

RESEARCH ARTICLE

Gender diversity and sustainability performance in the banking industry

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Abstract

This study analyses the impact of female directors and managers on sustainability performance in the banking industry. Drawing on prior studies, we attempt to frame gender diversity, its determinants, and its consequences with respect to financial, social, and environmental performance. Our sample includes 880 bank-year observations from 48 countries over the period 2011–2019. We conduct OLS and probit regressions on the panel data sample. The results show that increasing the proportion of female directors also improves the financial and environmental performance; female managers are keener on the social dimension and in engaging with stakeholders, than female directors. This study extends the current literature in the context of the banking industry, suggesting that banks should focus their efforts on establishing the right combination of female directors and managers. Furthermore, practical implications that encourage gender diversity among policy makers and regulators arise from this research.

KEYWORDS

banks, corporate social responsibility, gender diversity, sustainability performance

1 | INTRODUCTION

Gender equality is Goal 5 of the 2030 Agenda for sustainable development (United Nations, 2015). Although notable steps have been taken on the road to women's rights, full gender equality today is still an objective to be achieved, even more so during the pandemic scenario determined by COVID-19 (United Nations, 2020).

According to the United Nations (2020), the pandemic has exacerbated economic and social inequalities to the detriment of women.

The crucial role of women in leadership has been shown even in times of crisis (Grandy et al., 2020). Indeed, during the Covid-19 pandemic, also in the financial industry, working conditions became tougher for women employees and women leaders. Women carry much more family responsibility than their male colleagues. This has been reflected in a late return to physical workplaces with respect to men (Calabrese et al., 2021). A recent study that investigated the role

of women during the COVID-19 crisis, revealed that women are seen as more effective leaders with respect to their men colleagues. This, because women leaders can better interact as well as engage with their employees (Zenger & Folkman, 2020).

In recent years, financial management scholars have focused on gender studies in the workplace, finding that women's skills, which are often overlooked and undercompensated, play a key role in firms' financial performance (Cabeza-García et al., 2017; Oware & Mallikarjunappa, 2021; Reguera-Alvarado et al., 2017). In more detail, some authors have highlighted that gender diversity provides the top management with a better understanding of the complexities of the organizational environment and thus improves decision making (De Luis-Carnicer et al., 2008; Dwyer et al., 2003; Luanglath et al., 2019). As well as financial performance, gender diversity in the top management positively influences the social performance of firms (Campbell & Mínguez-Vera, 2008; Hafsi & Turgut, 2013; Veltri

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et al., 2021; Yasser et al., 2017). Prior studies have demonstrated that women in top management positions show a greater concern for social relationships, risk awareness, and stakeholder engagement (Amorelli & García-Sánchez, 2020). Moreover, in the early 21st century, women have made major contributions to enhancing the environmental performance of firms and to broadening the research and policy debate on global environmental issues (Charumathi & Rahman, 2019; Hossain et al., 2017).

Corporate governance studies focusing on banks have provided evidence on the relationship between the structure and the characteristics of the boards of directors and the performance of banks. Indeed, previous studies have shown how larger board size improve the effectiveness of monitoring and control activities, with the possibility of better assessing risk management choices (Adams & Mehran, 2012; De Andrés & Vallelado, 2008). More recently, other authors have investigated the presence of a relationship between banks' performance and the multiple factors that characterize corporate governance (Gallucci et al., 2020; Grove et al., 2011; Selvam et al., 2006). Corporate governance scholars have pointed out the need to expand the presence of women in the top and middle management of companies. Hence, empirical evidences have shown that the diversification of corporate bodies generates advantages for the effectiveness of group decision-making mechanisms (Frias-Aceituno et al., 2013; Naciti et al., 2021; Valls Martinez et al., 2019). Indeed, gender diversity can contribute to avoiding dangerous cognitive biases as it favors decision-making mechanisms based on a plurality of views, freely expressed, in a participatory board debate (Frias-Aceituno et al., 2013; Galbreath, 2018).

Accordingly, the topic of gender diversity is part of the debate on the complexity of corporate governance principles for banks (European Banking Authority—European Banking Authority (EBA), 2020a). Previous studies argued that gender diversity on board positively affects bank performance and greater bank stability (Cardillo et al., 2020; García-Meca et al., 2015; Owen & Temesvary, 2018; Sahay et al., 2017). Conversely, Talavera et al. (2018) highlighted that a more heterogeneous board might consider different decisions because of the difference in directors' viewpoints, slowing down the decision process in the boardroom and leading to worse bank performance. The evolution of the banking environment requires governance to implement business models that are consistent with economic and management principles, but also compatible with social and environmental sustainability risks (European Banking Authority (EBA), 2019; EBA, 2020a; European Banking Authority (EBA), 2020b). In this view, the presence of women in the board provides a positive contribution to the effectiveness of governance, in which women supply the development of diversified approaches and usually tend to mitigate risks. Indeed, banks that have a presence of women in the board show on average lower risk profiles because linked to a prudent vision and more oriented towards the stability of the intermediary (De Cabo et al., 2012; García-Sánchez et al., 2015). Furthermore, the presence of women improves the bank's reputation ensuring homogeneous and non-discriminatory approaches to governance (Baselga-Pascual et al., 2018).

Although the topic has gained increasing attention from banking authorities in recent years, there is a gap in the literature as scholars have devoted narrowed attention to the topic of gender diversity in the banking industry. In particular, to our knowledge, there are no studies that focused on the role of women on the board and that of women managers with regard to the three dimensions of performance. In the light of previous considerations, this work investigates how the presence of female directors and managers influences financial, social, and environmental performance. The methodology applied for the analysis is based on a multivariate panel data regression model. The results indicate the importance of specific aspects of banking governance capable of influencing performance and suggest viable trajectories to strengthen the good governance practices of banks.

