Indian companies. [23] found no significant influence of BS on the CSR of different companies from OECD. A study based on utility companies across the world found a positive effect of BS on the environmental and social disclosure [48]. Based on studies in Pakistani setting [45] found that BS has an unfavorable impact on the CSR of non-financial firms. A favorable effect of BS on CSR was found by Anyigbah [47], based on a study of firms from Chinese stock exchanges. BS improves CSR in different CSR columns namely “Economic, Environmental, and Social.” There are other studies [49] that have found significant positive impact of BS on CSR disclosure

Given that there exists a predominantly positive effect of BS on CSR found in the review, and based on the theoretical account and the empirical data we suggest the following hypotheses.

H4a-There is a significant impact of BS on the CSR of Indian firms.

H4b- There is a significant positive impact of BS on the Environmental, Social, and Governance scores related to CSR of Indian firms.

4. Methodology

4.1. Data and Sample

The study measures the impact of board characteristics on the CSR of Indian manufacturing companies listed in NSE from April 1, 2012, to March 31, 2021. Those companies have been excluded where the CSR data was not available for our study period. The final sample consists of 540 companies. The subsequent sections explain the measurement of the dependent and independent variables under study. The study also uses different control variables. The details of the variables including the control variables and their measurements are given in Table 1.

4.2. Measurement of CSR

This study measures the ESG scores as measure of CSR by considering the scores by Bloomberg [50]. Bloomberg provides information on ESG factors in more than 2000 categories pertaining to a company's social responsibility, including diversity, compensation, air quality, water and energy management, health and safety, and many others.

4.3. Measurement of Board characteristics

BGD is ascertained by calculating the fraction of female directors on the board to the total BOD [9]. BI has been calculated as a fraction of independent directors to the total BOD of a company [51]. The CEOD is measured using a dummy variable taken as 1 if the CEO and the Board Chairman is same and 0 if not [46]. The BS is measured by the total number of BOD in a company [46].

4.4. Control Variables.

To discover additional firm-level characteristics that potentially affect the demand for CSR, this study draws on earlier CSR studies. The first of which is the performance of firms [52], as better performing firms can engage more in social responsibility practices. The size of a corporation determines its visibility; larger firms typically engage in increased CSR activities and make more disclosures to support their firm endeavors since they are subject to greater scrutiny from a variety of stakeholders hence firm size has been controlled for [9]. The other control variables that affect the ESG profile in terms of the availability of funds have been taken such as Leverage, current ratio, and capital intensity.

Table 1: Measurement of variables

Dependent variables	Measurement	Source
Environmental, Social, and Governance Score (ESG)		Bloomberg ESG score
Women directors	Female directors/total directors	CMIE PROWESS IQ
Board independence	Independent directors/total directors	CMIE PROWESS IQ
CEO duality	Dummy variable	CMIE PROWESS IQ
Board size	Total of the BOD	CMIE PROWESS IQ
Return on Assets (ROA)	ROA = NI / Average Assets	CMIE PROWESS IQ
Current Ratio	Current Assets/ Current Liabilities	CMIE PROWESS IQ
Leverage	Debt / Equity	CMIE PROWESS IQ
Firm's size	Log of firm's sales	CMIE PROWESS IQ
Capital intensity	Capital Expenditure/ Sales	CMIE PROWESS IQ

Note: Compiled by the author

4.5. Methodology and Model

The following model has been used to test the hypotheses:

$$CSR = \beta IV + \beta ROA + \beta CR + \beta Lev + \beta firmsize + \beta capint + \delta \quad (1)$$

$$Env\ score = \beta IV + \beta ROA + \beta CR + \beta Lev + \beta firmsize + \beta capint + \delta \quad (2)$$

$$Soc\ score = \beta IV + \beta ROA + \beta CR + \beta Lev + \beta firmsize + \beta capint + \delta \quad (3)$$

$$Gov\ score = \beta IV + \beta ROA + \beta CR + \beta Lev + \beta firmsize + \beta capint + \delta \quad (4)$$

The first model analyses the influence of CSR on the Independent variables denoted by IV, and subsequent models evaluate the impact of the IVs on the individual E, S and G scores.

