

Article

Gender-Diverse Boards and Corporate Social Responsibility in the Thai Context

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Abstract

The study investigated the relationship between female board representation and corporate social responsibility (CSR) in Thai firms in the period between 2015 and 2021. We examined whether a higher proportion of female directors would enhance CSR and sustainable corporate development. The findings provide no empirical evidence of a relationship, suggesting that female board representation may not influence CSR in Thailand. The role and impact of female directors appear to be indirect and complex, making it difficult to assess and quantify their contribution to CSR. We also examined whether female chief executive officers (CEOs) and/or chief financial officers (CFOs) moderate the relationship between female board representation and improved CSR. The findings do not support this hypothesis, suggesting that female CEOs and/or CFOs do not moderate the relationship between the presence of female directors and CSR. The presence of a female CEO or a member of a minority group in a firm may not be enough to influence the company's charitable giving decisions. This study contributes to the corporate governance and CSR literature by examining how female board representation and female executive leadership jointly shape ESG performance and disclosure in an emerging market context, and by distinguishing between performance-based and disclosure-based ESG outcomes using two major global databases.

Keywords: female directors; gender diversity; corporate social responsibility; corporate governance; sustainable finance; corporate finance

1. Introduction

Both corporate governance and corporate social responsibility (CSR) help firms balance profitability with sustainable and ethical business practices. In doing so, enterprises can meet investor and stakeholder expectations (Shin & Moon, 2026; Jayaraman et al., 2025; Firew, 2024) while fulfilling their responsibilities to society and the environment. As a result, corporate governance and CSR have become integral components of modern business.

Our analysis draws on resource dependence theory and stakeholder theory, both of which suggest that gender-diverse leadership broadens the perspectives available to the board, strengthens engagement with key stakeholders, and can shape how CSR decisions are made. Social role theory also helps explain why gendered leadership styles may matter for CSR, as it highlights behavioral tendencies that can influence how leaders approach social and ethical responsibilities.

Table 1 presents the representation of females on boards and in CEO and chief financial officer (CFO) positions across Asian countries in 2019. Note that only 8.3% of Thai firms lacked female directors altogether, whereas 66.7% had one or two, and 25.0% had three or



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more. Thailand also reported the highest proportions of female CEOs (13.9%) and CFOs (38.9%) among the Asian countries examined. These figures allowed us to hypothesize that female directors, CEOs, and CFOs play a prominent role in CSR and sustainability in Thailand than in most other Asian countries.

Table 1. Female director, chief executive officer (CEO), and chief financial officer (CFO) positions in 2019 (Asia).

Country	# of Firms	% Firms with 3+ Female Directors	% Firms with 1–2 Female Directors	% Firms with No Female Directors	% Companies with Female CEOs	% Companies with Female CFOs	Gender Quota
China	395	11.6%	56.5%	31.9%	5.6%	20.3%	No
Hong Kong	91	15.4%	52.7%	31.9%	3.3%	12.1%	No
India	80	21.3%	78.8%	0.0%	2.5%	0.0%	Yes
Indonesia	27	0.0%	51.9%	48.1%	3.7%	11.1%	No
Japan	323	3.4%	63.2%	33.4%	0.6%	0.6%	Yes
Malaysia	43	37.2%	62.8%	0.0%	0.0%	27.9%	Yes
Philippines	23	13.0%	60.9%	26.1%	0.0%	26.1%	No
Republic of Korea	107	0.0%	23.4%	76.6%	1.9%	0.0%	No
Singapore	26	23.1%	73.1%	3.8%	7.7%	30.8%	Yes
Taiwan	87	14.9%	48.3%	36.8%	6.9%	27.6%	No
Thailand	36	25.0%	66.7%	8.3%	13.9%	38.9%	No

Source: MSCI ESG Research (2019).

CSR is shaped by organizational decision-making, with the CEO often exerting the greatest influence. Female CEOs tend to demonstrate a strong understanding of diverse stakeholder groups and frequently align their personal values with those of the organization. As a result, they are more likely to promote stakeholder welfare and support CSR initiatives (Lim & Chung, 2021). Prior research has suggested that female executives positively influence CSR practices (Khidmat et al., 2022; Lim & Chung, 2021; McGuinness et al., 2017), indicating that their presence may strengthen the strategic role of female directors in advancing CSR. Female CEOs and CFOs may strengthen boards' influence on CSR by prioritizing ethical conduct, stakeholder engagement, and long-term sustainability—areas closely aligned with CSR. Their leadership style may also facilitate stronger board–management alignment, increasing boards' ability to shape CSR outcomes beyond what is possible under male-dominated executive teams.

The moderating role of female CEOs/CFOs contributes to governance theory by highlighting how executive gender diversity shapes the effectiveness of board oversight. When top executives share similar stakeholder-oriented values, boards may be better able to translate their preferences into CSR decisions, consistent with behavioral governance perspectives.

The growing prominence of CSR in Thailand may be influenced by the country's Buddhist tradition, which plays an important role in shaping socially responsible business practices. Buddhist values emphasize merit-making and the importance of contributing to society. In addition, the sufficiency economy philosophy introduced by King Rama IX encourages responsible and sustainable business conduct. Together, these cultural values underpin Thai corporations' commitment to CSR. Many large firms incorporate social responsibility and community well-being into their business practices (Padungsaksawasdi & Treepongkaruna, 2024).

Thailand offers a distinctive setting for this investigation because it combines relatively high proportions of female CEOs and CFOs with a CSR culture influenced by Buddhism and the sufficiency economy philosophy.

Beyond these characteristics, the country's institutional environment is shaped by concentrated ownership structures, prevalence of family-controlled firms, evolving gender

norms, and regulatory emphasis on CSR disclosure. These features differ markedly from other governance environments and offer a unique context for extending existing theories on gender diversity and CSR.

Despite this context, limited research has examined whether female CEOs and/or CFOs moderate the relationship between female directors and CSR. This gap highlights the need to investigate the moderating role of female executive leadership in the relationship between female board representation and CSR.

Accordingly, Thailand provides an informative setting for examining how female representation on boards influences CSR. This study further incorporates female leadership as a moderator to evaluate whether the presence of at least one female CEO and/or CFO affects the relationship between female board representation and CSR.