The work is divided as follows. The second paragraph presents a brief review of the literature, leading to the research hypotheses. The third paragraph describes the sample being analyzed, the fourth paragraph contains the methodology of the research, and the fifth paragraph discusses the results achieved. The sixth paragraph sets out implications and conclusive assessments.

2 | LITERATURE REVIEW AND HYPOTHESES

2.1 | Theoretical background

In the research literature, the issue of gender diversity within boards of directors (BoDs) has been discussed in depth, and studies have adopted multiple theories to frame the topic. Among these, scholars have proposed *the agency theory* and *the resource dependence theory* (Davis & Cobb, 2010; Shapiro, 2005; Ullah et al., 2020; Yoder, 1994).

Following the assumption that managers have an opportunistic attitude and may have objectives that diverge from those of shareholders (*agency theory*; Jensen & Meckling, 1976), the BoD plays the role of representation and safeguards the interests of the property to avoid the so-called agency costs. Against this background, several studies (Adams & Ferreira, 2009; Moreno-Gómez et al., 2018) have focused on the effects that a greater percentage of female directors has on business decisions, showing that female managers' monitoring provides greater protection of the interests of shareholders. This is due to the fact that different backgrounds bring various points of view to the decision-making process (Valls Martinez et al., 2019). Moreover, a recent study has shown that a heterogeneous board performs control and monitoring activities better given that different backgrounds, ages, genders, nationalities, and cultures offer multiple points of view (Pucheta-Martínez & Gallego-Álvarez, 2020).

According to the *resource dependence theory* (RDT; Pfeffer & Salancik, 1978), organizations seek to reduce external uncertainty to ensure the availability of resources for their survival and development (Hillman et al., 2009). The presence of diversity among the members of the BoD allows for a greater number of interconnections with the market and with competitors, which translates into a source of new capital as well as a higher quality of resources and information

(Cordeiro et al., 2020). In this sense, previous studies have agreed that women have better networking characteristics than men and help the company to secure these resources (Bear et al., 2010; Nadeem et al., 2019). Another significant function of the BoD, reinterpreted by the resource theory, concerns the legitimacy of the company in the eyes of the community. Accordingly, the representation of minorities on the board leads to greater approval by citizens, especially regarding gender diversity, given that the lack of women's representation on boards means a potential loss of human capital.

As regards the top management team (TMT) diversity, Dezsö and Ross (2012), analyzing a sample of 1500 companies over a period of 15 years, show that the presence of women in top management increases the performance of management (both Top and Middle) and thus the performance of enterprise. Women do, in fact, contribute to management teams by bringing a diversity of life experiences and providing extra insights into some strategic issues, particularly those involving female clients, collaborators, or business partners.

In general, more diverse groups can benefit from different points of view, consider a broader range of possible solutions, and debate others' points of view more vigorously, resulting in higher-quality decisions, especially when the task requires analyzing and processing a large amount of data, as it does with TMT decisions. Furthermore, the good influence of female presence in TMT, is not confined to the performance of the management team, but also involves other levels of the organization. Indeed, there are times in a person's career when mentoring and other supportive relationships are critical, and because these social relationships are strongly influenced by similarities in certain social factors (i.e., gender), the lack of women in top management positions can be a barrier to women's career advancement.

2.2 | Effects of gender diversity on the three dimensions of sustainability

Studies which focus on the relationship between gender diversity and performance present considerable heterogeneity in their results. Many scholars have found a positive relationship, others a negative one, and still others no relationship. Carter et al. (2003), considering a sample of 638 American companies, found a positive relationship between the presence of women and the market value of the companies measured using Tobin's Q. Similarly, the empirical studies conducted by Christiansen et al. (2016), Darko et al. (2016), Erhardt et al. (2003), and Smith et al. (2006) observed that companies with women on their board showed positive results in their financial and economic performance, such as the ROA and ROE.

Other studies observed how the increase in the percentage of female directors has arisen by specific regulations that have required companies to have a minimum number of women on the board (Joecks et al., 2013; Khan, Khan, & Saeed, 201). On the other hand, further studies on female staff have focused on specific professional or training skills and the way in which these provide added value to cover roles within the boards (Christiansen et al., 2016; Ongore et al., 2015). Huse et al. (2009), discuss the findings of their study on

women and employee-elected board members, as well as fill in some of the gaps in the literature on their impact on board effectiveness. They also looked at the effects of women's esteem and employee-elected board members in the article, and they employed innovative boardroom talks as a mediating variable. The study's major takeaway is that it's more vital to question how, rather than if, women and employee-elected board members contribute, and that we need to crack open the black box of actual board conduct to see how they do so.

The research by Liu et al. (2014) examined the effect of gender diversity on corporate performance for Chinese-listed companies between 1999 and 2011. They showed a strong positive relationship between the presence of executive women and the ROA rather than the presence of independent female directors.

Moreover, Gabaldon et al. (2016) provided a systematic assessment of interdisciplinary theoretical approaches to women on boards to comprehend the reasons that both obstruct and facilitate women's entry to boards, and to demonstrate the tools that may be employed to advance women to top corporate positions. Their findings demonstrate that women's access to corporate boards appears to be scattered in research silos from a variety of fields, with no cohesive vision that provides tools to overcome the constraints that prevent women from serving on corporate boards.

Ranganathan and Shivaram (2020) investigated the effects of managers' gender on organizations' productivity. They found that female managers motivate greater worker productivity than male managers by engaging subordinates and working voluntarily to perform subordinates' routine tasks, which increases subordinates' engagement with their work.