The variables have been anlaysed using descriptive statistics like mean, median and mode and standard deviation, Pearson correlation analysis has been done to analyze the cross correlation between the variables. The hypotheses have been tested using Fixed effects panel regression models. Panel data are more effective in explaining the variety of cross-sectional and time series research [53]. The decision between a fixed effects and a random effects model was determined by the Hausman Specification test. In addition to the cross-correlation analysis, Variance Inflation Factors (VIF) have been used to test the instance of multicollinearity among the IVs of the study. To avoid the issue heteroscedasticity and any potential bias, the regression estimates have been calculated using robust standard errors.

5. Results and Discussions

5.1. Descriptive Statistics

The descriptive statistics and correlation results are shown in Tables 2 and 3. The mean ESG score is 29.77 which is low as the Bloomberg ESG scores can go from 0 to 100. Bloomberg ESG score is calculated using ESG parameters from more than 2000 categories relating to social responsibility of firms. Out of the E, S and G score the highest mean is governance score at 69.81. Around 11% directors are women and 51% are independent directors. The mean number of BOD is 9.45.

The correlation coefficient depicts the extent of correlation between the variables. There is a significant correlation between BGD and ESG scores and BGD and E, S and G scores respectively as shown in Table 3. The correlation coefficients for the other variables taken in the study have been shown in Table 3. Even though the correlation between the independent variables is small, to observe the existence of multicollinearity, VIF test results have been done which reveals that there is no reason to

establish the existence of multicollinearity as the values are centered on 1 in Table 4, which is less than the accepted limits of 10 [54].

Table 2- Descriptive statistics

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
ESG	29.77	29.01	5.77	77.60	11.30
ENVSCR	8.90	2.41	0.00	77.28	14.18
SOCSCR	13.13	10.61	0.00	69.89	11.62
GOVSCR	69.81	76.09	6.26	98.61	13.45
BOARD SIZE	9.45	9.00	0.00	26.00	3.52
WOMENDIR	11.70	11.11	0.00	50.00	8.63
CEODUAL	0.28	0.00	0.00	1.00	0.45
INDDIREC	51.71	50.00	0.00	100	11.32
ROA	5.454	4.83	-121.07	115.83	10.03
CURRENT RATIO	1.928	1.27	0.00	358.00	6.64
LEVERAGE	1.24	0.36	0.00	629.11	11.78
FIRM SIZE	9.70	9.74	-1.20	15.63	1.71
CAPEXPEND	10.02	4.534	0.00	708.23	24.96

Source: Compiled by author

Table 3- Correlation matrix—Pearson coefficients

	1	2	3	4	5	6	7	8	9	10	11	12	13
ESG	1.00												
EVS	0.84**	1.00											
SCS	0.85**	0.73**	1.00										
GVS	0.69**	0.29**	0.40**	1.00									
BDS	0.00	-0.01	0.01	0.01	1.00								
WOM	0.24**	0.05**	0.23**	0.34**	-0.03**	1.00							
CED	-0.01	0.02	-0.00	-0.07	0.02	-0.24	1.00						
INDR	-0.02*	-0.03**	-0.13**	0.083**	-0.01	0.03**	-0.08	1.00					
ROA	0.09**	0.08**	0.08**	0.05**	-0.017	0.01	-0.00	0.02	1.00				
CR	-0.01	-0.01	-0.01	0.00	-0.01	0.01	-0.03	-0.01	-0.00	1.00			
LEV	0.014	0.02	-0.00	0.01	0.03	-0.00	--0.00	0.01	-0.12**	0.00	1.00		
SIZE	0.00	-0.00	0.01	-0.00	0.08	0.02	0.03	-0.04	0.05	-0.21	-0.00	1.00	
CAPEX	-0.05**	-0.02*	-0.02	-0.07**	0.00	-0.10**	0.03**	-0.02*	-0.08**	-0.01	0.00	0.00	1.00

**ρ<0.05

Note. Correlation coefficients between different firm characteristics.

