



Do ESG ratings mediate the relationship between board gender diversity and firm financial performance? Evidence from the U.S. Market

 **Duy Thanh Nguyen**¹⁺

 **Thinh Gia Hoang**²

 **Nguyet Thi Minh Phi**³

 **Thanh Hai Huyen Truong**⁴

¹*Becamex Business School, Eastern International University, Vietnam.*

Email: duy.nguyen@eiu.edu.vn

²*UMT School of Business, University of Management and Technology, Vietnam.*

Email: thinh.hoanggia@umt.edu.vn

³*Academy of Finance, Vietnam.*

Email: minhnguyetphi.aof@gmail.com

⁴*Faculty of Economics, Thu Dau Mot University, Vietnam.*

Email: thanhhth@tdm.edu.vn



(+ Corresponding author)

ABSTRACT

Article History

Received: 30 March 2023

Revised: 23 March 2023

Accepted: 1 June 2023

Published: 12 June 2023

Keywords

Board gender diversity

ESG

Firm performance

Mediator.

JEL Classification:

G32; G34.

The impact of board gender diversity on firm value is inconclusive. The paper investigates whether a firm's environmental, social, and governance (ESG) performance mediates the relationship between board gender diversity and firm financial performance. The study employs a sample of 1514 non-financial firms listed on the National Association of Securities Dealers Automated Quotations (NASDAQ) and New York Stock Exchanges (NYSE) from 2016 to 2020. It reveals that a firm improves its ESG ratings and financial performance when there are more female directors on its board. When controlling ESG performance, the significant relationship between board gender diversity and firm performance turns insignificant, and ESG performance has a significant positive impact on a firm's financial performance. These findings confirm the mediating role of ESG performance in the studied relationship. A firm's management can refer to these findings to employ more women on its board, which creates additional firm financial value through better ESG practices. Investors may incorporate the factors of board gender diversity and corporate ESG performance into their investment decisions.

Contribution/Originality: This study provides evidence of the mediating role of ESG performance in the relationship between board gender diversity and firm financial performance. The evidence enriches the previous literature on the set of moderators on this relationship, such as the ESG-related sensitivity of an industry and society's attitude towards women.

1. INTRODUCTION

Board gender diversity is one of the central topics in corporate governance. The distinguishing attributes of women in a boardroom have been well studied. They are more risk-averse and less competitive than men (Croson & Gneezy, 2009) and have a long-term perspective (Marinova, Plantenga, & Remery, 2016). These characteristics are consistent with the view that women are less aggressive in forming business strategies and focus on investment sustainability (Charness & Gneezy, 2012). Regarding the resource dependence theory, female directors understand specific customers better (Yarram & Adapa, 2021), so their representation results in higher stakeholder trust (Qureshi, Kirkerud, Theresa, & Ahsan, 2020). The presence of women on the board could, therefore, provide firms with diverse knowledge bases and perspectives.

Whether board gender diversity improves firm value, however, is inconclusive. Matsa and Miller (2013) found a positive relationship between female board members and Nordic firm profitability by lowering the relative labour costs. This positive effect varies across institutional contexts. Investigating Asian countries, Low, Roberts, and Whiting (2015) discovered that the positive relationship is more pronounced when society's attitude towards women is more positive. On the other hand, mandatory gender quotas in the boardroom could reduce firm performance. This view is supported by Zhang (2020), who showed that firms with more women on board experience higher sales and market valuation in countries where gender diversity is a normative legitimacy rather than a regulatory one. Additionally, Conyon and He (2017) found that the performance distribution – whether a firm is a high-performing one – positively moderates the positive relationship among U.S. firms.