2. Materials and Methods

2.1. Research Framework

This study employed regression analysis to examine the relationship between female board representation and CSR. The dependent variable is the ESG score, while the independent variable is the proportion of females serving on the board of directors. Control variables included return on assets, board size, firm size, leverage, board independence, and industry type. The regression equation used to test Hypothesis 1 is as follows:

$$ESG_{it} = \beta_0 + \beta_1 PWOB_{it} + \beta_2 ROA_{it} + \beta_3 BSize_{it} + \beta_4 FSize_{it} + \beta_5 LEV_{it} + \beta_6 PInde_{it} + \beta_7 Indus_{it} + \varepsilon_{it}, \quad (1)$$

where i denotes firms, t represents time, ESG_{it} indicates the ESG score of firm i in period t , $PWOB_{it}$ represents the proportion of female directors, ROA_{it} denotes the return on assets, $BSize_{it}$ indicates board size, $FSize_{it}$ represents firm size, LEV_{it} denotes the debt-to-equity ratio, $PInde_{it}$ indicates board independence, $Indus_{it}$ represents industry type, and ε_{it} is the error term.

To test Hypothesis 2, the analysis incorporated an interaction term between $PWOB$ and the presence of at least one female serving as CEO and/or CFO ($WCEOCFO$) to examine whether female executive leadership moderates the relationship between female board representation and CSR. The moderated regression equation is as follows:

$$CSR_{it} = \beta_0 + \beta_1 PWOB_{it} + \beta_2 WCEOCFO_{it} + \beta_3 PWOB_{it} * WCEOCFO_{it} + \beta_4 ROA_{it} + \beta_5 BSize_{it} + \beta_6 FSize_{it} + \beta_7 LEV_{it} + \beta_8 PInde_{it} + \beta_9 Indus_{it} + \varepsilon_{it}, \quad (2)$$

where $WCEOCFO_{it}$ indicates the presence of at least one female serving as CEO and/or CFO of firm i in period t , and $PWOB_{it} * WCEOCFO_{it}$ represents their interaction term.

In principle, firm-fixed effects represent the more rigorous approach for controlling unobserved, time-invariant firm-specific heterogeneity, since they absorb all stable firm characteristics that could otherwise confound the relationship between female board representation and CSR. This study employs industry-fixed effects rather than firm-fixed effects. The objective is to examine differences in CSR performance across Thai firms rather than to rely exclusively on within-firm changes over time. Female board representation changes relatively little within firms over the sample period, meaning that firm-fixed effects would rely on only a limited amount of within-firm variation, thereby reducing the precision of the estimates. The moderating variable (female CEO/CFO) also changes infrequently, leaving insufficient variation to estimate the interaction effect with precision. In addition, ESG scores tend to evolve gradually over time, further limiting within-firm variation. For these reasons, industry-fixed and year-fixed effects represent the preferred specification

because they control for sector-level heterogeneity while preserving the cross-sectional variation needed to evaluate the relationship between female directors and CSR. A Hausman specification test comparing fixed-effects and random-effects estimates of the baseline model rejects the null hypothesis that the random-effects estimator is consistent ($\chi^2(6) = 4106.03, p < 0.001$). This result confirms the presence of firm-specific heterogeneity correlated with our regressors, which in principle favors a fixed-effects approach at the firm level. We nonetheless adopt industry- and year-fixed effects rather than firm-fixed effects, for the reasons outlined above. We acknowledge that industry-fixed effects do not absorb firm-level heterogeneity to the same extent as firm-fixed effects would; this trade-off should be borne in mind when interpreting our results.

2.2. Data Collection

This study used secondary data from firms listed on the Stock Exchange of Thailand (SET) and employed regression analysis to test the hypotheses. In 2015, the SET introduced the Thailand Sustainability Investment List, which recognizes listed companies that pursue long-term value creation through responsible ESG practices. The initiative provides an alternative for investors interested in responsible investment strategies (Stock Exchange of Thailand, 2023). This study used ESG scores for Thai listed firms obtained from Bloomberg and Thomson Reuters from 2015 to 2021. Using both databases enables us to distinguish between substantive CSR outcomes and reporting behavior, providing a more comprehensive understanding of how gender diversity influences ESG across different dimensions. Sample selection was determined by the availability of ESG scores from these providers. Data were collected from multiple sources, including the SET, SET Market Analysis and Reporting Tool, the Securities and Exchange Commission, Bloomberg, Thomson Reuters, and company websites. To mitigate survivorship bias, the dataset included delisted firms through their respective delisting dates. The final sample comprised an unbalanced panel of 956 firm-year observations from 139 SET-listed firms.

2.3. Hypothesis Development

A study by Lim and Chung (2021) suggested that firms led by female chief executive officers (CEOs) are generally more engaged in CSR initiatives. Moreover, effective monitoring is essential for overseeing managers (Post & Byron, 2015). When boards comprise directors with diverse backgrounds, they contribute broader perspectives, greater creativity, and a wider range of ideas and opinions, all of which strengthen oversight and help protect shareholder wealth (Carter et al., 2003). Female directors often contribute distinct knowledge, professional experience, and values that enrich boards' collective expertise (Post & Byron, 2015). They are also more likely to be outside directors with fewer conflicts of interest, enabling them to perform a more effective monitoring role. To the extent that female directors serve as outside directors, their independence may enhance board monitoring because they often resemble independent directors (Adams & Ferreira, 2009).

Previous research on the relationship between gender diversity and CSR has produced mixed results. Some studies reported a positive relationship (Khidmat et al., 2022; Padungsaksawasdi & Treepongkaruna, 2024; Suttipun, 2021), whereas others found that female directors on boards do not significantly influence CSR (Andreas & Chang, 2024; Colakoglu et al., 2021; Jaturat et al., 2021; Sriersan & Panna, 2025). In fact, one study reported a negative relationship (Zhuang et al., 2018). These inconsistent findings suggest that the influence of female directors on CSR may vary across institutional and organizational contexts.

