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Corporate Governance and ESG Controversies: Navigating Risk-Taking in Banks

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Correspondence: Nicola Del Sarto (nicola.delsarto@unifi.it)**Received:** 16 October 2024 | **Revised:** 16 January 2025 | **Accepted:** 10 February 2025**Funding:** The authors received no specific funding for this work.**Keywords:** banking industry | corporate governance | ESG controversies | risk management | sustainable development

ABSTRACT

This study examines the impact of environmental, social, and governance (ESG) controversies on bank risk, focusing on the moderating role of corporate governance. Using a dynamic panel dataset of 88 European banks from 2013 to 2020, we analyze two key risk measures: the Z-score, indicating financial stability, and risk-weighted assets (RWAs), reflecting risk exposure. The findings reveal that banks facing ESG controversies are exposed to heightened risk, with corporate governance playing a crucial role in moderating these effects. Strong governance structures, characterized by board diversity and independence, are found to mitigate the financial risks associated with ESG controversies, whereas weak governance amplifies these risks. Our results contribute to the growing literature on ESG and bank risk by highlighting the complexities introduced by ESG controversies and the essential role of governance in managing these risks. These insights are relevant for both academics and practitioners seeking to enhance risk management frameworks in the banking sector.

JEL Classification: G21, G34, Q56

1 | Introduction

The integration of environmental, social, and governance (ESG) factors into financial institutions has gained increasing prominence in both academic research and industry practice (La Torre et al. 2024). ESG considerations are widely recognized as essential for promoting long-term financial stability and managing risks, particularly in the banking sector. A significant body of research (Friede et al. 2015; Eccles et al. 2014; Bauer and Hann 2010; Goss and Roberts 2011) has established that banks with strong ESG performance tend to experience lower financial risks and enhanced stability, aligning with stakeholder theory, which suggests that ethical behavior and good governance strengthen corporate reputation and financial resilience.

Although much of the literature focuses on the positive effects of ESG performance, the potential negative impacts of ESG controversies—defined as incidents reflecting failures in environmental, social, or governance practices, such as governance scandals, environmental mismanagement, or social misconduct—are less understood. ESG controversies can lead to substantial financial risks even for banks with strong ESG practices. Recent work by Galletta and Mazzù (2023) highlights this issue, showing that banks with fewer ESG controversies are associated with lower risk-taking behaviors, evidenced by reduced risk-weighted assets (RWAs) and higher Z-scores. Similarly, other studies (Di Tommaso and Thornton 2020; Cai et al. 2016) have argued that ESG controversies heighten firm-level risk through reputational damage, operational disruptions, and increased regulatory

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scrutiny. Dyck et al. (2019) further suggest that negative ESG events amplify financial risks through significant stakeholder pressure and regulatory penalties.

Despite these insights, the existing literature has not sufficiently explored the role of corporate governance in moderating the relationship between ESG controversies and bank risk. Governance factors—such as board size, composition, diversity, and independence—may influence how banks manage the fallout from ESG controversies. For instance, well-composed and diverse boards may mitigate risks by fostering better decision-making and oversight, but weaker governance structures could exacerbate both financial and reputational damages (Adams and Ferreira 2009; Coles et al. 2008; Gerged et al. 2023). Moreover, most studies treat ESG as a homogeneous construct, assuming a straightforward relationship between high ESG performance and lower financial risk (Menla Ali et al. 2024; Nollet et al. 2016; Cheng et al. 2014). This perspective oversimplifies the dynamics at play, as ESG controversies can introduce complexities that undermine the anticipated risk-reducing benefits of strong ESG performance (Gangwani and Kashiramka 2024).

This study addresses these gaps by posing two key research questions: How do ESG controversies impact bank risk? How do corporate governance structures, such as board size, diversity, and independence, moderate this relationship?

To answer these questions, we analyze a comprehensive dataset of 88 publicly traded European banks from 2013 to 2020, focusing on two measures of bank risk: the Z-score, which reflects financial stability, and RWAs, which indicate the risk exposure of a bank's asset portfolio. By incorporating corporate governance variables as moderators, this study provides a nuanced understanding of the interplay between ESG controversies and governance mechanisms.