Source: Compiled by author

Table 4: Variance Inflation Factors

Variables	Centered VIF
C	NA
BOARD_SIZE	1.016
WOMEN_DIR	1.015
CEO_DUAL	1.004
IND_DIREC	1.006
ROA	1.120
CR	1.088
LEV	1.019
FIRM SIZE	1.019
CAP_EXPEND	1.029

Source: Compiled by author

Table 5 presents the results of fixed effects panel data regression on the effect of BGD on the CSR of firms aggregately and on separate dimensions of ESG. The Hausman Specification test results reveals that the use of fixed effects over random effects model is justified for testing our proposed hypothesis. To determine the regression coefficients Robust standard errors have been used. The regression results reveal that the first hypothesis is supported, and we find a positive impact (β=0.41, ρ<0.05) of BGD on the CSR of firms. We also find a positive effect of BGD on the E (β=0.19, ρ<0.05), S (β=0.47, ρ<0.05) and G score (β=0.610, ρ<0.05). Hence, hypothesis 1a and 1b is supported and we find a significant positive impact of BGD on the CSR of firms.

Table 5- Regression results of BGD on CSR

	ESG scores	Environment score	Social score	Governance score
Constant	10.30**	−18.95***	−8.66	46.68***
Gender diversity(BGD)	0.418***	0.195***	0.47***	0.610***
ROA	-0.042**	−0.035**	−0.044*	−0.04*
Current Ratio	0.159**	0.007	0.138	0.280***
Leverage	−0.008***	0.0075	−0.011	−0.014***
Firm size	1.51***	2.55***	1.68***	1.64***
Capital expenditure	−0.023**	−0.006	−0.032***	−0.02**
Observations	4900	4670	4600	4900
R^2	0.797	0.77	0.70	0.72
Hausman Test	41.65***	47.70***	45.70***	63.25***

*** ρ<0.01, **ρ<0.05, *ρ<0.10

Note. Table 5 shows the regression results of the impact of BGD on the CSR of companies and E, S and G scores.

Source: Compiled by author

Table 6 shows the results of fixed effects panel data regression on the effect of BI on the CSR of firms. The Hausman Specification test results reveals that the use of fixed effects upon random effects model. To determine the regression coefficients, Robust standard errors have been used. The regression results reveal that there is a negative but insignificant impact (β=-0.008, ρ>0.05) of BI on CSR of the firms. We also find a negative but insignificant impact of BI on the E (β=-0.007, ρ>0.05), S (β=-0.029,

ρ>0.05) and G score (β=-0.009, ρ>0.05). Hence hypothesis 2a and 2b is not supported as we could not get a significant impact of BI on the CSR of firms.

Table 6- Regression results of board independence on CSR

	ESG scores	Environment score	Social score	Governance score
Constant	6.29	−6.71*	−12.2	40.07***
Board Independence(BI)	−0.008	−0.007	−0.029	0.009
ROA	−0.07***	−0.04**	−0.087	−0.10***
Current Ratio	0.25**	0.09*	0.244	0.41***
Leverage	−0.004	−0.009	−0.009	−0.009
Firm size	2.49***	1.67***	2.80	3.04***
Capital expenditure	−0.04***	−0.03**	−0.055	−0.05***
Observations	4895	4597	4595	4895
R^2	0.73	0.75	0.62	0.62
Hausman Test	37.99***	19.50***	35.68***	51.08***

*** ρ<0.01, **ρ<0.05, *ρ<0.10

Note. Table 6 presents the regression results of the impact of BI on the CSR of companies and E, S and G scores.

Source: Compiled by author

Table 7 shows the consequences of fixed effects panel data regression on the effect of CEOD on the CSR of firms. The Hausman Specification test results reveals that the use of fixed effects over random effects model. To determine the regression coefficients, Robust standard errors have been used. The regression results reveal that there is a significant negative impact (β=-2.00, ρ<0.05) of CEOD on CSR of the firms. We also find a negative but insignificant impact of CEOD on the E (β=-1.73, ρ>0.05) and G score (β=-1.58, ρ>0.05) of firms but a negative and significant impact (β=-2.87, ρ<0.05) of CEOD duality on the S Score. Hence Hypothesis 3a is supported and we find support for 3b only partially.