Several studies have examined the relationship between female board representation and CSR in Thailand (Jaturat et al., 2021; Padungsaksawasdi & Treepongkaruna, 2024;

Sriersan & Panna, 2025; Suttipun, 2021). However, a notable gap remains, as none of these studies employed both Bloomberg environmental, social, and governance (ESG) and Thomson Reuters ESG scores as proxies for CSR performance. This study addresses that gap by utilizing both measures. It is important to note that Bloomberg's ESG score is a disclosure-based metric. According to Bloomberg's technical documentation, the score primarily reflects the extent and completeness of ESG disclosure rather than the quality or effectiveness of ESG performance.

Prior research has largely highlighted a positive relationship between female board representation and improved CSR (Khidmat et al., 2022; Padungsaksawasdi & Treep-ongkaruna, 2024; Suttipun, 2021). One explanation is that female directors may enhance board understanding of the external environment and provide a more effective assessment of stakeholder needs. Accordingly, greater gender diversity on boards is expected to contribute positively to CSR outcomes.

Hypothesis 1: *The presence of female directors positively influences CSR.*

Female executives may influence CSR differently because their leadership characteristics often differ from those of traditional leaders. McGuinness et al. (2017) defined leadership as one or more CEO, vice-CEO, chair, and vice-chair positions. Research suggests that female CEOs and/or vice-CEOs are more likely to support CSR initiatives due to their greater sensitivity to social and community issues. As a result, they may place greater emphasis on social initiatives alongside financial objectives. Moreover, Lim and Chung (2021) suggested that female CEOs use CSR to engage stakeholders and promote the welfare of others. This can enhance organizational legitimacy and reputation, helping firms gain external support while strengthening internal support within the organization.

However, evidence on the role of female CEOs remains mixed. One study found no evidence that female CEOs are more likely than male CEOs to support environmentally sustainable practices. Glass et al. (2016) observed that although females generally favor environmental initiatives, female and male CEOs are equally likely to promote innovative environmental policies. Likewise, Kabongo et al. (2013) reported that firms led by a female CEO or a member of a minority group exhibit a negative relationship with corporate giving decisions, suggesting that their influence alone may be insufficient to affect charitable contributions.

Table 1 shows that Thailand has the highest proportions of female CEOs (13.9%) and CFOs (38.9%) among the Asian countries examined, highlighting the potential influence of female leadership in the Thai corporate sector. Female directors also tend to face less stereotyping when other females occupy top leadership positions. Firms led by female CEOs are more likely to appoint female directors, increasing opportunities within the organization (Khidmat et al., 2022). Therefore, it is reasonable to expect that the influence of female directors on CSR may be stronger when one or more females hold CEO and/or CFO positions, consistent with prior studies reporting a positive association between female leadership and CSR (Lim & Chung, 2021; McGuinness et al., 2017).

Hypothesis 2: *The presence of at least one female CEO and/or CFO positively moderates the positive relationship between female directors and CSR.*

3. Results

3.1. Descriptive Statistics

As shown in Table 2, the number of listed companies receiving Bloomberg ESG scores increased from 53 in 2015 to 137 in 2021. A similar trend is observed for Thomson Reuters

ESG scores, which rose from 33 to 128 firms over the same period. This growth reflects increasing corporate awareness of environmental, social, and governance issues, as well as broader ESG score coverage by Bloomberg and Thomson Reuters.

Table 2. Summary of sample by year.

Year	Number of Companies	
	Bloomberg ESG Score	Thomson Reuters ESG Score
2015	53	33
2016	53	35
2017	56	38
2018	57	42
2019	62	95
2020	65	114
2021	137	128

This study applied a log transformation to total assets to reduce the influence of outliers and extreme values. All observations were retained because removing outliers could eliminate information relevant to the analysis. ROA is winsorized at the 2.5% and 97.5% levels, while LEV was winsorized at the 99th percentile of the right tail.

Table 3 presents descriptive statistics for the main variables. The mean (median) Bloomberg ESG score was 3.03 (2.73), while the mean (median) Thomson Reuters score was 52.6 (55.3). The respective minimum and maximum values were 0.430 and 6.62, respectively, for Bloomberg ESG scores and 2.41 and 92.0 for Thomson Reuters. Standard deviations of 1.41 and 18.6 indicate substantial variation across firms. The relatively low average ESG scores suggest considerable scope for improvement in ESG practices among Thai listed companies. Similarly, the average Bloomberg ESG subdimension scores remain relatively low.

Table 3. Descriptive statistics of the main variables.

Variables	Mean	Median	Standard Deviation	Minimum	Maximum
Bloomberg ESG Score	3.03	2.73	1.41	0.430	6.62
Bloomberg E Score	2.26	1.79	2.18	0	8.76
Bloomberg S Score	3.22	2.86	2.11	0	8.2
Bloomberg G Score	4.41	4.34	0.781	1.96	6.3
Thomson Reuters ESG Score	52.6	55.3	18.6	2.41	92.0
Percentage of Female Directors	19.2	16.7	13.8	0	75
Number of Female Directors	1.99	2	1.36	0	7
Return on Assets	8.66	7.79	6.41	−5.74	27.1
Board Size	10.7	11	3.05	1	19
Firm Size	7.64	7.67	0.765	5.36	9.63
Leverage	0.537	0.535	0.205	0.01	0.93
Board Independence	39.6	40	14.4	0	81.8

Female board representation ranged from 0% to 75%, with a standard deviation of 13.8. The mean and median proportions of female directors were 19.2% and 16.7%, respectively. These figures indicate that female representation on Thai corporate boards remained relatively low and fell below the 25% and 30% thresholds promoted by corporate governance principles in Japan, Malaysia, and Singapore (MSCI ESG Research, 2020). This may indicate the continued underrepresentation of females on boards of Thai listed firms.

The dataset included 139 firms and 956 firm-year observations. The proportion of firms without female directors declined steadily during the study period, accounting for

116 firm-year observations, or 12.13% of the sample. In contrast, firms with one female director and those with four or more increased over time, representing 27.93% and 13.70% of observations, respectively. The proportions of firms with two and three female directors remained relatively stable, accounting for 29.08% and 17.15% of total firm-year observations (Table 4).

Table 4. Number of female directors from 2015 to 2021.