Other studies present the opposite findings. Marinova et al. (2016) and Pandey, Kumar, Post, Goodell, and García-Ramos (2022) contended that board gender diversity has no direct impact on a firm's financial performance, although it does help firms mitigate the detrimental effect of chief executive officer (CEO) duality on firm performance. Joecks, Pull, and Vetter (2013) even discovered a negative relationship; however, Brahma, Nwafor, and Boateng (2021) proved that it turns positive when more than two women are on the board, in line with critical mass theory. In an attempt to reconcile the inconclusive evidence, Post and Byron (2015) and Liang and Vansteenkiste (2022) suggested taking the conditions and mechanisms through which board gender diversity impacts firm value into account, respectively. From a sustainability perspective, we, therefore, aim to investigate whether a firm's ESG performance mediates the relationship between board gender diversity and firm performance.

Firms with higher gender diversity display better ESG performance (Bear, Rahman, & Post, 2010; Boulouta, 2013; Bruna, Đăng, Ammari, & Houanti, 2021; Dang, Houanti, Sahut, & Simioni, 2021; Harjoto, Laksmana, & Lee, 2015; Qureshi et al., 2020). Two primary theories underpin such a relationship: the theories of gender socialization and diversity. The former contends that, compared to men, women focus more on stakeholders' welfare, so they tend to take action to address environmental risks and other issues harming communities (Adams, Licht, & Sagiv, 2011). The latter argues that the representation of women on the board could improve board decision-making on environmental issues as they provide firms with different perspectives and more eco-friendly initiatives (Estélyi & Nisar, 2016). Based on these two theories, Liu (2018) found that firms reduce environmental lawsuits when having greater board gender diversity. In the same vein, Boulouta (2013) showed that female directors lower negative business practices in corporate social performance. Female directors also improve sustainability performance by lowering greenhouse gas emissions (Rjiba & Thavaharan, 2022). That is to say, gender diversity improves corporate environmental policies. Women display a unique sustainability skillset (Kim & Starks, 2016) and maintain community-minded, caring, and harmonious relationships with other stakeholders (Yarram & Adapa, 2021). They are also more emotionally inclined towards social and environmental issues than men (Yadav & Prashar, 2022). Liang and Vansteenkiste (2022) additionally found that the presence of more women on the board improves a firm's ESG performance, attracting more capital from ESG-focused funds. Under the critical mass theory, a token female representation of less than three does not affect a firm's ESG practice, as the experience and views of those female directors are unlikely to be considered (Nerantzidis, Tzeremes, Koutoupis, & Pourgias, 2022; Yadav & Prashar, 2022; Yarram & Adapa, 2021).

Although the impact of ESG practice on firm performance remains debatable, most studies have found a beneficial relationship. Shareholder and stakeholder-focused theories are two underlying perspectives on the benefits of practising ESG. The shareholder-focused theory emphasizes that ESG investment serves stakeholders' interests at the shareholders' expense (Barnea & Rubin, 2010). Taking that point of view, Barnea and Rubin (2010) studied the problem of ESG overinvestment, which is detrimental to firm value. The managers benefit by overinvesting in ESG – for instance, through a better reputation among stakeholders. When it exceeds an optimal point, such investment bears costs higher than the benefits it adds (Krüger, 2015). The overinvestment results in a

negative market response (Liu, Liu, Wang, & Xu, 2020), limits firms' free cash flow, and reduces investment efficiency (Benlemlih & Bitar, 2018).

The stakeholder-focused theory supports the view that a firm's ESG practice enhances its financial performance (Arouri, Gomes, & Pukthuanthong, 2019; Branco & Rodrigues, 2008; Nguyen, Hoang, & Tran, 2022). ESG engagement reduces firms' information asymmetry (Dhaliwal, Li, Tsang, & Yang, 2011), analysts' forecast errors (Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012), and firm risks (Jo & Na, 2012). It helps firms lower the cost of equity (Dhaliwal et al., 2011), the cost of debt (Bhuiyan & Nguyen, 2020), and the cost of capital (Amel-Zadeh & Serafeim, 2018). Additionally, Fatemi, Fooladi, and Tehranian (2015) showed that practising ESG improves firm value via sustainable cashflows and an increased probability of firm survival. Nguyen et al. (2022) confirmed that ESG practice positively impacts firm performance measured by both accounting and market-based proxies. They also revealed that the associated ESG benefits would be obtained in the long run, meaning that the benefits could offset the initial costs of ESG investment.