Conversely, other studies, such as those by Adams and Ferreira (2009) and Shrader et al. (1997), have shown that the presence of women has negative effects on accounting performance indicators. In addition, Man (2011) addressed the issue of gender diversity and its influence on corporate performance indicators, highlighting the negative effect of women in terms of Tobin's Q. Ahern and Dittmar (2012), focusing on Norwegian companies, observed that companies that did not have women on the board performed better according to Tobin's Q. Dankwano and Hassan (2018) investigated the effect of gender diversity on Indian firms' financial performance. They used the return on assets (ROA) and return on equity (ROE) to measure financial performance, and the results showed that an increase in the number of female directors had a significant negative impact on the ROA.

Furthermore, some authors have not been able to observe any significant effects of gender diversity on performance indicators (Carter et al., 2010; Francoeur et al., 2008; Rose, 2007). The study by Campbell and Mínguez-Vera (2008) considered companies' value through Tobin's Q and the presence of women. It focused on companies in Spain—a country that foresaw the introduction of the female quota—highlighting that, in this context, organizations should focus on improving the gender balance rather than on the forced presence of women. The results show that gender diversity within the board is not able to influence the value meaningfully.

2.3 | Hypothesis development

In the last decades, gender diversity in the workplace has also become a hot topic in financial institutions. A recent and comprehensive study, *CS Gender 3000*, conducted by the Credit Suisse Research Institute (2016), demonstrated that companies in which women in decision-making roles stand out generate more profits and achieve higher market returns. The report by the Credit Suisse Research Institute (2016) investigated whether there is a link between gender diversity and performance, referring to companies with more than 50% female representation in the top management. In addition, according to another recent study by the European Banking Authority (EBA, 2020a), two-thirds of the credit institutions in Europe have only men at the top. This led the authority to call for banks to implement all the necessary measures to achieve a more balanced composition not only of the boards but also of their managerial structures. Moreover, the study conducted by Arnaboldi et al. (2021) examined the results of 83 listed banks in 21 European countries between 2007 and 2018. They analyzed 146 incidents of misconduct and the resulting sanctions imposed by U.S. regulators. Banks with strong diversity at the top were found to be more compliant with the rules, experiencing a lower level of financial punishment than those with male-dominated boards. Indeed, women bring a special set of skills to corporate boards, including their tendency to be more risk averse than their male counterparts. Likewise, Selvam et al. (2006) investigated the impact of the organizational structure on performance and corporate governance practices in the Indian context. The performance indicators used were Tobin's Q and the ROCE (return on capital employed). The study made a comparison between public sector banks and private sector banks, and the results indicate that the former can implement the best corporate governance practices. In this case, many governance factors were considered, and the results show that some governance profiles, such as the presence of committees or women on the board of directors, are significant with respect to the performance of banks.

Gallucci et al. (2020) demonstrated the existence of a link between women on the board and banks' risk taking, arguing that the moderating role of masculinity at the country level negatively influences board diversity and intensifies women's risk aversion. From various reports (Owen & Temesvary, 2018; Strøm et al., 2014), it is possible to understand that women could reach top positions in a shorter time frame, improving the workplace environment and consequently the company performance (García-Meca et al., 2015).

In light of the above argument and following the aforementioned theories, we hypothesize that:

Hypothesis 1a. A higher percentage of women directors have a positive impact on bank financial performance.

Hypothesis 1b. A higher percentage of women in top management have a positive impact on bank financial performance.

In addition to the economic-financial parameters, scholars have investigated how diversity among board directors can influence corporate social performance (CSP; Boulouta, 2013; Zubeltzu-Jaka et al., 2020).

Defining CSP, Wood (1991) underlines the importance of the principles of social responsibility and interrelation between the individuals that operate in the company as drivers for the achievement of performance and social impacts deriving from the business programs and policies (Esposito et al., 2021). In this perspective, Boulouta's (2013) empirical analysis, based on a sample of 126 American companies over a 5-year period, suggested that board gender diversity significantly influences CSP. The author stated that, within boards of directors, women tend to care for social issues more than men, and this exerts positive effects on corporate performance. Furthermore, she argued that one of the distinctive traits of the female stereotype is looking after social, economic, or environmental aspects, meaning that the company's commitment to these issues is recognized through positive impacts on social performance.

In addition, the analysis by Hafsi and Turgut (2013) considered the effects of diversity within the board and social performance. Firstly, they defined the concept of board diversity by distinguishing the individual members and the overall characteristics of the board. Secondly, they focused on social indicators in evaluating company performance, reinforcing the thesis that there is a relationship between the social environment and the diversity of administration. Thirdly, they found a relationship between board diversity and social performance, demonstrating that diversity on boards is a necessary ingredient of corporate governance.

Cabeza-García et al. (2017) investigated the impact of board gender diversity on corporate social responsibility (CSR) reporting, revealing that a higher percentage of women in boardrooms and in groups of outside and independent directors implies better CSR disclosure (Fernández-Gago et al., 2018). More recently, Provasi and Harasheh (2021) investigated the impact of boards' female representation on corporate financial and sustainability performance. They found no significant effect of females on financial performance and a significant association with corporate sustainability performance.

Moreover, scholars have pointed out that women tend to have a wider range of network relationships, social obligation that aid companies' ability to build interactions with different stakeholder groups (Beckman & Haunschild, 2002; Naciti, 2019; Pulejo et al., 2017; Setó-Pamies, 2015). Since stakeholder relationships are the main drivers of CSP (Clarkson, 1995; Cosma et al., 2021), better relationships with different stakeholders would lead to better CSP.