Female Directors	2015	2016	2017	2018	2019	2020	2021	2015–2021	%
0 WOB	26	21	18	15	15	11	10	116	12.13%
1 WOB	35	41	36	39	35	39	42	267	27.93%
2 WOB	38	42	45	38	41	37	37	278	29.08%
3 WOB	24	20	21	25	23	27	24	164	17.15%
4 WOB	10	11	16	20	24	24	26	131	13.70%

3.2. Correlation Analysis

To examine the relationships among the study variables, a pairwise correlation matrix was employed. The correlation analysis in Table 5 assesses the association between female board representation and ESG performance. As a rule of thumb, correlation coefficients above 0.7 may indicate multicollinearity. All coefficients fell below this threshold except those between the Bloomberg ESG score and its environmental and social components, which was expected because these dimensions form part of the overall Bloomberg ESG score. Moreover, these variables were analyzed separately rather than simultaneously. Accordingly, multicollinearity did not appear to be a concern.

Table 5. Correlation coefficients.

Variable	Bloomberg ESG Score	Bloomberg E Score	Bloomberg S Score	Bloomberg G Score	Thomson Reuters ESG Score	Percentage of Female Directors
Bloomberg ESG Score	1.0000					
Bloomberg E Score	0.8753 ***	1.0000				
Bloomberg S Score	0.7552 ***	0.4519 ***	1.0000			
Bloomberg G Score	0.4011 ***	0.2053 ***	0.2088 ***	1.0000		
Thomson Reuters ESG Score	0.5300 ***	0.4167 ***	0.4639 ***	0.1868 ***	1.0000	
Percentage of Female Directors	−0.1365 ***	−0.1667 ***	−0.2105 ***	0.2503 ***	−0.1401 ***	1.0000
Return on Assets	−0.0886 *	−0.0103	−0.1547 ***	−0.0390	−0.1606 ***	−0.0063
Board Size	0.2149 ***	0.1648 ***	0.1798 ***	−0.0089	0.2472 ***	−0.1951 ***
Firm Size	0.2505 ***	0.1213 ***	0.2733 ***	0.0177	0.4427 ***	−0.2291 ***
Leverage	−0.0575	−0.1609 ***	0.0430	−0.1220 ***	0.0702	0.0210
Board Independence	0.0464	−0.0384	0.0771	0.2362 ***	0.1566 ***	−0.0126
Variable	Return on Assets	Board Size	Firm Size	Leverage	Board Independence	
Return on Assets	1.0000					
Board Size	−0.1412 ***	1.0000				
Firm Size	−0.3249 ***	0.4722 ***	1.0000			
Leverage	−0.4138 ***	0.2005 ***	0.4983 ***	1.0000		
Board Independence	−0.0235	0.2702 ***	0.1087 ***	−0.0112	1.0000	

Note: Asterisks indicate statistical significance of the pairwise correlation coefficients at the 1% (***) and 10% (*) levels.

The results showed significant negative correlations at the 1% level between the percentage of female directors and the Bloomberg ESG, Bloomberg E, Bloomberg S, and Thomson Reuters ESG scores, providing preliminary evidence contrary to Hypothesis 1.

Bloomberg and Thomson Reuters ESG scores were positively correlated (0.5300) at the 1% significance level, indicating a moderate association between the two scoring systems.

In addition, Bloomberg ESG, Bloomberg E, Bloomberg S, and Thomson Reuters ESG scores were positively correlated with board size and firm size at the 1% level. In contrast, the proportion of female directors is negatively correlated with both board size and firm size, with coefficients of -0.1951 and -0.2291 , respectively.

3.3. Impact of Female Presence on the Board of Directors

The fixed-effects results (Table 6) indicate that female board representation does not significantly affect CSR, contrary to prior studies (Setó-Pamies, 2015; Yasser et al., 2017; Zhang et al., 2013). Accordingly, Hypothesis 1 is not supported. The absence of a significant relationship between female directors and CSR is consistent with previous findings (Colakoglu et al., 2021; Khidmat et al., 2022; Padungsaksawasdi & Treepongkaruna, 2024; Suttipun, 2021). Yang et al. (2019) suggested that females tend to exhibit compassionate, diligent, inclusive, moral, and stakeholder-oriented characteristics, their influence on CSR may be indirect and difficult to quantify.

Table 6. Fixed-effects regression of female directors and CSR.

Variable	Bloomberg				Thomson Reuters
	ESG Score	E Score	S Score	G Score	ESG Score
Percentage of Female Directors	0.0214 * (0.057)	0.0268 (0.158)	0.0190 (0.136)	0.0143 *** (0.000)	0.1349 (0.179)
Return on Assets	-0.0214 * (0.064)	-0.0230 (0.224)	-0.0266 * (0.093)	-0.0119 * (0.073)	-0.2388 * (0.092)
Board Size	0.0046 (0.934)	-0.0409 (0.604)	0.0717 (0.455)	0.0684 *** (0.000)	0.6174 (0.280)
Firm Size	2.6689 *** (0.000)	2.9893 *** (0.000)	3.1551 *** (0.000)	0.5596 *** (0.001)	38.4051 *** (0.000)
Leverage	-3.8994 *** (0.000)	-3.4219 ** (0.023)	-5.1242 *** (0.005)	-1.0501 *** (0.006)	-30.3216 ** (0.025)
Board Independence	-0.0031 (0.739)	-0.0110 (0.495)	0.0020 (0.897)	0.0027 (0.398)	0.1261 (0.211)
Number of Observations	471	471	471	470	485
R ²	0.2994	0.1687	0.1693	0.2120	0.2651

Note: Asterisks indicate statistical significance of the regression coefficients at the 1% (***), 5% (**), and 10% (*) levels. *p*-values are reported in parentheses.

Further, because Bloomberg ESG is a disclosure score, the results indicate that female directors do not significantly influence the extent of ESG information firms choose to report. This suggests that board gender diversity does not appear to shape firms' ESG disclosure practices, even though disclosure is often considered a communication-driven aspect of CSR.

However, female directors are positively associated with the Bloomberg governance score at the 1% significance level, with a coefficient of 0.0143. This finding supports Paweenawat (2019), who argued that the risk aversion and diligence of female audit committee members contribute to reduced risk and improved audit quality, thereby strengthening corporate governance practices.