Based on these rationales, we argue that a firm's board gender diversity positively impacts its ESG performance, which in turn improves firm performance. Therefore, we formulate the following hypothesis.

Hypothesis: ESG performance mediates the relationship between board gender diversity and firm performance.

2. METHODOLOGY

We used a sample of 1514 non-financial U.S. firms, of which 61% were listed on the NASDAQ Stock Exchange and 39% on the New York Stock Exchange, from 2016 to 2020. Their ESG and financial data had to be available for the entire research period. The final sample included 7570 firm-year observations.

We measured a firm's ESG performance by its ESG combined (ESGC) score. The ESGC score was obtained from the Refinitiv ESG database. Refinitiv assesses more than 500 data points in the three categories of environment, social, and governance to calculate the ESG score, which measures a firm's ESG performance, commitment, and effectiveness. The Refinitiv ESG score assessment is based on a firm's self-reported information. The ESG score then is discounted by the controversies score, which proxies the frequency and severity of the firms' negative ESG scandals reported in the media. This discounted ESG score is the so-called ESG combined score and ranges from 0 (worst) to 100 (best). We used the natural logarithm of ESGC in the statistical models.

We measured the board gender diversity by calculating the ratio of the number of women on the board to the total number of board members (GENDIV). We obtained the data from Refinitiv.

We employed both accounting and market-based proxies of firm performance (FPER). The former measures were return-on-assets (ROA) and return-on-equity (ROE). We divided the net income by the total assets and total equity, respectively. The latter proxy was Tobin's Q, the ratio of total market capitalization and total debts to total assets (Kahloul, Sbai, & Grir, 2022).

We employed a set of control variables in accordance with Dang et al. (2021). Leverage (LEV) is the ratio of total debts to total equity. Firm size (FSIZE) is proxied by the natural logarithm of the total market capitalization. Board independence (BI) is the proportion of total independent directors on the board. Institutional ownership (IO) is the percentage of ownership held by the institutional owners. The data for all variables were extracted from Refinitiv.

Following Baron and Kenny (1986), we tested whether ESG performance functions as a mediator in the relationship between board gender diversity and firm performance in three steps, as follows. First, the board's gender diversity (independent variable) must significantly affect ESG performance (mediator). Second, the board's gender diversity must significantly influence firm performance (dependent variable). Third, ESG performance must significantly impact firm performance when controlling for board gender diversity. If those three conditions are met, the mediating function of ESG performance is confirmed if the board's gender diversity has no (or a lesser) impact on firm performance in the third step compared to the second one.

The statistical models are as follows:

- *Model 1*

$$ESGC_{i,t-1} = \alpha_0 + \alpha_1 GENDIV_{i,t-1} + \alpha_2 LEV_{i,t-1} + \alpha_3 FSIZE_{i,t-1} + \alpha_4 BI_{i,t-1} + \alpha_5 IO_{i,t-1} + \gamma + \delta + \varepsilon$$

- *Model 2*

$$FPER_{i,t} = \beta_0 + \beta_1 GENDIV_{i,t-1} + \beta_2 LEV_{i,t-1} + \beta_3 FSIZE_{i,t-1} + \beta_4 BI_{i,t-1} + \beta_5 IO_{i,t-1} + \gamma + \delta + \varepsilon$$

- *Model 3*

$$FPER_{i,t} = \theta_0 + \theta_1 GENDIV_{i,t-1} + \theta_2 ESGC_{i,t-1} + \theta_3 LEV_{i,t-1} + \theta_4 FSIZE_{i,t-1} + \theta_5 BI_{i,t-1} + \theta_6 IO_{i,t-1} + \gamma + \delta + \varepsilon$$

Where i is firm, t is year, and γ and δ are the firm and year fixed effects to remove invariant unobserved heterogeneity from the error terms across firms and years, respectively. Because the practice of ESG, gender diversity, and other control variables takes time to be reflected in firm performance, we used one-year lagged values of GENDIV, ESGC, LEV, FSIZE, BI, and IO. We also clustered the standard error at the industry level to get rid of the potential serial correlation of those variables within a certain industry.