In light of the above argument, we hypothesize that:

Hypothesis 2a. A higher percentage of women directors have a positive impact on bank social performance.

Hypothesis 2b. A higher percentage of women in top management have a positive impact on bank social performance.

Although financial and social performance are generally more relevant to financial sector issues, banks are increasingly involved in environmental issues (Birindelli et al., 2019). Scholars have highlighted the involvement of financial institutions in environmental responsibility not only because they might grant loans to polluting firms (Krasodomska, 2015; Simpson & Kohers, 2002) but also due to their direct and indirect emissions, such as the production of purchased and used energy, the extraction and production of purchased and consumed combustible materials, and the generation of waste (Gallego-Álvarez & Pucheta-Martínez, 2020; Galletta, Mazzù, Naciti, & Vermiglio, 2021).

Previous studies have shown that the characteristics and structures of the board of directors are related to the adoption of environmental practices. Ciocirlan and Pettersson (2012) investigated a sample of Fortune 500 companies and demonstrated that companies with a larger proportion of females show greater awareness of climate-related issues. In this sense, considering the composition of boards in terms of gender, Kassinis et al. (2016) found that the companies that are more engaged in gender policies are also those that show the best environmental performance. Likewise, Li et al. (2017) argued that gender diversity on board is crucial for the development of good firm environmental policy, especially for those businesses that affect the environment and communities. Moreover, Birindelli et al. (2019) pointed out that the presence of women on the board and CEO women might influence firm's environmental performance. Indeed, with regard to top management teams, it has been argued that the intrinsic cognitive background is related to the presence of women (Byron & Post, 2016; Post & Byron, 2015). Other studies have shown that female directors are associated with better environmental disclosure (Elmagrhi et al., 2019; Fernandez-Feijoo et al., 2014). However, there are studies that have found no positive association between gender diversity and environmental performance (Boulouta, 2013; Glass et al., 2016).

To the best of our knowledge, few studies have highlighted the relationship between gender diversity in the top management and environmental issues. These include the studies by Birindelli et al. (2019), Deschênes et al. (2015), Gangi et al. (2019), and García-Sánchez et al. (2020), which underlined top management gender diversity as an important driver of environmental sustainability in banks.

Drawing from the aforementioned theories, we expect that gender diversity in BoD and at the top management level has a positive impact on environmental performance. Therefore, we formulate the following hypotheses:

Hypothesis 3a. A higher percentage of women directors have a positive impact on bank environmental performance.

Hypothesis 3b. A higher percentage of women in top management have a positive impact on bank environmental performance.

3 | RESEARCH DESIGN

3.1 | Sample and data collection

Our analysis focuses on a sample of 808 observations in 48 countries from 2011 to 2019. Although the original sample contained 3915 observations (bank-year), a lack of data reduced the sample size. Our sample comprises worldwide listed banks. Data on gender were retrieved from the Refinitiv Eikon database, formerly called "Thomson Reuters," which has been used by previous authors in banking industry research (Birindelli et al., 2019; Esteban-Sanchez et al., 2017; Gangi et al., 2019; Helfaya & Moussa, 2017; Shakil et al., 2019). With respect to the aforementioned literature that employed "Asset4," in this study, the data are built on the currently updated Refinitiv Eikon framework, as of December 2020. The bank financial variables were sourced from the Bankfocus database.

Table 1 displays a summary of all the variables included in the analysis. Tables 2 and 3 show, respectively, the descriptive statistics and the correlation between the variables employed. As shown in Table 2, the results of the descriptive statistics analysis show that the highest mean value with respect to the position of women in the workplace belongs to the female employees, followed by the managers, while women on the BoD present the lowest percentage of the group (i.e., 17.7%, highlighting a low presence). The average number of women managers is 37.34% and the maximum values is 66%. The minimum value of the dependent variable, ROA, is negative, which underlines the economic distress experienced by the banking industry even after the financial crisis.

Table 3 presents the pairwise correlation coefficient between the dependent, the independent, and the control variables. The correlation coefficients in bold are significant at the 5% level. Moreover, the correlation coefficients show that the financial performance of banks is positively related to female managers. The absolute values of the coefficients range between 0.61 and 0.02, indicating no evidence of serious multicollinearity. To support this result further, the variance inflation factor (VIF) values in this study are less than 10, confirming that multicollinearity is not an issue.

3.2 | Model

To investigate the relationship between the three performance dimensions (i.e., financial, social, and environmental) and the proportion of women in top-middle management, we estimate the following panel data models with fixed effects, clustering heteroscedasticity standard errors at the bank level to account for the serial correlation of the dependent variables for each bank:

$$\begin{aligned} \text{ROA}_{it} = & \alpha_i + \beta_1 \text{W_BOD}_{it} + \beta_2 \text{W_MANAG}_{it} + \beta_3 \text{W_EMPL}_{it} \\ & + \beta_4 \text{TIER}_{it} + \beta_5 \text{LNTA}_{it} + \beta_6 \text{CINC}_{it} + \beta_7 \text{RWA}_{it} \\ & + \beta_8 \text{BOARDSIZE}_{it} + \beta_9 \text{BOARDSKILLS}_{it} + \delta_t + \varepsilon_{it} \end{aligned} \quad (1)$$