To assess robustness, the analysis was re-estimated using the Thomson Reuters ESG score as the dependent variable. We find no evidence of a statistically significant relationship, and this finding is robust to alternative measures and estimation approaches. Unlike the Bloomberg ESG score, the Refinitiv ESG score was not further decomposed into its environmental, social, and governance pillars. The purpose of the robustness analysis was to examine whether the baseline findings were robust to the use of an alternative ESG data provider, rather than to replicate the component-level analyses. Since the environmental, social, and governance dimensions were already examined using Bloomberg data in the main analysis, the Refinitiv analysis was limited to the aggregate ESG score as an independent robustness check.

Prior studies in Thailand have reported mixed results. [Suttipun \(2021\)](#) found that female board committees, CSR committees, board size, compensation committees, and remuneration were positively associated with ESG disclosure. Differences may have stemmed from the use of content analysis and a smaller sample of 120 firms between 2015 and 2019. Similarly, [Padungsaksawasdi and Treepongkaruna \(2024\)](#) reported that firms with at least three female directors exhibited higher CSR performance. Their findings may have differed because CSR was measured using the Refinitiv CSR strategy category score, and the sample consists of 100 listed firms divided into family and non-family subsamples from 2009 to 2018.

Regarding the control variables, board size is positively associated with the governance score at the 1% significance level, with a coefficient of 0.0684. Agency theory suggests that boards play a central role in monitoring management and advising the firm. Larger boards may improve oversight and help mitigate agency problems ([Singh et al., 2018](#)). From a stakeholder perspective, larger and more diverse boards may also foster stronger relationships with stakeholders by incorporating social, environmental, and ethical objectives alongside financial goals ([Treepongkaruna et al., 2024](#)).

Firm size is positively associated with the Bloomberg ESG score, its ESG components, and the Thomson Reuters ESG score. The respective coefficients are 2.6689, 2.9893, 3.1551, 0.5596, and 38.4051, all significant at the 1% level. Larger firms generally possess greater resources to support CSR activities ([Yang et al., 2019](#)).

Finally, leverage is negatively associated with the Bloomberg ESG score and its social and governance components, with coefficients of -3.8994 , -5.1242 , and -1.0501 , respectively. According to [Surya and Rokhim \(2022\)](#), high debt levels increase interest obligations and financial pressure. Consequently, highly leveraged firms may allocate fewer resources to CSR initiatives ([Barnea & Rubin, 2010](#)).

It shall be noted that the negative correlations between female board representation and ESG scores (Table 5) reflect raw, two-variable comparisons that do not consider how different firms operate. Once we account for factors such as firm size, profitability, leverage, and industry in the fixed-effects models, the relationship disappears. This suggests that the initial negative correlations were largely driven by firm characteristics associated with both gender diversity and ESG performance, rather than reflecting an independent relationship between the two variables.

3.4. Moderating Effect of Female Executives

Table 7 presents the results of the moderated regression analysis. To reduce potential multicollinearity associated with the interaction term, we created a centered measure of female board representation (*centerPWOB*) ([Romano et al., 2020](#)). The results indicate that female directors do not significantly influence CSR performance. According to [Khan \(2010\)](#), the influence of female board members may be constrained.

Table 7. Moderating effect of female CEO/CFO on the relationship between the percentage of female directors and CSR.

Variable	Bloomberg ESG Score			Thomson Reuters ESG Score		
	With centerPWOB	Adds Moderator	Adds Interaction Term	With centerPWOB	Adds Moderator	Adds Interaction Term
centerPWOB	−0.0052 (0.271)	−0.0045 (0.346)	−0.0088 (0.245)	0.0197 (0.752)	0.0219 (0.726)	0.0595 (0.535)
WCEOCFO (moderator)		−0.1864 (0.108)	−0.1703 (0.149)		−0.7018 (0.647)	−0.7919 (0.608)
centerPWOB*WCEOCFO (interaction term)			0.0067 (0.464)			−0.0604 (0.605)
Return on Assets	−0.0029 (0.778)	−0.0022 (0.836)	−0.0029 (0.785)	−0.2791 ** (0.046)	−0.2752 ** (0.049)	−0.2672 * (0.058)
Board Size	0.0098 (0.723)	0.0149 (0.593)	0.0173 (0.538)	−0.0740 (0.839)	−0.0632 (0.863)	−0.0825 (0.823)
Firm Size	0.6237 *** (0.000)	0.6082 *** (0.000)	0.6034 *** (0.000)	15.7640 *** (0.000)	15.7436 *** (0.000)	15.7900 *** (0.000)
Leverage	−1.1903 *** (0.003)	−1.2750 *** (0.001)	−1.3113 *** (0.001)	−15.8384 *** (0.003)	−15.9989 *** (0.002)	−15.6845 *** (0.003)
Board Independence	0.0016 (0.722)	0.0018 (0.692)	0.0021 (0.664)	0.0962 (0.155)	0.0970 (0.152)	0.0947 (0.163)
DumIndus2	−0.7003 (0.333)	−0.6966 (0.337)	−0.6516 (0.371)	16.1184 * (0.058)	16.3402 * (0.055)	16.1910 * (0.057)
DumIndus3	−1.0648 *** (0.000)	−0.9921 *** (0.000)	−0.9707 *** (0.001)	−13.3132 *** (0.000)	−13.0434 *** (0.000)	−13.0799 *** (0.000)
DumIndus4	0.2602 (0.450)	0.2686 (0.438)	0.2574 (0.458)	−5.1829 (0.237)	−5.0563 (0.250)	−4.8226 (0.275)
DumIndus5	−0.7823 *** (0.002)	−0.7244 *** (0.005)	−0.7261 *** (0.004)	−3.1096 (0.341)	−2.7937 (0.403)	−2.7053 (0.419)
DumIndus6	0.7153 *** (0.003)	0.7590 *** (0.002)	0.7667 *** (0.002)	−5.9531 ** (0.050)	−5.6588 * (0.068)	−5.6555 * (0.068)
DumIndus7	−0.4079 * (0.084)	−0.3712 (0.125)	−0.3665 (0.130)	−5.6654 * (0.054)	−5.4292 * (0.069)	−5.3233 * (0.075)
DumIndus8	−0.7548 ** (0.011)	−0.739 ** (0.013)	−0.7315 ** (0.014)	3.6965 (0.327)	3.8293 (0.312)	3.8338 (0.311)
Number of Observations	471	469	469	485	485	485
Adjusted R ²	0.3008	0.3016	0.3009	0.2741	0.2728	0.2717

Note: Asterisks indicate statistical significance of the regression coefficients at the 1% (***), 5% (**), and 10% (*) levels. *p*-values are reported in parentheses.