Table 7- Regression results of CEO duality on CSR

	ESG scores	Environment score	Social score	Governance score
Constant	6.28	−6.65*	−13.01*	40.79
CEO duality	−2.00**	−1.73	−2.87***	−1.58
ROA	−0.07***	−0.048**	−0.08***	−0.09
Current Ratio	0.25**	0.092*	0.239*	0.41
Leverage	−0.004	−0.009	−0.009	−0.009
Firm size	2.50***	1.67***	2.81***	3.06
Capital expenditure	−0.041***	−0.029**	0.054***	−0.053
Observations	4897	4599	4597	4897
R^2	0.73	0.75	0.62	0.63
Hausman Test	37.36***	20.27***	33.60***	50.43***

*** ρ<0.01, **ρ<0.05, *ρ<0.10

Note. Table 7 presents the regression results of the impact of CEO duality on the CSR of companies and Environment, Social and Governance scores.

Source: Compiled by author

Table 8 shows the outcome of fixed effects panel data regression on the effect of BS on the CSR of firms. The Hausman Specification test results reveals that the use of fixed effects over random effects model. To determine the regression coefficients, Robust standard errors have been used. The regression results reveal that there is a positive but insignificant impact (β=0.068, ρ>0.05) of BS on CSR of the firms. We also find a positive but insignificant impact of BS on the E (β=0.11, ρ>0.05) and S (β=0.05,

ρ>0.05) score of firms, but a significant positive impact of BS on the G score (β=0.24, ρ<0.05). Hence, we don't support Hypothesis 4a and we find partial support for hypothesis 4b.

Table 8- Regression results of board size on CSR

	ESG scores	Environment score	Social score	Governance score
Constant	5.12	−6.13	−14.04**	37.95***
Board Size	0.068	0.11	0.05	0.24**
ROA	−0.078***	−0.04**	−0.08***	−0.10***
Current Ratio	0.25**	0.09*	0.24*	0.41***
Leverage	−0.004	−0.009	−0.009	−0.009
Firm size	2.49***	1.67***	2.77***	3.07***
Capital expenditure	−0.04***	−0.03**	−0.05***	−0.05***
Observations	4892	4594	4592	4892
R^2	0.73	0.75	0.62	0.62
Hausman Test	65.97***	52.10***	53.32***	46.32***

(*** ρ<0.01, **ρ<0.05, *ρ<0.10)

Note. Table 8 presents the regression results of the impact of board size on the CSR of companies and Environment, Social and Governance scores.

Source: Compiled by author

5.2. Robustness check

To further substantiate the study's findings, the main analysis evaluating the effect of various board characteristics on firms' CSR has been carried out using the two-step GMM technique. The GMM model addresses the endogeneity bias and unobserved heterogeneity in regression models by using the lagged scores of the dependent variables in the regression model [55], and it gives estimates after handling the issues of endogeneity, heteroskedasticity, and serial correlation [56]. The results, as depicted in Table 9, substantiate the results using the fixed effects regression models, where the presence of women directors has a significant positive effect on CSR. Board independence and board size has no significant effect on the CSR whereas CEO duality has a significant negative effect on CSR.

Table 9- Regression results based on two step-GMM model

Variables	CSR	CSR	CSR	CSR
CSR_{t-1}	0.060***	-0.21**	-0.25***	0.25***
Women director	0.11***			
Independent director		-0.00		
CEO duality			-0.00*	
Board size				0.038
ROA	-0.000	-0.00	-0.02	-0.00
CR	0.05***	0.04***	0.03**	0.03***
DE	0.00	0.00	0.00	0.00
Size	0.311*	0.10***	0.09***	0.09***
CAP	-0.00	-0.02*	-0.01*	0.01*
Wald test	1542.14***	56.52***	58.70***	59.43***
Sargan test (p-value)	0.05	0.3	0.46	0.39
AR (1)	0.00	0.00	0.00	0.00
AR (2)	0.06	0.62	0.48	0.23
Firm-year observations	3842	3838	3840	3842

Note(s): (Robust standard errors in parentheses; ***p < 0.01, **p < 0.05, *p < 0.10)

Note. Table 9 presents the regression results of the impact of board attributes on the CSR of companies

Source: Compiled by author

6. Discussion

The rationale of the study is to empirically assess the effect of various board attributes on the CSR of firms aggregately and separately on the Environment, Social and Governance Scores. The IVs that were taken include BGD, BI, CEOD and BS. The IVs include the CSR score and its dimensions namely E, S and G score. These variables were identified and analysed primarily based on the Agency theory and Stakeholder theories. Fixed-effects panel regression models based on Robust Standard Errors have

been used to analyse the proposed relationships. The study is focussed on the data taken from Bloomberg and CMIE PROWESS IQ database for 540 Indian Companies listed in NSE for a time of 10 years.