TABLE 1 Description of variables

Variable	Description	Source
Dependent variable		
ROA	Net income by total assets, as profitability of bank assets	BankFocus
SOCIAL_PERF	Dummy variable, coded 1 if the bank engages with its stakeholders, 0 otherwise	Refinitiv Eikon
ENV_PERF	Dummy variable, coded 1 if the bank has a policy to improve emission reduction, 0 otherwise	Refinitiv Eikon
Independent variable		
W_BOD	Percentage of female on the board	Refinitiv Eikon
W_MANAG	Percentage of women managers among total managers of the company	Refinitiv Eikon
Control variables		
W_EMPL	Percentage of women employees to the total number of employees of the company	Refinitiv Eikon
TIER	Tier 1 capital/Risk Weighted assets	BankFocus
LNTA	Natural logarithm of total assets for banking size	BankFocus
CINC	Efficiency Ratio: total operating expenses by total operating income	BankFocus
RWA	Risk weighted asset intensity on total assets	BankFocus
BOARDSIZE	The total number of board members at the end of the fiscal year	Refinitiv Eikon
BOARDSKILLS	Dummy variable coded 1 if the bank describes the professional experience or skills or the age of every board member, 0 otherwise	Refinitiv Eikon

TABLE 2 Descriptive statistics variables

Variable	Obs	Mean	SD	Min	Max
ROA	808	0.93	0.94	−1.54	10.31
SOCIAL_PERF	808	0.72	0.45	0	1
ENV_PERF	808	0.76	0.43	0	1
W_BOD	808	17.77	13.08	0.00	57.14
W_MANAG	560	37.34	12.84	7.69	66.00
W_EMPL	808	51.12	11.38	15.98	70.01
TIER	808	13.47	3.14	7.89	27.88
LNTA	808	18.84	1.63	14.22	21.73
CINC	808	54.04	14.28	3.80	108.47
RWA	808	57.98	18.06	5.20	100.09
BOARDSIZE	808	12.98	4.26	3.00	29.00
BOARDSKILLS	808	0.78	0.41	0.00	1.00

Employing panel regression, we are able to analyze data over a longer period, that is, for 5 consecutive years and up to 9 years in our case. Indeed, this methodology has been implemented in many recent banking studies (Buallay, 2019; Buallay et al., 2020; Siueia et al., 2019). Model 1 considers the financial performance of banks, measured as the ROA, as the dependent variable; β_1 and β_2 are the independent variables used in our hypothesis test. β_3 – β_9 are the control variables; δ_t is a year dummy; and α_i is a bank-specific fixed effect. Including fixed effects takes into account bank characteristics that do not vary over time.

To examine the impact of female directors and managers on banks' social and environmental performance dimensions, we distinguish banks' social and environmental performance into individual measures as dependent variables. Thus, Model 2 is proposed:

$$Y_{it}^* = x_{it}\beta + c_{i1} + u_{it1} \quad (2)$$

$$Y_{it} = 1[Y_{it}^* > 0], t = 1, \dots, T,$$

where Y_{it}^* is a latent variable, Y_{it} is the observed variable, $1[\cdot]$ is an indicator function that takes the value of one if the expression in brackets is true and zero otherwise, x_{it} is a $1 \times M$ vector of time-varying explanatory variables, c_{i1} is the unobserved effect, and u_{it1} is the idiosyncratic error. In the following, the observed covariates are assumed to be strictly exogenous conditional on c_{i1} (Semykina & Wooldridge, 2010, 2018). The latent variable linearly depends on a set of explanatory variables expressed by vector x . The software used to carry out our statistical analysis was STATA 16.

3.3 | Dependent variables

The choice of the dependent variables came from the willingness to investigate the financial, social, and environmental dimensions of corporate performance in banks. Improving financial performance is not the only objective of banks; indeed, to attract more investors, financial institutions must enhance the other performance dimensions that can affect investors' decisions and stakeholders' needs, developing a competitive advantage to be socially beneficial (Galletta, Mazzù, & Naciti, 2021; García-Sánchez et al., 2020).

With the aim of testing our first set of hypotheses, we use the ROA as a financial performance indicator, measuring banks' ability to generate returns on their assets. To test our second set of hypotheses, we use stakeholder engagement as a proxy for the dependent variable indicating social performance (SOCIAL_PERF). It is computed as a dummy variable that equals one if a bank conveys qualitative

TABLE 3 Pairwise correlation

Variable	VIF	1	2	3	4	5	6	7	8	9	10	11	12
ROA		1.000											
SOCIAL_PERF		-0.039	1.000										
ENV_PERF		-0.079	0.446	1.000									
W_BOD	1.53	-0.212	0.132	0.219	1.000								
W_MANAG	1.74	0.162	0.095	0.060	0.039	1.000							
W_EMPL	1.87	0.023	0.200	0.276	0.222	0.615	1.000						
TIER	1.27	0.368	0.104	0.035	0.032	0.062	-0.117	1.000					
LNTA	1.94	-0.263	0.209	0.228	0.164	-0.144	0.071	-0.214	1.000				
CINC	1.21	-0.463	0.058	0.215	0.196	-0.111	0.057	-0.071	-0.065	1.000			
RWA	2.22	0.367	-0.145	-0.247	-0.462	0.082	-0.138	-0.093	-0.514	-0.263	0.367		
BOARDSIZE	1.32	0.279	0.069	0.120	0.152	-0.089	0.140	-0.258	0.336	0.124	-0.214	1.000	
BOARDSKILLS	1.17	0.120	0.153	0.102	0.126	0.149	0.291	0.142	0.129	-0.083	-0.139	-0.157	1.000

Note: Correlation matrix. Coefficients in bold are significant at 5%.

information on how it engages with its stakeholders and zero otherwise (Bătae et al., 2021). The information provided on stakeholder engagement relates to how the company is involving the stakeholders in its decision-making process and what procedures are in place for engagement (Refinitiv Eikon, 2020). Indeed, banks share the values and the guiding principles on which their conduct and decisions are based and are willing to undertake initiatives that testify to their strong commitment to supporting their values in the light of engaging with stakeholders. Stakeholder engagement can be understood as a sequence of activities that an organization implements to involve stakeholders in its decision-making processes in a positive way.