3. DATA ANALYSIS AND DISCUSSION

Table 1 shows the data statistics and the correlations between the variables. The average proportion of women on boards is 19.1%. The 30% Club, a business-led global campaign, was founded in the U.S. in 2014 to promote at least a 30% representation of women on boards. Despite this campaign, the average gender diversity value is still below the threshold. The mean of $\ln(ESGC)$ is 4.290, which is equivalent to an ESGC score of 73. The correlations among the explanatory variables are less than 0.8, and their variance inflation factors (VIFs) are less than 10. Thus, the dataset is free of multicollinearity issues (Mansfield & Helms, 1982). Table 2 presents the regression results of the three models mentioned above. Column (1) in Table 2 confirms that the board gender diversity positively influences a firm's ESG performance with a coefficient of 0.373 and a p-value of less than 0.01. As such, an additional one percentage point in the proportion of women on the board increases the ESGC score by 37.3%. All explanatory variables in Model 1 could explain 60.1% of the variation in the ESGC score. Thus, the finding confirms the first condition of a mediator. It is also consistent with the gender socialization and diversity theories studied by Liu (2018) and in line with Harjoto et al. (2015), Bear et al. (2010), and Dang et al. (2021).

Columns (2), (3), and (4) in Table 2 exhibit the results of Model 2. Regarding Column (2), the board's gender diversity has a positive and significant effect on ROA with a coefficient of 0.03 and a p-value of less than 0.01. A firm could improve its ROA by 3% with an additional 1% of female directors. Using the alternative firm performance proxies of ROE (Column (3)) and TOBINQ (Column (4)), the impact of board gender diversity on firm performance remains consistent. Thus, the second condition of a mediator is met.

Columns (5), (6), and (7) in Table 2 show the results of Model 3. Column (5) reveals that a 1% increase in ESGC enhances ROA by 0.024 percentage points, which is statistically significant (p-value less than 0.01). Meanwhile, the impact of board gender diversity on ROA is insignificant. The GENDIV coefficient's magnitude of 0.007 is less than the respective coefficient of 0.030 reported in Column (2). That trend remains consistent when using ROE (Column (6)) or TOBINQ (Column (7)) instead of ROA. Therefore, the results indicate that a firm's ESG performance functions as a mediator in the relationship between board gender diversity and firm performance, confirming the proposed hypothesis.

Table 1. Descriptive statistics and correlation.

Variable	Mean	ROE	ROA	TOBINQ	GENDIV	ESGC	LEV	FSIZE	BI	IO
ROE	0.074	1								
ROA	0.025	0.578***	1							
TOBINQ	2.862	0.047***	0.046***	1						
GENDIV	0.191	0.057***	0.070***	0.025***	1					
ESGC	4.290	0.043***	0.051***	0.078***	0.184***	1				
LEV	1.322	0.209***	0.014**	0.102***	0.027***	0.029***	1			
FSIZE	20.351	0.204***	0.220***	0.076***	0.050***	0.264***	0.133***	1		
BI	0.242	0.025***	0.022***	0.022***	-0.014**	0.531***	0.029***	0.092***	1	
IO	0.193	0.042***	0.049***	0.053***	-0.066***	0.674***	0.037***	0.209***	0.648***	1
VIF					1.06	1.98	1.02	1.13	3.71	4.85

Note: ** and *** denote statistical significance at the 10% and 5% levels, respectively.

Table 2. The mediating effect of ESG performance on the relationship between board gender diversity and firm performance.