According to the findings drawn from the empirical investigation of the impact of BGD on the CSR scores revealed that it is an important independent variable that positively affect all our three dependent variable CSR and E, S and G score. More women directors result in superior E, S and G performance in an organisation. These findings are coherent with the earlier empirical articles [29]. The results suggest that female directors provide expertise and skills to the BOD that influence BOD choices about the creation of CSR strategies, and that they play a better monitoring role on the BOD, increasing the likelihood that businesses would take CSR concerns into account. The results are corresponded with the different theoretical constructs like agency [14], gender social role [19], legitimacy [17] and stakeholder theory [15] which identifies the impact of the BGD on improving the company's responsibility towards various environmental and social concerns.

The negative but insignificant impact of BI on the CSR and the E, S and G scores extends the findings of previous studies [42,43]. The various reasons that are attributed to this may relate to the inert role exercised by the independent directors. It also implies that efficiency and company value are not increased by merely designating independent directors to comply with formal corporate governance model criteria.

The negative effect of CEOD on the CSR scores is in line with several previous empirical findings [40,47]. The agency theory also is supported as more power concentrated in the hands of one person may direct their attention away from the social causes. Equity-based remuneration is positively correlated with CEO dualism, which causes CEOs to rank instant stock price growth above long-term strategic objectives [45]. BS is found to have positive but insignificant effect on the CSR scores of firms which extends the findings of existing studies [23].

Regarding the control variables, the association between Current ratio and CSR is positive which supports the concept of slack resources that availability of short-term funds is positively related with a company's performance including its CSR performance. The leverage shows a negative but insignificant impact on CSR. Firms with high leverage might encounter numerous constraints imposed by regulatory requirements which may constrict investing in CSR for them. Bigger sized firms spend more funds on CSR which is evidenced by a substantial positive impact of firm size on CSR. A high capital expenditure can limit a firm to devote resources towards CSR which might be a factor that capital expenditure has a negative and statistically significant impact on CSR. ROA has a significant negative impact on CSR as it depends on a company's priority that whether they are keen to spend money for social purposes or use profits for other avenues. The findings of the negative effect of ROA on CSR also indicate that in the Indian context, the mandatory CSR investment places a burden on business operations and hence negatively affects the profitability of firms.

7. Conclusion

This study extends the understanding of the influence of board characteristics on the CSR of firms and has some empirical, theoretical, and practical implications. The matter of social disclosure is pertinent given the present scenario when so much importance is placed on the CSR of companies and their significance in achieving various Sustainable Development Goals. A positive role of female directors on the CSR implies that the firms attempting to improve their social responsibility score should concentrate on the women directors as it creates an all-encompassing business culture. Rather than it being a symbolic gesture of out of mandate to hire female directors, it is pertinent to empower the female directors to partake in the decision-making course. Independent directors are more likely to furnish impartial supervision of the company's CSR endeavours. The independent board members every so often come with varied professional surroundings, which can present novel notions and standpoints on CSR. The companies can stress on enhancing the effect of BI on CSR by vigorously including them and enlightening them. The firms should focus more on enhancing the effectiveness and efficiencies of the board, providing further incentives to the board and strengthening the CSR committees When CEO is the board chairman, their self-interested behaviour leads them to focus away from CSR performance and specifically on the profit motive. The companies having dual CEO makeup needs to execute stout governance bases and advance a corporate culture that values CSR. The division of duties between the

CEO and chairperson may strengthen the board's supervision capacity, which would increase anticipations for enhanced CSR. Concerning the board size, a large board may have the benefit of sharing experience among themselves which leads to enhanced response to the stakeholder issues, but it might create a lack of communication and synchronization.