This paper makes two key contributions. First, it provides empirical evidence on the underexplored relationship between ESG controversies and bank risk, addressing a critical gap in the literature. Second, it enhances our understanding of how corporate governance structures influence this relationship, demonstrating their pivotal role in determining whether banks can effectively manage ESG-related risks. By bridging two important streams of research—ESG performance and corporate governance—this study contributes to the academic debate and offers valuable insights for risk management practices in the banking sector.

2 | Theoretical Background and Hypothesis Development

2.1 | The Role of ESG Controversies in Banks' Risk-Taking Behavior

For banks, ESG issues represent a critical dimension of financial risk, commonly referred to as ESG risk (Di Tommaso and Thornton 2020). These risks stem from potential violations of ESG principles, inadequate management of ESG-related controversies, and insufficient integration of ESG factors into

risk management frameworks. ESG controversies—such as regulatory breaches, environmental incidents, or social misconduct—can significantly undermine financial stability by damaging reputations, increasing regulatory scrutiny, and eroding stakeholder trust. Consequently, banks are increasingly compelled to adopt robust ESG measurement and scoring techniques to proactively manage these risks (Galletta and Mazzù 2023).

The relationship between ESG performance and risk-taking behavior in banks can be understood through two theoretical perspectives: stakeholder theory and agency theory. Stakeholder theory posits that banks mitigate risks by building strong reputations and creating “moral capital” through ethical behavior and proactive ESG practices. By addressing the interests of various stakeholders—such as customers, employees, and regulators—banks can reduce reputational and operational risks. Strong ESG performance, particularly in governance and environmental management, fosters trust and loyalty, leading to greater financial stability (Friede et al. 2015). Importantly, ESG controversies directly undermine this trust, transforming moral capital into reputational liabilities, which can amplify risks and reduce stakeholder support during crises (Ortas et al. 2015).

In contrast, agency theory offers a more skeptical view, emphasizing the potential costs of ESG initiatives. Managers, acting as agents for shareholders, may overinvest in ESG practices to enhance personal reputations or satisfy a diverse range of stakeholders. This overinvestment can divert resources from profitable activities and elevate operational costs, ultimately increasing the bank's risk exposure (Di Tommaso and Thornton 2020). ESG controversies further complicate this dynamic by exposing potential misalignments between managerial actions and shareholder interests. For instance, controversies may indicate poor oversight or inefficiencies in resource allocation, highlighting governance deficiencies that exacerbate financial risk.

Empirical evidence underscores the nuanced relationship between ESG practices, controversies, and risk. Although some studies demonstrate that strong ESG performance reduces risk-taking behavior, the presence of ESG controversies appears to negate these benefits. Galletta and Mazzù (2023) found that banks with fewer ESG controversies exhibit lower RWAs and higher Z-scores, reflecting more prudent risk-taking behavior. Similarly, Shakil (2021) demonstrated that ESG controversies in the oil and gas sector significantly moderate the relationship between ESG performance and financial risk, reducing the protective effects of ESG practices. These findings suggest that though ESG practices may enhance resilience, controversies introduce reputational and regulatory risks that can destabilize banks.

Board characteristics, such as diversity and size, also play a pivotal role in managing ESG controversies. Di Tommaso and Thornton (2020) found that gender-diverse and independent boards significantly enhance governance, reducing the likelihood of ESG controversies and their adverse effects. However, Anginer et al. (2014) caution that overly shareholder-focused governance structures may inadvertently increase systemic risk. These findings highlight the importance of balanced governance structures in mitigating ESG-related risks while promoting sustainable financial performance.

Despite growing interest in ESG, the literature on ESG controversies and their specific role in bank risk-taking remains underdeveloped. Recent studies suggest that controversies not only erode the benefits of strong ESG performance but also introduce additional complexities in risk management (Ortas et al. 2015; Shakil 2021). For example, Tamimi and Sebastianelli (2017) found that higher ESG scores correlate with lower risk profiles, but this relationship weakens in the presence of controversies.