	Model 1	Model 2			Model 3		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ESGC	ROA	ROE	TOBINQ	ROA	ROE	TOBINQ
GENDIV	0.373*** (16.21)	0.030*** (3.07)	0.035** (2.61)	0.077*** (4.49)	0.007 (0.78)	0.021 (0.60)	0.047 (1.43)
LEV	0.001*** (3.27)	0 (-2.38)	0.006*** (4.11)	-0.012* (-1.72)	0 (-2.44)	0.006*** (4.04)	-0.012* (-1.70)
FSIZE	-0.001 (-1.23)	0.004*** (4.70)	0.011** (2.60)	0.368*** (3.74)	0.004*** (4.68)	0.011** (2.59)	0.368*** (3.73)
BI	0.028*** (3.88)	-0.004 (-1.46)	0.002 (0.13)	0.185** (2.00)	-0.005 (-1.63)	0 (0.01)	0.185** (2.03)
IO	0.238*** (35.16)	0 (0.16)	-0.01 (-1.04)	0.186** (2.01)	0.005* (1.70)	0.005 (0.53)	0.179** (2.22)
ESGC					0.024*** (2.68)	0.064** (2.28)	0.036*** (3.03)
Constant	4.348*** (217.50)	-0.051*** (-3.02)	-0.152* (-1.78)	-4.674** (-2.37)	0.053 (1.31)	0.125 (0.82)	-4.788* (-1.74)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	7570	7570	7570	7570	7570	7570	7570
Adj. R ²	0.601	0.538	0.455	0.589	0.641	0.514	0.672

Note: t-statistics reported in parentheses were calculated using standard errors adjusted for heteroskedasticity and clustered by industry. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

4. CONCLUSION

In response to Post and Byron (2015) and Liang and Vansteenkiste (2022), we explored the mechanism by which board gender diversity impacts firm value. We found that a firm's ESG performance serves as a mediator in that relationship in the U.S. context from 2016 to 2020. Greater board gender diversity improves ESG performance at the firm level. The sustainability-driven attributes of female directors are the underlying reason for this improvement. The improvement in ESG performance helps the firm enhance its financial performance, which in this case was proxied by both accounting and market-based indicators. With the presence of the ESGC variable in the model, the board's gender diversity has no direct impact on firm performance.

Our paper offers certain contributions. It sheds light on the mechanism by which board gender diversity enhances firm value: the mediating role of ESG performance. This result complements previous research that studied the moderators of the relationship between board gender diversity and firm performance: an industry's ESG-related sensitivity (Qureshi et al., 2020), society's attitude towards women (Low et al., 2015), and how gender diversity is brought about in a country – normative or regulatory (Zhang, 2020). In addition, our paper confirms the positive effect of board gender diversity on a firm's ESG performance and that of ESG performance on a firm's financial performance, as established in previous research (Fatemi et al., 2015; Low et al., 2015; Nguyen et al., 2022; Zhang, 2020). The paper has important implications for firms and investors. When employing more female directors, a firm can expect to improve its ESG policies and practices. Such an improvement will create additional firm value through better financial performance. Investors could refer to the presence of women on a firm's board and its ESG performance to predict its financial performance and value. That is to say, this paper provides investors with an additional tool to assess potential investments. Our research suggests an avenue for future research. Baron and Kenny (1986) stated that, with the presence of a mediator, if the impact of the independent variable on the dependent variable is not zero, it indicates that multiple mediators affect that relationship. Therefore, future research can explore additional mediators to comprehend the impact of board gender diversity on firm performance.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study.