Since the company's economic, or financial, responsibility is typically related to prudent strategic decision-making by the BOD and top executives, it is imperative to address governance obligations. It might be important to reevaluate the laws and regulations pertaining to board composition to be more inclusive and cater to the varied kind of stakeholders. The study broadens the literature in the milieu of the different corporate governance characteristics on the social responsibility of companies and the E, S and G scores distinctly in the Indian context. With the significance of the mandatory investment of profits of Indian companies on CSR practices and the requirement of female directors and independent directors, specifically in the CSR committee for the latter, the results may give specific directions to the practitioners in addition to the academicians of the area. The additional oversight and independence frequently allied with diverse boards may boost the validity and dependability of the board, encouraging stakeholders to support charities and social activities.

Future studies may concentrate on the influence of other metrics of board diversity like age, ethnicity, educational qualifications, political orientation, experience, etc., on firms' CSR performance. Studies may also compare the impact of diverse boards on social performance for countries where greater parity is there with respect to female representation in boards with India, where presence of women in boards in still skewed.

Acknowledgement: The author is thankful to Manipal Academy of Higher Education for the relevant data access.

Funding Statement: No funding support available.

Author Contributions: The author fully contributed to the research and writing of the manuscript.

Data Availability Statement: The data used in this study are not publicly available due to licensing agreements with Bloomberg and CMIE Prowess. Access may be granted upon reasonable request, subject to approval from the data providers.

Conflict of Interest: No conflicting interest to declare.

Consent for Publication: Not applicable.

REFERENCE

1. Singhal, N., Paul, P., Giri, S., & Taneja, S. (2024). Corporate Social Responsibility: Impact on Firm Performance for an Emerging Economy. Journal of Risk and Financial Management, 17(4), 171.
2. Galbreath, J. (2011). Are there gender-related influences on corporate sustainability? A study of women on boards of directors. Journal of Management & Organization, 17(1), 17–38. https://doi.org/DOI: 10.5172/jmo.2011.17.1.17
3. Jones Christensen, L., Mackey, A., & Whetten, D. (2014). Taking responsibility for corporate social responsibility: The role of leaders in creating, implementing, sustaining, or avoiding socially responsible firm behaviors. Academy of Management Perspectives, 28(2), 164–178.
4. Pareek, R., Pandey, K. D., & Sahu, T. N. (2019). Corporate governance, firms' characteristics and environmental performance disclosure practices of Indian companies. Indian Journal of Corporate Governance, 12(2), 142–155.
5. Hafsi, T., & Turgut, G. (2013). Boardroom diversity and its effect on social performance: Conceptualization and empirical evidence. Journal of Business Ethics, 112(3), 463–479.
6. Prudêncio, P., Forte, H., Crisóstomo, V., & Vasconcelos, A. (2021). Effect of diversity in the board of directors and top management team on corporate social responsibility. BBR. Brazilian Business Review, 18, 118–139.
7. De Villiers, C., & Alexander, D. (2014). The institutionalisation of corporate social responsibility