In conclusion, ESG controversies play a critical role in shaping banks' risk-taking behavior, moderating the relationship between ESG performance and financial stability. Whereas stakeholder theory highlights the risk-reduction potential of strong ESG practices, agency theory emphasizes the potential risks associated with managerial overinvestment. To better understand these dynamics, future research should explore the long-term effects of ESG controversies on bank stability, incorporating insights into board characteristics and governance structures to provide a more comprehensive analysis.

2.2 | ESG Practices and Banks' Riskiness

The literature on the impact of ESG practices on financial performance (Orazalin et al. 2024; Robinson and McIntosh 2022) has increasingly expanded to examine their relationship with bank risk. Empirical findings consistently suggest that ESG practices are negatively associated with bank risk, demonstrating their capacity to mitigate operational, reputational, and regulatory risks (Bolton 2013; Citterio and King 2023; Di Tommaso and Thornton 2020; Gangi et al. 2019). This focus on ESG factors has been further accelerated by regulatory and supervisory frameworks, which increasingly require the integration of climate and environmental risks into business model analysis and internal governance.

Recent studies highlight that strong ESG performance contributes to reducing risk levels in banks. For instance, Di Tommaso and Thornton (2020) found that high ESG scores correlate with lower levels of risk-taking across institutions, irrespective of their initial risk profile. Similarly, Citterio and King (2023) demonstrate that integrating ESG dimensions into financial distress models improves their predictive accuracy, thereby reducing the misclassification of distressed banks as healthy. These results indicate that ESG practices enhance the robustness of risk management systems, fostering greater financial stability.

The relationship between ESG practices and risk is nuanced, particularly when considering the distinct contributions of the ESG components. Chiaramonte et al. (2022) found that each ESG pillar contributes uniquely to reducing bank fragility, with the governance component often playing the most significant role. Governance structures that include independent and diverse boards strengthen oversight and reduce systemic risks (Di Tommaso and Thornton 2020). Furthermore, Gangi et al. (2019) found that banks with a strong commitment to corporate social responsibility (CSR) exhibit lower risk levels, consistent with stakeholder theory. This theory posits that responsible banking practices foster trust and loyalty among stakeholders, thereby reducing reputational and operational risks.

Although the benefits of ESG practices are well documented, the potential role of ESG controversies in undermining these benefits has received limited attention (Korzeb et al. 2025). Research in other sectors suggests that controversies—such as regulatory violations or governance failures—can erode the advantages of strong ESG performance. For instance, Shakil (2021) found that ESG controversies significantly weaken the risk-reducing benefits of ESG practices in the oil and gas sector, introducing new dimensions of financial and reputational risk. Similarly, Ortas et al. (2015) argue that ESG controversies not only diminish the positive effects of ESG initiatives but also create additional challenges for risk management.

The integration of ESG practices into banking is driven not only by their risk-reducing potential but also by external pressures from regulatory bodies and stakeholders. Regulatory mandates for ESG disclosure and integration into risk management frameworks have compelled banks to align their practices with global trends in transparency and sustainability. These pressures, combined with increasing stakeholder expectations, underscore the strategic importance of ESG practices in enhancing banks' resilience to financial shocks. In view of the above, as our research explores the connection between banks' risk and ESG controversies, we propose the following:

Hypothesis 1. *Banks' overall risk is positively related to their ESG controversies' score.*

2.3 | The Moderating Effect of Corporate Governance Dimensions

The interplay between ESG factors and bank risk-taking has garnered significant scholarly attention in recent years, with a particular focus on the moderating role of corporate governance dimensions. ESG controversies, such as environmental spills, labor disputes, or governance scandals, can lead to reputational damage, legal liabilities, and financial losses, thereby influencing a bank's risk profile. Studies such as those by Shakil (2021) highlight that ESG controversies can weaken the protective effects of high ESG scores on financial risk, suggesting that these controversies exacerbate risk-taking behaviors in banks. Corporate governance, encompassing board structure, ownership concentration, executive compensation, and shareholder rights, plays a critical role in mitigating these risks. Research indicates that smaller, more independent, and gender-diverse boards (Iannotta et al. 2007), concentrated yet balanced ownership (Anginer et al. 2018), long-term performance-linked executive compensation (Bolton 2013), and robust shareholder rights (Citterio and King 2023) can effectively moderate the relationship between ESG controversies and bank risk-taking. These governance mechanisms ensure proactive risk management and alignment of management actions with long-term sustainability goals, buffering against the negative impacts of ESG controversies (Galletta et al. 2021). Conversely, weak governance structures may fail to mitigate, or even exacerbate, these risks. Empirical evidence, such as the findings by Di Tommaso and Thornton (2020), supports the notion that strong governance practices reduce volatility in risk profiles despite ESG controversies, whereas poor