In Column 3, *WCEOCFO* is introduced as a moderator to examine its effect on CSR performance. However, the relationship remains statistically insignificant. The findings provide no evidence that female CEOs and/or CFOs exert a greater influence on CSR than their male counterparts, consistent with prior research (Glass et al., 2016). Similarly, Kabongo et al. (2013) suggested that the presence of a female CEO or a member of a minority group may not be sufficient to influence a firm's charitable giving decisions.

Column 4 includes the interaction term *PWOB * WCEOCFO* to test whether the presence of at least one female CEO and/or CFO moderates the relationship between female directors and CSR. The results indicate no significant moderating effect. That is, female CEOs and/or CFOs do not strengthen the relationship between female board representation and CSR relative to male CEOs and/or CFOs.

As a robustness check, we re-estimated the model using the Thomson Reuters ESG score as the dependent variable. The results closely mirror those obtained using the Bloomberg ESG score. Accordingly, the analysis does not support Hypothesis 2, which tests whether female executive leadership modifies the relationship between female board representation and CSR.

These findings contrast with [Khidmat et al. \(2022\)](#), who reported a positive association between female board representation, female executive directors, non-executive female directors, and CSR activities. The discrepancy may have stemmed from differences in CSR measurement, as that study used a CSR index. It also examined 3020 non-financial Chinese A-share firms and employs Tobit regression and two-stage self-selection models over the 2007–2016 period.

Consistent with the results reported in Table 7, firm size exhibits a significant positive relationship with both Bloomberg and Thomson Reuters ESG scores. In contrast, leverage is significantly negatively associated with both Bloomberg and Thomson Reuters ESG scores.

3.5. Endogeneity and 2SLS Regression

Potential endogeneity concerns may arise when examining the relationship between female board representation and CSR performance ([McGuinness et al., 2017](#)). To address this issue, we employed instrumental variables and estimates the main model using two-stage least squares (2SLS) regression. The first instrument was the proportion of female directors in other firms within the same region (*PWOBRegion*), following [Peng and Chandarasupsang \(2023\)](#). The second instrument was the percentage of female directors in other firms within the same industry (*PWOBIndus*), consistent with ([Liu et al., 2014](#)). Regional and industry female board representation are plausibly exogenous because they reflect broader labor market conditions and sector-specific gender norms rather than firm-level CSR strategies. These factors influence the supply of female directors but should not directly affect individual firms' CSR outcomes, supporting their use as instruments. Because CSR performance is determined primarily through firm-level board decisions, ownership structure, and management strategy, regional and industry-level female labor supply should influence a given firm's CSR outcomes only indirectly, through its effect on that firm's own board composition. We treat this exogeneity assumption as theoretically motivated rather than empirically verified, since the exclusion restriction cannot be directly tested.

Columns 2, 4, 6, 8, and 10 of Table 8 report the first-stage regression results, in which the dependent variable is the proportion of female directors. Instrument relevance was evaluated using the first-stage F-test. The results indicate a significant F-statistic of 4.91 when CSR was measured using the Thomson Reuters ESG score. Regarding the instrumental variables, *PWOBRegion* exhibited a significant negative association with the proportion of female directors, with a coefficient of -0.2540 at the 1% significance level. This finding suggests that a higher proportion of female directors in firms within the same region does not necessarily translate into greater female representation on a firm's board. The growing presence of females on corporate boards may instead reflect regulatory requirements ([Peng & Chandarasupsang, 2023](#)) or increased demand for diversity rather than an expanded supply of qualified female board candidates ([Rose, 2007](#)).

Table 8. Two-stage least squares regression.

Variable	Bloomberg						Thomson Reuters			
	PWOB First Stage	ESG Score with IV	PWOB First Stage	E Score with IV	PWOB First Stage	S Score with IV	PWOB First Stage	G Score with IV	PWOB First Stage	ESG Score with IV
Percentage of Female Directors		0.1698 * (0.054)		0.2765 * (0.073)		0.1452 (0.166)		0.0113 (0.609)		0.1883 (0.720)
Return on Assets	−0.0372 (0.685)	−0.0164 (0.411)	−0.0372 (0.685)	−0.0014 (0.965)	−0.0372 (0.685)	−0.0329 (0.145)	−0.0373 (0.685)	−0.0200 ** (0.018)	−0.0003 (0.998)	−0.3910 *** (0.003)
Board Size	−0.7537 (0.129)	0.0973 (0.428)	−0.7537 (0.129)	0.1252 (0.557)	−0.7537 (0.129)	0.1326 (0.307)	−0.7536 (0.130)	0.0571 ** (0.026)	−0.7464 (0.130)	−0.1991 (0.749)
Firm Size	3.4898 (0.192)	2.0372 *** (0.001)	3.4898 (0.192)	2.2447 ** (0.042)	3.4898 (0.192)	2.4726 *** (0.003)	3.4874 (0.194)	0.5063 ** (0.012)	5.3337 (0.154)	47.0700 *** (0.000)
Leverage	−6.4244 (0.257)	−3.0131 ** (0.027)	−6.4244 (0.257)	−1.8299 (0.442)	−6.4244 (0.257)	−4.5760 *** (0.006)	−6.4214 (0.259)	−1.0791 *** (0.006)	2.5420 (0.675)	−42.7291 *** (0.000)
Board Independence	0.0675 (0.233)	−0.0128 (0.333)	0.0675 (0.233)	−0.0302 (0.196)	0.0675 (0.233)	−0.0059 (0.707)	0.0674 (0.234)	0.0040 (0.265)	0.0136 (0.822)	0.1458 * (0.100)
PWOBRegion (IV)	−0.1333 * (0.065)		−0.1333 * (0.065)		−0.1333 * (0.065)		−0.1332 * (0.066)		−0.2540 *** (0.005)	
PWOBIndus (IV)	0.2988 (0.165)		0.2988 (0.165)		0.2988 (0.165)		0.2991 (0.167)		0.2792 (0.285)	
Number of Observations	354	354	354	354	354	354	353	353	408	408
F-Statistic	2.83 * (0.0608)	12.59 *** (0.0000)	2.83 * (0.0608)	5.80 *** (0.0000)	2.83 * (0.0608)	8.88 *** (0.000)	2.83 * (0.0609)	10.04 *** (0.0000)	4.91 *** (0.0080)	14.52 *** (0.0000)
Kleibergen–Paap rk LM Statistic		5.246 * (0.0726)		5.246 * (0.0726)		5.246 * (0.0726)		5.242 * (0.0727)		8.569 ** (0.0138)
Cragg–Donald Wald F-Statistic		2.234		2.234		2.234		2.225		3.805
Stock–Yogo weak ID test critical values:										
10% maximal IV size		19.93		19.93		19.93		19.93		19.93
15% maximal IV size		11.59		11.59		11.59		11.59		11.59
20% maximal IV size		8.75		8.75		8.75		8.75		8.75
25% maximal IV size		7.25		7.25		7.25		7.25		7.25
Hansen J Statistic		5.730 ** (0.0167)		4.247 ** (0.0393)		2.349 (0.1254)		0.546 (0.4598)		13.068 *** (0.0003)
Endogeneity Test		7.766 *** (0.0053)		13.122 *** (0.003)		1.204 (0.2725)		0.055 (0.8144)		0.209 (0.6478)