reporting. The British Accounting Review, 46(2), 198–212.
8. Nguyen, T. H., Nguyen, Q. T., Nguyen, D. M., & Le, T. (2023). The effect of corporate governance elements on corporate social responsibility reporting of listed companies in Vietnam. Cogent Business & Management, 10(1), 2170522.
9. Pareek, R., & Sahu, T. N. (2021). How far the ownership structure is relevant for CSR performance? An empirical investigation. Corporate Governance: The International Journal of Business in Society.
10. Bowen, H. R. (2013). Social responsibilities of the businessman. University of Iowa Press.
11. Matten, D., & Moon, J. (2008). "Implicit" and "explicit" CSR: A conceptual framework for a comparative understanding of corporate social responsibility. Academy of Management Review, 33(2), 404–424.
12. Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. Corporate Social Responsibility and Environmental Management, 15(1), 1–13. https://doi.org/10.1002/csr.132
13. Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. Business Horizons, 34(4), 39–48. https://doi.org/10.1016/0007-6813(91)90005-G
14. Elmagrhi, M. H., Ntim, C. G., Malagila, J., Fosu, S., & Tunyi, A. A. (2018). Trustee board diversity, governance mechanisms, capital structure and performance in UK charities. Corporate Governance: The International Journal of Business in Society, 18(3), 478–508.
15. Freeman, R. E., & Reed, D. L. (1983). Stockholders and stakeholders: A new perspective on corporate governance. California Management Review, 25(3), 88–106.
16. Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource dependence theory: A review. Journal of Management, 35(6), 1404–1427.
17. Patten, D. M. (1991). Exposure, legitimacy, and social disclosure. Journal of Accounting and Public Policy, 10(4), 297–308. https://doi.org/https://doi.org/10.1016/0278-4254(91)90003-3
18. Shahab, Y., & Ye, C. (2018). Corporate social responsibility disclosure and corporate governance: Empirical insights on neo-institutional framework from China. International Journal of Disclosure and Governance, 15(2), 87–103.
19. Liu, C. (2018). Are women greener? Corporate gender diversity and environmental violations. Journal of Corporate Finance, 52, 118–142.
20. Ouni, Z., Ben Mansour, J., & Arfaoui, S. (2020). Board/Executive gender diversity and firm financial performance in Canada: The mediating role of environmental, social, and governance (ESG) orientation. Sustainability, 12(20), 8386.
21. Harjoto, M. A., & Jo, H. (2011). Corporate governance and CSR nexus. Journal of Business Ethics, 100(1), 45–67.
22. Kabir, R., & Thai, H. M. (2017). Does corporate governance shape the relationship between corporate social responsibility and financial performance? Pacific Accounting Review, 29(2), 227–258.
23. Ashraf, Y., & Nazir, M. S. (2023). Corporate sustainability and environmental reporting: triggers and consequences. Environmental Science and Pollution Research, 30(26), 68743–68769.
24. Hamad, H. A., & Cek, K. (2023). The moderating effects of corporate social responsibility on corporate financial performance: Evidence from OECD countries. Sustainability, 15(11), 8901.
25. Pareek, R., Sahu, T. N., & Gupta, A. (2023). Gender diversity and corporate sustainability performance: empirical evidence from India. Vilakshan-XIMB Journal of Management, 20(1), 140–153.
26. Padungsaksawasdi, C., & Treepongkaruna, S. (2024). Corporate social responsibility, board characteristics, and family business in Thailand. Corporate Social Responsibility and Environmental Management, 31(2), 1340–1353.
27. Fernando, G. D., Jain, S. S., & Tripathy, A. (2020). This cloud has a silver lining: Gender diversity, managerial ability, and firm performance. Journal of Business Research, 117, 484–496.
28. Ali, M., Grabarski, M. K., Ahmed, S., & Imtiaz, N. (2023). Does leadership gender diversity drive corporate social responsibility and organizational outcomes? The role of organization size. Australian Journal of Management, 03128962231160650.
29. Temiz, H., & Acar, M. (2023). Board gender diversity and corporate social responsibility (CSR)