governance, as noted by Gangi et al. (2019), leads to more pronounced risk-taking behaviors. Thus, the integration of robust corporate governance is crucial for banks to navigate the complexities of ESG risks and enhance their overall risk management frameworks.

The relationship between ESG practices and bank risk is complex, with board size playing a key moderating role. Larger boards bring diverse expertise and perspectives, which enhance decision-making, oversight, and the integration of ESG considerations into banks' strategies (Coles et al. 2008). By allocating specific responsibilities, such as establishing sustainability committees, larger boards strengthen governance and risk management processes (Klein 2002).

According to resource dependency theory, larger boards access broader external resources and specialized knowledge, essential for addressing ESG challenges effectively (Hillman and Dalziel 2003). Additionally, stakeholder theory highlights their ability to represent diverse interests, ensuring ESG factors are thoroughly integrated into risk management and reducing reputational and operational risks (Lokuwaduge and Heenetigala 2017).

Empirical evidence supports the role of board size in moderating ESG–risk relationships. Banks with larger boards exhibit better governance practices, including ESG oversight, which lowers risk levels (Leung et al. 2019; Gangi et al. 2019). Robust discussions and focused ESG oversight in larger boards enhance accountability and ensure proactive risk mitigation (Yatim 2010).

In conclusion, board size positively moderates ESG practices' impact on bank risk, as larger boards improve governance quality and reduce risks from ESG controversies, fostering greater bank stability (Adams and Mehran 2012).

Hypothesis 2. *Board size positively moderates the ESG controversies' impact on the risk of banks.*

Existing research consistently shows that strong ESG practices are associated with reduced financial and operational risks in banks, as they enable better management of ESG challenges (Hoepner et al. 2019). ESG integration allows banks to mitigate risks tied to environmental regulations, social upheavals, and governance scandals, contributing to greater financial stability and lower cost of capital (Eccles et al. 2014; Goss and Roberts 2011). At the same time, gender diversity on corporate boards has been linked to improved decision-making, ethical conduct, and responsiveness to stakeholder concerns—factors that contribute to stronger corporate governance and risk management (Adams and Ferreira 2009; Erhardt et al. 2003). Research suggests that a gender-diverse board, rather than a board composed solely of women, brings a range of perspectives that enhance board functionality and oversight (Carter et al. 2003). Women directors, in particular, are more likely to prioritize stakeholder interests and sustainability initiatives, further reinforcing the positive effects of ESG practices (Bear et al. 2010; Post et al. 2011). Studies indicate that gender-diverse boards are more effective in implementing and overseeing ESG policies, leading to more robust risk mitigation

strategies (Frias-Aceituno et al. 2013; Galbreath 2018). Recent studies further confirm these findings. For instance, Paolone et al. (2024) demonstrated that European banks with gender-diverse boards, particularly those achieving a critical mass of at least three female directors, experienced significant improvements in ESG performance and risk mitigation. Similarly, Odriozola et al. (2024) highlights that increasing the proportion of female directors contributes to enhanced ESG performance, emphasizing that it is the diversity of perspectives, rather than the presence of women alone, that drives these improvements.

Building on these insights, we propose that the diversity between men and women on corporate boards—rather than the sheer presence of women—plays a key role in moderating the relationship between ESG practices and bank risk. Diversity in board composition can enhance the decision-making process and strengthen governance, enabling better risk management and more effective ESG implementation. Above arguments allowed us to formulate the following hypothesis:

Hypothesis 3. *Women ratio on board positively moderates the ESG controversies' impact on the risk of banks.*

Existing research underscores the critical role of independent directors in enhancing corporate governance by providing impartial oversight and reducing agency conflicts, which strengthens risk management (Dahya et al. 2008). Their independence allows them to prioritize long-term value creation over short-term managerial interests, aligning closely with the objectives of ESG practices (Hillman and Dalziel 2003). Independent directors are particularly effective in driving the implementation and monitoring of ESG initiatives, as their focus on transparency and accountability ensures that ESG policies are rigorously enforced (Ben-Amar et al. 2017).