REFERENCES

- Adams, R. B., Licht, A. N., & Sagiv, L. (2011). Shareholders and stakeholders: How do directors decide? *Strategic Management Journal*, 32(12), 1331-1355. <https://doi.org/10.1002/smj.940>
- Amel-Zadeh, A., & Serafeim, G. (2018). Why and how investors use ESG information: Evidence from a global survey. *Financial Analysts Journal*, 74(3), 87-103. <https://doi.org/10.2469/faj.v74.n3.2>
- Arouri, M., Gomes, M., & Pukthuanthong, K. (2019). Corporate social responsibility and M&A uncertainty. *Journal of Corporate Finance*, 56, 176-189. <https://doi.org/10.1016/j.jcorpfin.2019.02.002>
- Barnea, A., & Rubin, A. (2010). Corporate social responsibility as a conflict between shareholders. *Journal of Business Ethics*, 97(1), 71-86. <https://doi.org/10.1007/s10551-010-0496-z>
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics*, 97(2), 207-221. <https://doi.org/10.1007/s10551-010-0505-2>
- Benlemlih, M., & Bitar, M. (2018). Corporate social responsibility and investment efficiency. *Journal of Business Ethics*, 148, 647-671. <https://doi.org/10.1007/s10551-016-3020-2>
- Bhuiyan, M. B. U., & Nguyen, T. H. N. (2020). Impact of CSR on cost of debt and cost of capital: Australian evidence. *Social Responsibility Journal*, 16(3), 419-430. <https://doi.org/10.1108/srj-08-2018-0208>
- Boulouta, I. (2013). Hidden connections: The link between board gender diversity and corporate social performance. *Journal of Business Ethics*, 113(2), 185-197. <https://doi.org/10.1007/s10551-012-1293-7>
- Brahma, S., Nwafor, C., & Boateng, A. (2021). Board gender diversity and firm performance: The UK evidence. *International Journal of Finance & Economics*, 26(4), 5704-5719. <https://doi.org/10.1002/ijfe.2089>
- Branco, M. C., & Rodrigues, L. L. (2008). Factors influencing social responsibility disclosure by portuguese companies. *Journal of Business Ethics*, 4(83), 685-701. <https://doi.org/10.1007/s10551-007-9658-z>
- Bruna, M. G., Đăng, R., Ammari, A., & Houanti, L. H. (2021). The effect of board gender diversity on corporate social performance: An instrumental variable quantile regression approach. *Finance Research Letters*, 40, 1-12. <https://doi.org/10.1016/j.frl.2020.101734>
- Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of Economic Behavior & Organization*, 83(1), 50-58. <https://doi.org/10.1016/j.jebo.2011.06.007>
- Canyon, M. J., & He, L. (2017). Firm performance and boardroom gender diversity: A quantile regression approach. *Journal of Business Research*, 79, 198-211. <https://doi.org/10.1016/j.jbusres.2017.02.006>
- Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47(2), 448-474.
- Dang, R., Houanti, L. H., Sahut, J.-M., & Simioni, M. (2021). Do women on corporate boards influence corporate social performance? A control function approach. *Finance Research Letters*, 39, 1-18. <https://doi.org/10.1016/j.frl.2020.101645>
- Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59-100. <https://doi.org/10.2308/accr-00000005>
- Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., & Yang, Y. G. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review*, 87(3), 723-759. <https://doi.org/10.2308/accr-10218>
- Estélyi, K. S., & Nisar, T. M. (2016). Diverse boards: Why do firms get foreign nationals on their boards? *Journal of Corporate Finance*, 39, 174-192. <https://doi.org/10.1016/j.jcorpfin.2016.02.006>
- Fatemi, A., Fooladi, I., & Tehranian, H. (2015). Valuation effects of corporate social responsibility. *Journal of Banking & Finance*, 59(C), 182-192. https://doi.org/10.1007/978-3-642-28036-8_101291