Along with other polluting industries, financial institutions are involved in environmental responsibility (Gallego-Álvarez & Pucheta-Martínez, 2019; Galletta, Mazzù, & Naciti, 2021). Therefore, with the purpose of testing our third set of hypotheses, we employ policy emission reduction as a proxy for the dependent variable, which indicates environmental performance (ENV_PERF). It is determined by considering a dummy variable equals one if a bank has a policy to reduce its emissions and zero otherwise. In addition, emission policies refer to the processes, mechanisms, or programs that a bank has put in place to reduce its emissions in its operations. Moreover, information regarding emission policies pertains to the possibility of a bank adopting a system or a set of formal, documented processes for controlling emissions and driving continuous improvement.

3.4 | Independent variables

The independent variables of interest, which are included in our econometrics analysis, are the proportion of women who are managers and the proportion of women on the board of directors (Birindelli et al., 2019; Buttner & Rosen, 1988; Cucari et al., 2018; Glass et al., 2016). Specifically, W_BOD is computed as the percentage of female directors on the board among the total directors of the bank, while W_MANAG is measured as the percentage of female managers among the total managers of the bank.

3.5 | Control variables

To avoid misspecification in the model, we control for additional variables that could influence the two measurements of the dependent variables. Indeed, the model also includes a variable, W_EMPL, that accounts for the percentage of female employees in each bank (Bezbaruah, 2015; Kim, 2004; Yadav & Dabhade, 2014). In addition, we identify two sets of control variables and include them in the model. The first set controls for the board's dimension (BOARDSIZE) and for its background and skills (BOARDSKILLS). The second set of bank-specific control variables includes bank size (LNTA), capital (TIER), cost-to-income ratio (CINC), which expresses bank efficiency, and a measure of risk, that is, assets weighted by their risk (RWA). Adding the control variables helps us to deal with the omitted variable problem. Moreover, we account for bank fixed effects and control for time dummy variables.

TABLE 4 Panel data analysis

Variable	(1)	(2)	(3)
	ROA	ROA	ROA
W_BOD	0.0056 (0.0009)***	0.0029 (0.0012)*	0.0029 (0.0013)*
L.W_BOD		0.0022 (0.0002)***	
W_MANAG	0.0005 (0.0028)	0.0010 (0.0030)	0.0023 (0.0030)
L.W_MANAG			−0.0029 (0.0004)***
W_EMPL	0.0174 (0.0047)**	0.0173 (0.0066)**	0.0167 (0.0060)**
TIER	0.0127 (0.0172)	0.0124 (0.0182)	0.0135 (0.0135)
LNTA	−0.4799 (0.1676)**	−0.5490 (0.1959)**	−0.6105 (0.2373)**
CINC	−0.0296 (0.0022)***	−0.0305 (0.0023)***	−0.0329 (0.0018)***
RWA	0.0034 (0.0015)*	0.0056 (0.0033)	0.0047 (0.0009)***
BOARDSIZE	−0.0098 (0.0042)*	−0.0079 (0.0056)	−0.0057 (0.0060)
BOARDSKILLS	0.1231 (0.0657)	0.1663 (0.0600)**	0.1794 (0.0533)**
Obs.	560	521	445
Adj. R-squared	0.20	0.19	0.22
Fixed effects	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes

Note: Bank financial performance. Clustered heteroscedasticity standard errors at the bank level account for serial correlation in parentheses.

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

4 | RESULTS

To test the hypotheses, we run separate OLS regressions for both types of female leaders in the workplace (Table 4). Model 1 displays the regression results with both the independent variables, and the main results show that women on the board contribute to increased financial performance, supporting Hypothesis 1. Moreover, to mitigate the concern about persistence and the correlation of past and future values of error terms, we use dynamic panel estimation with lagged independent variables (L.W_BOD, L.W_MANAG). Model 2 presents the outcomes, including the lagged regressor of female directors (L.W_BOD), which shows a positive and statistically significant coefficient together with W_BOD at time t . Thus, considering its lagged regressor, we find that the presence of women on the board of directors has a persistent effect. Model 3 (Table 4) includes the lagged regressor of W_MANAG, which presents a negative and significant sign. However, no evidence supports Hypothesis 1b concerning female managers' effects on financial performance. The significant and positive control variables for enhancing financial performance are female employees and board skills.

As regards social performance, the probit regression outcomes show that, unlike female directors, the share of female managers at time t is positively related to social performance; that is, female managers have a higher probability of engaging with stakeholders in the decision-making process, supporting Hypothesis 2b (Table 5). The lagged regressor of both the independent variables supports Hypotheses 2a and 2b, proving that there is a higher past influence of both

female directors and female managers on the likelihood of engaging with stakeholders.

Our findings suggest a significant effect of female managers on the probability of engaging with stakeholders, meaning that their presence is able to improve the level of social performance. From a policy point of view, female managers should continue to establish two-way communication between the bank and its various stakeholders. In this case, female managers are more likely to engage with stakeholders with respect to women on the board.

With regard to ENV_PERF, the results in Table 5 (columns 3 and 4) indicate that the probability of pursuing policy emissions is higher when considering the share of female directors at time $t - 1$, supporting Hypothesis 3a. The same does not apply to Hypothesis 3b, for which an increasing proportion of female managers at time $t - 1$ decreases the possibility of a bank undertaking emission strategies. This implies that banks have raised climate change as a governance priority for board members and CEOs in emission policy formation and risk management. Conversely, with respect to top management members, the negative sign associated with female managers indicates a need to re-examine the emerging role of the top management in climate change oversight.