From a theoretical perspective, agency theory suggests that independent directors mitigate agency conflicts by aligning managerial decisions with shareholder and stakeholder interests. This alignment is crucial for managing ESG-related risks, as it ensures a focus on ethical standards and stakeholder priorities, which are integral to effective ESG integration (Chang et al. 2017). Furthermore, independent directors bring diverse expertise, such as regulatory or environmental knowledge, that strengthens a board's capacity to address ESG controversies and proactively manage associated risks.

Empirical studies provide strong support for this moderating role. For instance, Ben-Amar et al. (2017) found that boards with a higher proportion of independent directors demonstrate superior oversight of ESG initiatives, improving both governance quality and risk mitigation. Similarly, Chang et al. (2017) highlight that independent directors' impartiality enhances stakeholder trust, further amplifying ESG's positive effects on a bank's risk profile. These findings indicate that independent directors contribute to the robustness of ESG strategies by ensuring they are effectively implemented and monitored. Given the evidence, we hypothesize:

Hypothesis 4. *Independent ratio on board positively moderates the ESG controversies' impact on the risk of banks.*

Research on corporate governance indicates that the average age of board members can significantly shape their approach to risk management and decision-making. Older directors often bring a wealth of professional experience, long-term perspectives, and crisis management expertise, which can enhance the oversight and implementation of ESG initiatives (Vafeas 2003). Their extensive industry knowledge and professional networks allow them to address the complexities of ESG practices more effectively, ensuring that these strategies are not only adopted but rigorously enforced (Boone et al. 2007).

From a theoretical standpoint, resource dependency theory highlights that the knowledge and connections of seasoned board members enable them to access and utilize external resources more effectively. This is particularly important for addressing ESG-related risks, as older directors can leverage their experience to anticipate and mitigate ESG challenges (Kor and Sundaramurthy 2009). Additionally, stakeholder theory suggests that older directors may prioritize sustainable practices and ethical governance, driven by their stronger commitment to legacy, reputation, and long-term value creation (Hillman et al. 2011).

Empirical evidence supports the idea that the average age of board members positively influences governance quality and risk management. Kim and Starks (2016) found that boards with older directors are more effective at mitigating ESG risks, particularly in ensuring comprehensive and transparent ESG policy enforcement. Their seasoned judgment and cautious approach contribute to prudent risk management, reducing the likelihood of ESG controversies and enhancing overall bank stability. Given these considerations, we hypothesize:

Hypothesis 5. *Board average age positively moderates the ESGC controversies' impact on the risk of banks.*

Figure 1 provides a simple schematic structure that summarizes the main elements (board size, women ratio, independent ratio, and average age) upon which research hypotheses has been built.

3 | Methodology

3.1 | Dataset

To explore the relationship between ESG controversies and bank risk-taking, along with the moderating role of corporate governance, we examine a sample of 88 publicly traded European banks from 2013 to 2020. The focus on European banks is driven by the increased attention that European supervisory authorities place on ESG issues within financial institutions and markets. This regional emphasis is particularly relevant given Europe's stringent regulatory landscape and proactive approach to promoting sustainable finance (Busch et al. 2016).