- Harjoto, M., Laksmana, I., & Lee, R. (2015). Board diversity and corporate social responsibility. *Journal of Business Ethics*, 132, 641-660. <https://doi.org/10.1007/s10551-014-2343-0>
- Jo, H., & Na, H. (2012). Does CSR reduce firm risk? Evidence from controversial industry sectors. *Journal of Business Ethics*, 110(4), 441-456. <https://doi.org/10.1007/s10551-012-1492-2>
- Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a “critical mass?”. *Journal of Business Ethics*, 118(1), 61-72. <https://doi.org/10.1007/s10551-012-1553-6>
- Kahloul, I., Sbai, H., & Grir, J. (2022). Does corporate social responsibility reporting improve financial performance? The moderating role of board diversity and gender composition. *Quarterly Review of Economics and Finance*, 84, 305-314. <https://doi.org/10.1016/j.qref.2022.03.001>
- Kim, D., & Starks, L. T. (2016). Gender diversity on corporate boards: Do women contribute unique skills? *American Economic Review*, 106(5), 267-271. <https://doi.org/10.1257/aer.p20161032>
- Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics*, 115(2), 304-329. <https://doi.org/10.1016/j.jfineco.2014.09.008>
- Liang, H., & Vansteenkiste, C. (2022). *Delegated gender diversity*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4023775
- Liu, A. Z., Liu, A. X., Wang, R., & Xu, S. X. (2020). Too much of a good thing? The boomerang effect of firms' investments on corporate social responsibility during product recalls. *Journal of Management Studies*, 57(8), 1437-1472. <https://doi.org/10.1111/joms.12525>
- Liu, C. (2018). Are women greener? Corporate gender diversity and environmental violations. *Journal of Corporate Finance*, 52, 118-142. <https://doi.org/10.1016/j.jcorpfin.2018.08.004>
- Low, D. C. M., Roberts, H., & Whiting, R. H. (2015). Board gender diversity and firm performance: Empirical evidence from Hong Kong, South Korea, Malaysia and Singapore. *Pacific-Basin Finance Journal*, 35, 381-401. <https://doi.org/10.1016/j.pacfin.2015.02.008>
- Mansfield, E. R., & Helms, B. P. (1982). Detecting multicollinearity. *The American Statistician*, 36(3a), 158-160. <https://doi.org/10.2307/2683167>
- Marinova, J., Plantenga, J., & Remery, C. (2016). Gender diversity and firm performance: Evidence from dutch and danish boardrooms. *The International Journal of Human Resource Management*, 27(15), 1777-1790. <https://doi.org/10.1080/09585192.2015.1079229>
- Matsa, D. A., & Miller, A. R. (2013). A female style in corporate leadership? Evidence from quotas. *American Economic Journal: Applied Economics*, 5(3), 136-169. <https://doi.org/10.1257/app.5.3.136>
- Nerantzidis, M., Tzeremes, P., Koutoupis, A., & Pourgias, A. (2022). Exploring the black box: Board gender diversity and corporate social performance. *Finance Research Letters*, 48, 102987. <https://doi.org/10.1016/j.frl.2022.102987>
- Nguyen, D. T., Hoang, T. G., & Tran, H. G. (2022). Help or hurt? The impact of ESG on firm performance in S&P 500 non-financial firms. *Australasian Accounting, Business and Finance Journal*, 16(2), 91-102. <https://doi.org/10.14453/aabfj.v16i2.7>
- Pandey, N., Kumar, S., Post, C., Goodell, J. W., & García-Ramos, R. (2022). Board gender diversity and firm performance: A complexity theory perspective. *Asia Pacific Journal of Management*, 7, 1-32. <https://doi.org/10.1007/s10490-022-09817-w>
- Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, 58(5), 1546-1571. <https://doi.org/10.5465/amj.2013.0319>
- Qureshi, M. A., Kirkerud, S., Theresa, K., & Ahsan, T. (2020). The impact of sustainability (environmental, social, and governance) disclosure and board diversity on firm value: The moderating role of industry sensitivity. *Business Strategy and the Environment*, 29(3), 1199-1214. <https://doi.org/10.1002/bse.2427>
- Rjiba, H., & Thavaharan, T. (2022). Female representation on boards and carbon emissions: International evidence. *Finance Research Letters*, 49, 103079. <https://doi.org/10.1016/j.frl.2022.103079>

- Yadav, P., & Prashar, A. (2022). Board gender diversity: Implications for environment, social, and governance (ESG) performance of Indian firms. *International Journal of Productivity and Performance*, 71. <https://doi.org/10.1108/IJPPM-12-2021-0689>
- Yarram, S. R., & Adapa, S. (2021). Board gender diversity and corporate social responsibility: Is there a case for critical mass? *Journal of Cleaner Production*, 278, 123319. <https://doi.org/10.1016/j.jclepro.2020.123319>
- Zhang, L. (2020). An institutional approach to gender diversity and firm performance. *Organization Science*, 31(2), 439-457. <https://doi.org/10.1287/orsc.2019.1297>

Views and opinions expressed in this article are the views and opinions of the author(s). The Economics and Finance Letters shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.