Note: Asterisks indicate statistical significance of the regression coefficients at the 1% (***), 5% (**), and 10% (*) levels. *p*-values are reported in parentheses.

The first-stage F-statistics range from 2.83 to 14.52 across specifications, and the Cragg–Donald Wald F-statistics range from 2.225 to 3.805 (Table 8), both falling well below Stock and Yogo (2005) critical values for weak-instrument tests. This indicates that our instruments are weak, which may bias the 2SLS estimates toward the corresponding OLS estimates. Because the exclusion restriction cannot be directly tested, this weak-instrument evidence reinforces that the 2SLS results should be interpreted as suggestive rather than definitive evidence of a causal relationship.

Table 8 also reports the second-stage regression results using the Bloomberg ESG score, its ESG components, and the Thomson Reuters ESG score as dependent variables. The findings suggest that the instrumental variables may not be sufficiently strong when CSR is measured using these ESG indicators.

The results in Columns 3, 5, 7, and 9 show that the percentage of female directors was not significantly associated with the Bloomberg ESG score or its environmental, social, and governance components. To assess robustness, the model was re-estimated using the Thomson Reuters ESG score. The results reported in Column 11 are consistent with those obtained using the Bloomberg measures, supporting the reliability of the findings. Overall, gender-diverse boards are not associated with either higher or lower CSR performance. These

results are consistent with prior studies (Andreas & Chang, 2024; Colakoglu et al., 2021; Jaturat et al., 2021; Sriersan & Panna, 2025). One possible explanation is that the influence of female directors on CSR is indirect and complex, making their contribution difficult to assess and quantify (Yang et al., 2019). In addition, Khan (2010) suggest that the role of female board members may be constrained. CSR performance also may be shaped more by firm strategy, regulatory compliance, or ownership structure than by board composition alone, explaining why governance improves while CSR does not.

Regarding the control variables, return on assets was negatively associated with the Thomson Reuters ESG score at the 1% significance level, with a coefficient of -0.3910 . One possible explanation is that managers may prioritize personal objectives over broader stakeholder interests. Firms with strong financial performance may reduce CSR expenditures to maximize profits, whereas less profitable firms may increase CSR engagement to offset weaker performance (Otero-González et al., 2021).

Firm size exhibited a significant positive relationship with the Bloomberg ESG score, Bloomberg social score, and Thomson Reuters ESG score, with coefficients of 2.0372, 2.4726, and 47.0700, respectively. According to Romano et al. (2020), larger firms generally possess greater resources and are more likely to use reporting mechanisms to disclose ESG information and enhance corporate reputation. Similarly, Otero-González et al. (2021) argued that larger firms tend to engage more extensively in CSR activities, resulting in higher ratings. This may reflect their greater capacity to undertake initiatives beyond the reach of smaller firms. Larger firms also face greater pressure from regulators and labor groups, encouraging stronger engagement with social, labor, and environmental issues.

Finally, leverage was negatively associated with the Bloomberg social and governance scores and the Thomson Reuters ESG score, with coefficients of -4.5760 , -1.0791 , and -42.7291 , respectively. The effectiveness of CSR initiatives depends heavily on available organizational resources. Specifically, CSR performance is influenced by a firm's cash flow and debt burden (Yang et al., 2019). According to Surya and Rokhim (2022), high leverage may indicate difficulty generating sufficient profits to meet financial obligations. Consequently, highly leveraged firms are likely to allocate fewer resources to CSR activities (Barnea & Rubin, 2010).

4. Discussion

This study examined the relationship between female board representation and CSR. The findings were robust across alternative measures, including analyses using the Thomson Reuters ESG score in addition to the Bloomberg ESG score. The results indicated no significant association between gender-diverse boards and CSR, nor between female CEOs and/or CFOs and CSR. Accordingly, Hypothesis 1, which predicts a positive relationship between female board representation and CSR, was not supported. Likewise, Hypothesis 2 was not supported, as the presence of at least one female CEO and/or CFO does not strengthen the relationship between female board representation and CSR.

Although the regression results show no significant relationship between female directors and CSR, this does not necessarily imply that female board members do not influence CSR. Their impact may instead operate through board dynamics, committee structures, or firm-specific governance processes that ESG scores cannot fully capture.