4.1 | Robustness checks

To support the findings reported in the previous section further, we conduct several robustness checks. First, we replace the dependent variable ROA with its natural logarithm, which has already been

TABLE 5 Probit analysis

Variable	(1)	(2)	(3)	(4)
	SOCIAL_PERF	SOCIAL_PERF	ENV_PERF	ENV_PERF
W_BOD	0.0008 (0.0271)	-0.0242 (0.0337)	0.0054 (0.0040)	0.0168 (0.0106)
L. W_BOD	-0.0456 (0.0290)		0.0106 (0.0062)*	
W_MANAG	0.0621 (0.0264)**	0.0469 (0.0331)	-0.0030 (0.0048)	-0.0061 (0.0070)
L. W_MANAG		0.0333 (0.0156)**		-0.0042 (0.0023)*
W_EMPL	-0.0234 (0.0378)	-0.0219 (0.0380)	0.0269 (0.0060)***	0.0440 (0.0089)***
TIER	0.1830 (0.0895)**	0.1675 (0.0352)***	0.1065 (0.0103)***	0.1365 (0.0241)***
LNTA	0.9862 (0.2608)***	0.8536 (0.4143)**	0.4642 (0.0427)***	0.5133 (0.0065)***
CINC	0.0390 (0.0190)**	0.0421 (0.0026)***	0.0442 (0.0037)***	0.0498 (0.0026)***
RWA	-0.0037 (0.0203)	0.0118 (0.0105)	0.0060 (0.0045)	0.0069 (0.0059)
BOARDSIZE	0.0596 (0.0599)	0.0979 (0.0321)***	0.0117 (0.0154)	-0.0005 (0.0130)
BOARDSKILLS	-0.3879 (0.6230)	0.5748 (0.3200)*	-0.5629 (0.1093)***	-0.8706 (0.1126)***
Obs.	521	445	521	445
Time Dummies	Yes	Yes	Yes	Yes
Pseudo-R ² /R ²	0.16	0.15	0.27	0.32

Note: Stakeholder engagement and policy emission. Standard errors clustered at the individual level in parentheses.

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

employed as the dependent variable in previous literature on the banking sector (Buallay et al., 2020). The use of the logarithm is also intended to normalize its density function, proving that the dependent variable shows high persistence. Second, the results reported in the previous sections might be biased by several methodological limitations. In particular, endogeneity is the major concern about selection bias and reverse causality between the variables chosen. As before, to address this issue, we add the independent variables lagged with respect to the natural logarithm of the ROA to check the effect of the previous year of the gender diversity policy in our sample of banks (Table 6, Models 3–5). Indeed, considering the lagged variables mitigates the likelihood of endogeneity (Birindelli et al., 2019; Galletta & Mazzù, 2019).

As well as the previous results, Model 4 (Table 6) confirms that past values exert an influence on performance indicators, assuming that the financial performance of banks at time “ t ” is affected by the past gender composition of the board of directors, which could play a role in enhancing the performance indicators at time $t + 1$. This finding can be explained by bank businesses relying on more efficient allocation of authority and responsibilities (Basel Committee on Banking Supervision, 2015).

As a further robustness test, we include the squared term of the independent variable representing female directors on the board as an explanatory variable to allow for a curvilinear relationship. Table 6 (Models 1 and 2) presents the regression model outcomes with the quadratic terms of the independent variable, W_BOD. Adding the quadratic term of female directors confirms that the relationship between the independent variable and the financial performance is nonlinear. Indeed, the quadratic term of women on the BoD (W_BOD) shows a U-shaped relationship (Table 6, Model 2), supporting a positive effect on the ROA. These results are confirmed using the lags of the quadratic terms for the independent variables of interest (Table 6, Model 2).

Furthermore, we perform a regression using the CSR sustainability report variable as an alternative measure of social and environmental performance. It is computed as a dummy variable equals one if a bank publishes a non-financial report on the environmental and social impact of banks' operations, and zero otherwise. The significant coefficients of the estimation confirm the previous results, namely that a bank is more likely to engage with its stakeholders through the attention paid by female managers to the various issues in the company reports on the social impact of its operations.

TABLE 6 Dynamic panel data analysis

Variable	(1) ROA OLS	(2) ROA OLS	(3) LNROA OLS	(4) LNROA OLS	(5) LNROA OLS	(6) CSR Probit
W_BOD	-0.0001 (0.0020)		0.0149 (0.0052)***	0.0810 (0.0168)***	0.0153 (0.0045)***	-0.0104 (0.0684)
L.W_BOD		0.0031 (0.0008)**		0.0570 (0.0111)***		
W_BOD ²	0.0347 (0.0081)***					
L.W_BOD ²		0.0209 (0.0054)**				
W_MANAG			-0.0037 (0.0038)	0.0288 (0.0403)	-0.0032 (0.0033)	0.2289 (0.1021)**
L.W_MANAG					0.0037 (0.0035)	
W_EMPL	0.0055 (0.0028)	0.0024 (0.0039)	0.0013 (0.0122)	0.0316 (0.0494)	0.0001 (0.0154)	-0.0882 (0.1205)
TIER	0.0460 (0.0187)*	0.0381 (0.0184)*	0.0232 (0.0153)	-0.0323 (0.1651)	0.0220 (0.0177)	0.6660 (0.3663)*
LNTA	-0.3415 (0.0683)***	-0.3688 (0.0783)***	-0.4376 (0.1558)***	-5.8772 (2.1392)**	-0.4801 (0.2026)**	4.1815 (0.9323)***
CINC	-0.0334 (0.0011)***	-0.0333 (0.0012)***	-0.0251 (0.0045)***	-0.3737 (0.0135)***	-0.0225 (0.0041)***	0.2299 (0.0638)***
RWA	0.0019 (0.0027)	0.0034 (0.0023)	0.0041 (0.0061)	-0.1011 (0.0164)***	0.0053 (0.0076)	0.2554 (0.0757)***
BOARDSIZE	0.0030 (0.0118)	0.0027 (0.0103)	-0.0169 (0.0146)	0.0087 (0.1184)	-0.0128 (0.0122)	0.8510 (0.2614)***
BOARDSKILLS	0.0006 (0.0423)	0.0238 (0.0540)	0.1905 (0.0815)**	1.2441 (0.5869)*	0.2995 (0.0895)***	-5.4809 (3.4449)
Obs.	808	739	530	521	423	560
Adj. R-squared	0.23	0.21	0.23	0.2616	0.2572	0.14
Fixed effects	Yes	Yes	Yes	Yes	Yes	No
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes

Note: Clustered heteroscedasticity standard errors at the bank level account for serial correlation in parentheses.

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

5 | DISCUSSION

Using Refinitiv Eikon and Bankfocus databases for the data collection, we proposed different methodologies, specifically OLS and probit. We estimated multivariate linear and, subsequently, probit regressions with panel data in which the continuous dependent variable ROA measured financial performance, while the binary dependent variable SOCIAL_PERF took the value one if a bank engages with its stakeholders and zero otherwise. In addition, to consider the organizational perspective of productivity gains, we controlled for the share of female employees. The results show that the proportion of female directors helps to increase financial performance, while the probit model estimation reveals that female managers are more likely to engage with stakeholders than female directors. Meanwhile, regarding ENV_PERF, that is, the emission policies pursued by banks, an increase in the percentage of women on the board shows a positive impact on the probability of undertaking emission reduction strategies. According to these perspectives, emission policies are a useful tool for financial institutions to improve stakeholders' awareness in accordance with social values (Alsaifi et al., 2020). Indeed, disseminating the information that stakeholders expect to receive is a way to ensure greater transparency and obtain social legitimacy (Knox-Hayes & Levy, 2011).

Finally, the robustness tests performed, employing other dependent variables (log ROA and CSR reporting), confirm the previous outcomes that banks benefit from female directors and managers in

terms of financial, social, and environmental performance, respectively. Moreover, we added lagged regressors to control for the endogeneity issue and checked for a curvilinear relationship of female directors by adding a quadratic term to the regression analysis. Since our analyses show that there are potential benefits from having more women in leadership positions, the results have implications for policy makers, encouraging gender diversity, as well as for regulators (Cosma et al., 2021).

What emerges from our study is that, on the one hand, banks with female directors are proving to the market their oversight ability to adapt to the rapidly developing regulatory environment by mitigating climate risks. Conversely, at the management level, there is still a need to implement more formal climate change policies and governance programs, which require greater attention from female managers.

6 | IMPLICATIONS AND CONCLUSION

In our study, we explored the relationship between gender diversity and bank performance, considering the financial, social, and environmental dimensions. Specifically, we examined the effects of the female proportion of the top and middle management in a sample of worldwide banks after the financial crisis, from 2011 to 2019. While the topic has been the subject of much debate, there is a gap in the literature regarding gender diversity in the banking industry; thus, we

clarified the contribution of female directors and managers to banks' financial, social, and environmental performance.

The implications of our research concern four different issues. First, the results indicate that increasing the presence of female directors and female managers in banks fosters value creation and might improve their financial and social performance. Following the *resource dependence theory*, directors play a leading role in an organization's environment and the fulfillment of the critical tasks, and the objectives set. Notably, female directors, due to their different traits, such as better networking and socialization skills, can help banks to reduce the uncertainties concerning their dependence on the external environment. This leads to improved efficiency of the board in decision making and information flow.

Second, in line with the *agency theory*, the results show that a larger proportion of female directors affects financial performance. Indeed, the agency theoretical view suggests that the role of the BoD, with its active monitoring and controlling, is an important driver to moderate agency problems. These have been found to be widespread practices when the board gender diversity increases.

Third, the evidence that TMT gender diversity has good benefits on social performance suggests that financial institutions should work on improving gender diversity in their TMTs, even if, based on our study, they do not have a significant effect on financial performance. Indeed, based on the social justice for gender diversity and its impact on corporate social performance, they should continue to strive for a stronger representation of women in top management (Byron & Post, 2016).

Fourth, the results support the best practice evidence indicating that gender diversity on boards significantly increases sustainability performance (Chartered Institute of Personnel and Development—Chartered Institute of Personnel and Development (CIPD), 2015; European Central Bank—European Central Bank, 2020). With reference to women in top management, banks will benefit through the direct effect of the proportion of female managers on social performance. This is an important finding as it suggests that women make a contribution in terms of the diversity of life experiences in management teams with respect to stakeholder demands. Indeed, the relationships between ethics and business are an essential issue: the stakeholder approach requires more since it claims to be founded on the idea of an intrinsic, close, and synergistic connection between ethics and business (Addabbo et al., 2020; Moore, 2001).

Nevertheless, this study suffers from some limitations which can be seen as future research. First, the sample includes banks from different countries, which differ in their regulation and the government policies aimed at addressing gender equality issues. In this respect, future research could be oriented towards analyzing the impact of gender diversity in organizations belonging to countries that are implementing the goals of the Agenda 2030 for sustainable development. Secondly, in this study, variables such as age, culture, nationality, education and which could indirectly influence the direct relationship between the percentage of women and the performance of banks were not included. In this sense, future research could investigate the moderating effect of the variables mentioned.

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