disclosure in different disclosure environments. Corporate Social Responsibility and Environmental Management.
30. Baker, H. K., Pandey, N., Kumar, S., & Haldar, A. (2020). A bibliometric analysis of board diversity: Current status, development, and future research directions. Journal of Business Research, 108, 232–246.
31. Harjoto, M. A., & Rossi, F. (2019). Religiosity, female directors, and corporate social responsibility for Italian listed companies. Journal of Business Research, 95, 338–346.
32. Benaguid, O., Sbai, H., Meghouar, H., & Antari, O. (2023). Board gender diversity and CSR performance: A French study. Cogent Business & Management, 10(3), 2247226.
33. Kogut, B., Colomer, J., & Belinky, M. (2014). Structural equality at the top of the corporation: Mandated quotas for women directors. Strategic Management Journal, 35(6), 891–902.
34. Husted, B. W., & de Sousa-Filho, J. M. (2019). Board structure and environmental, social, and governance disclosure in Latin America. Journal of Business Research, 102, 220–227.
35. Amran, A., Lee, S. P., & Devi, S. S. (2014). The influence of governance structure and strategic corporate social responsibility toward sustainability reporting quality. Business Strategy and the Environment, 23(4), 217–235.
36. Cook, A., & Glass, C. (2018). Women on corporate boards: Do they advance corporate social responsibility? Human Relations, 71(7), 897–924.
37. Kagzi, M., & Guha, M. (2018). Does board demographic diversity influence firm performance? Evidence from Indian-knowledge intensive firms. Benchmarking: An International Journal.
38. Umar, U. H., Jibril, A. I., & Musa, S. (2023). Board attributes and CSR expenditure before and during COVID-19. Journal of Financial Reporting and Accounting, 21(4), 800–819.
39. Rivas, J. L., & Rubio, J. (2023). Boards and CSR: an emerging market perspective. Academia Revista Latinoamericana de Administración, 36(2), 141–155.
40. Farooq, M., & Noor, A. (2023). The impact of corporate social responsibility on financial constraints: the role of insider and institutional ownership. Journal of Financial Reporting and Accounting.
41. Jarboui, A., Hlima, N. D. Ben, & Bouaziz, D. (2022). Do sustainability committee characteristics affect CSR performance? Evidence from India. Benchmarking: An International Journal, 30(2), 628–652.
42. Khan, N., Abraham, O. O., Alex, A., Eluyela, D. F., & Odianonsen, I. F. (2022). Corporate governance, tax avoidance, and corporate social responsibility: Evidence of emerging market of Nigeria and frontier market of Pakistan. Cogent Economics & Finance, 10(1), 2080898.
43. Daoud, K. A. Al, & Kharabsheh, B. (2022). Board political influence and corporate social responsibility: Evidence from Jordan. Global Business and Economics Review, 26(1), 1–19.
44. Giannarakis, G., Mallidis, I., Sariannidis, N., & Konteos, G. (2023). The impact of corporate governance attributes on environmental and social performance: The case of European region excluding companies from the Eurozone. Business Strategy and the Environment, 32(6), 3489–3512.
45. Farooq, M., Noor, A., & Naeem, M. (2023). Does family ownership moderate the relationship between board characteristics and corporate social responsibility? Evidence from an emerging market. Asian Journal of Business Ethics, 12(1), 71–99.
46. Agnese, P., Battaglia, F., Busato, F., & Taddeo, S. (2023). ESG controversies and governance: Evidence from the banking industry. Finance Research Letters, 53, 103397.
47. Anyigbah, E., Kong, Y., Edziah, B. K., Ahoto, A. T., & Ahiaku, W. S. (2023). Board characteristics and corporate sustainability reporting: Evidence from Chinese listed companies. Sustainability, 15(4), 3553.
48. Nicolo, G., Zampone, G., Sannino, G., & Tiron-Tudor, A. (2023). Worldwide evidence of corporate governance influence on ESG disclosure in the utilities sector. Utilities Policy, 82, 101549.
49. Bataineh, H., Alkurdi, A., Abuhommous, A. A., & Abdel Latif, M. (2023). The role of ownership structure, board, and audit committee in corporate social responsibility disclosure: Jordanian evidence. Journal of Islamic Accounting and Business Research.
50. Sachin, N., & Rajesh, R. (2021). An empirical study of supply chain sustainability with financial performances of Indian firms. Environment, Development and Sustainability, 1–25.

51. Agarwala, N., Pareek, R., & Sahu, T. N. (2023). Does board independence influence CSR performance? A GMM-based dynamic panel data approach. Social Responsibility Journal, 19(6), 1003–1022.
52. Waddock, S. A., & Graves, S. B. (1997). The corporate social performance–financial performance link. Strategic Management Journal, 18(4), 303–319.
53. Baltagi, B. H., Bratberg, E., & Holmås, T. H. (2005). A panel data study of physicians' labor supply: the case of Norway. Health Economics, 14(10), 1035–1045.
54. James, G., Witten, D., & Hastie, T. (2017). Tibshirani. R.(2013). An Introduction to Statistical Learning, 1.
55. Alam, Z. and Tariq, Y. Bin (2022) "Corporate social responsibility disclosure quality and firm financial performance: evidence from an emerging economy," Global Business Review, p. 09721509221131729.
56. Arellano, M. and Bover, O. (1995) "Another look at the instrumental variable estimation of error-components models," Journal of Econometrics, 68(1), pp. 29–51.