The distinction between ESG disclosure and ESG performance is important for interpreting our results. Bloomberg ESG scores capture the quantity of disclosure rather than the quality of CSR activities. Therefore, the insignificant Bloomberg-based findings imply that female directors do not meaningfully influence firms' ESG reporting behavior, even though they may still affect internal CSR processes that are not reflected in disclosure-focused metrics.

Although Thai culture, shaped by Buddhism and the sufficiency economy philosophy, appears conducive to CSR, several factors may explain the absence of a significant relationship between female leadership and CSR. First, the sample was limited to firms with Bloomberg and Thomson Reuters ESG scores. Because companies were not subject to a mandatory ESG reporting timetable, the available sample remained constrained. Future studies may benefit from larger samples as ESG coverage expands, allowing for a more comprehensive assessment of the relationship between female directors and CSR.

Second, the influence of female directors on CSR may have been indirect and complex. Although females are often characterized as compassionate, diligent, inclusive, moral, and stakeholder-oriented, isolating and measuring their specific contribution to CSR remains challenging (Yang et al., 2019).

Third, female directors may not differ substantially from their male counterparts in ways that affect CSR outcomes. Social network ties can encourage minority directors to conform to existing board norms and behaviors. Prior board experience may also reduce biases against out-group members, enabling minority directors to integrate more fully with the majority group (Terjesen et al., 2009). Consequently, the potential benefits of female board representation may not translate into measurable performance outcomes (Rose, 2007).

Female and male directors may also be similar because females have relatively equal access to education, training, and employment opportunities (Giannarakis et al., 2014). In Thailand, cultural and social norms have helped narrow the gender gap, producing levels of gender equality comparable to global averages (Grohmann et al., 2021). Men and females generally share similar roles in both family and workplace settings. Educational attainment gaps are relatively small, female labor-force participation is comparatively high, and wage equality is relatively strong. Together, these factors suggest that females occupy positions in the Thai labor market that are broadly comparable to those of male.

The findings further indicate that female CEOs and/or CFOs neither significantly influence CSR nor moderate the relationship between female board representation and CSR. As noted by Kabongo et al. (2013), the presence of a female CEO or another minority-group leader may not be sufficient to influence charitable giving decisions.

Although greater female representation on boards does not lead to higher CSR performance in this sample, diversity remains valuable because it broadens the range of backgrounds, experiences, perspectives, and ideas available to organizations. Females often contribute qualities such as diligence, compassion, inclusiveness, stakeholder orientation, and conflict avoidance (Yang et al., 2019). These attributes may support sustainable business practices and improve organizational decision-making. Moreover, organizations benefit from boards composed of individuals with diverse knowledge, skills, and experiences (Vetchagool, 2025). Accordingly, this study supports continued efforts to maintain gender diversity on corporate boards.

If board gender diversity alone does not translate into stronger CSR performance, our findings point to more targeted governance mechanisms. First, because Bloomberg ESG scores primarily capture disclosure rather than substantive performance, firms seeking genuine CSR improvement should prioritize dedicated CSR or sustainability committees with direct reporting lines to the board. Second, linking executive compensation to verified ESG/CSR performance indicators may create stronger incentives than board demographic composition alone. Third, because female CEO/CFO presence did not moderate the female-director-CSR relationship in our sample, firms may benefit more from granting female executives and directors substantive authority, such as seats on nomination and CSR committees, rather than symbolic representation. Fourth, formalizing stakeholder

engagement processes that translate board priorities into measurable CSR activities may have a more direct effect on outcomes than board composition itself.

This study had several limitations. First, the sample consisted of 139 SET-listed firms from 2015 to 2021 and was constrained by data availability. Unlike financial reporting, CSR and ESG reporting are not subject to a mandatory reporting timetable. The analysis was further limited to firms covered by Bloomberg and Thomson Reuters ESG databases. As ESG coverage expands, future research may be able to evaluate the effects of gender diversity using larger and more representative samples.

Second, CSR is commonly defined as the integration of social, ethical, and environmental considerations into corporate strategy (Freeman et al., 2010). However, no universally accepted measure of CSR exists (Colakoglu et al., 2021). ESG, by contrast, explicitly incorporates environmental, social, and governance dimensions (Li et al., 2021). Because governance is directly included within ESG, ESG may provide a more comprehensive assessment than CSR alone (Gillan et al., 2021). Firms increasingly identify ESG and reputational risks and implement CSR initiatives to mitigate them, highlighting the close relationship between CSR and risk management (Karwowski & Raulinajtys-Grzybek, 2021). For this reason, Bloomberg and Thomson Reuters ESG scores are used as proxies for CSR performance. Nevertheless, Li et al. (2021) note that ESG measures can vary across databases. Although Bloomberg and Thomson Reuters ESG scores exhibit only moderate correlation, the consistency of the findings across both measures strengthens the robustness of the results.

Third, as discussed in Section 3.5, our instruments exhibit weak-instrument evidence, with Cragg–Donald Wald F-statistics of 2.225–3.805, well below Stock and Yogo (2005) critical values, and the exclusion restriction cannot be directly tested. The causal interpretation of the 2SLS results should therefore be treated with appropriate caution.

Fourth, our study also faces limitations related to the ESG measures employed. Although Bloomberg ESG data allow us to analyze the environmental, social, and governance dimensions separately, we do not conduct an equivalent component-level analysis using the Refinitiv dataset because the two providers construct their pillar scores using different methodologies and weighting schemes. Consequently, the Bloomberg and Refinitiv pillar scores are not directly comparable. To maintain methodological consistency, we therefore use the overall Refinitiv ESG score as a holistic measure of CSR performance. Future research may examine the Refinitiv pillar scores separately.

Finally, this study focused exclusively on female directors in the context of CSR performance. Future research could examine deeper dimensions of gender diversity beyond traditional binary classifications. As recognition of non-binary gender identities continues to expand, including legal recognition in some jurisdictions (Fiani & Serpe, 2020), broader measures of gender diversity may become increasingly relevant. Diverse teams can enhance organizational performance by contributing varied perspectives, ideas, and experiences, underscoring the importance of collective human capital in shaping corporate strategies and outcomes (Kaur & Singh, 2025). Future studies may therefore consider the representation of non-binary individuals on corporate boards.

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