The selected timeframe, 2013–2020, aligns with significant macroeconomic and regulatory developments that have shaped ESG practices and risk management in the banking sector. This

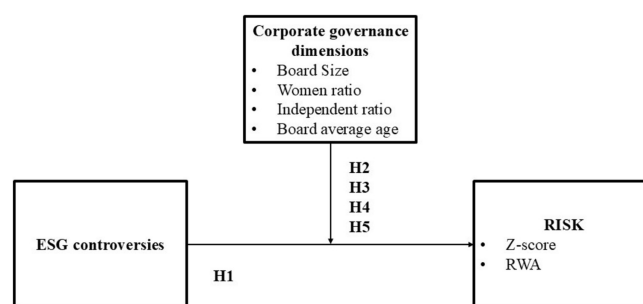


FIGURE 1 | Graphical representation of theoretical model.

period captures critical events such as the implementation of the European Union's Action Plan on Sustainable Finance and the Paris Agreement in 2015, which heightened the focus on environmental and social responsibility within financial institutions. Additionally, regulatory changes such as the EU Non-Financial Reporting Directive (2014/95/EU), effective from 2017, introduced stricter reporting requirements for ESG-related activities. These factors likely influenced banks' behavior regarding ESG practices, making this timeframe particularly pertinent for our analysis.

Our dataset is constructed using two comprehensive sources—Refinitiv and Bank Focus—which provide extensive and reliable financial and non-financial information, ensuring the rigor of our study. By leveraging these data, we aim to contribute to the ongoing discussion on how ESG controversies impact bank risk and how corporate governance can mitigate these risks.

3.2 | Measures and Variables

This study investigates the impact of ESG controversies on bank risk, with a focus on the moderating role of corporate governance dimensions. The primary independent variable is the ESG Controversies (ESGC) score, a widely used metric that quantifies a firm's exposure to ESG-related controversies and negative events reported globally. The ESGC score ranges from 0 to 100, with higher scores indicating lower exposure to controversies—specifically, a score of 100 signifies the absence of controversies, but lower scores reflect greater exposure. This metric follows methodologies established by Capelle-Blancard and Petit (2019) and Liang and Renneboog (2017) and is particularly valuable for assessing reputational and operational risks stemming from ESG issues.

The dependent variables include the Z-score, a measure of financial stability where higher values indicate lower risk (Boyd and Runkle 1993; Čihák and Hesse 2010), and the ratio of RWA to total assets, which reflects the risk profile of a bank's asset portfolio, with higher ratios denoting greater risk (Van Hoose 2007).

To examine the moderating influence of corporate governance, we analyze four key variables: Board Size (BS), Women Ratio on the Board (WR), Independent Ratio (IR), and Board Average Age (BAA). These dimensions were selected based on

their significance in governance literature, which highlights the influence of board size (Coles et al. 2008), gender diversity (Adams and Ferreira 2009), independent directors (Birindelli et al. 2018), and director age (Anderson et al. 2004) on governance outcomes. All variables are lagged by 1 year to account for delayed effects, and interaction terms between ESGC and the governance variables are included to assess how governance moderates the ESG–risk relationship.

The dependent variable, RISK, encompasses alternative measures of bank risk for bank i in year t , specifically the RWA-to-total assets ratio and the natural logarithm of the Z-score. To reduce model misspecification, we include bank-specific control variables that influence risk measures. However, when the Z-score is used as the dependent variable, the total equity-to-assets ratio and return on assets (ROA) are excluded as control variables to prevent redundancy, as these factors are already embedded in the Z-score.

The model incorporates year, bank, and country fixed effects to account for time-based, institutional, and regional heterogeneity. By including these controls and examining interactions

between ESGC and corporate governance dimensions, the study provides a nuanced understanding of how governance can mitigate the risks associated with ESG controversies.

Table 1 reports the description of the variables.

3.3 | Analytical Procedures

To analyze the effect of the ESGC score on bank risk and the moderating effect of corporate governance dimensions, we employ the feasible generalized least squares (FGLS) model. The choice of FGLS is supported by preliminary tests. The Breusch–Pagan Lagrange multiplier (LM) test confirmed the presence of significant random effects, whereas Hausman test indicated fixed effects were preferable. These tests, reported in Table 2, guided the decision to adopt a panel data approach. Additionally, the FGLS model was selected due to its ability to address heteroscedasticity and first-order autocorrelation, as detected through further diagnostics. This approach ensures robust and efficient estimates, addressing econometric challenges in the dataset.

TABLE 1 | Summary of variables.

Variable	Source	Description
Independent variable		
<i>ESG Controversies Score</i>	Refinitiv DataStream	ESG Controversies Score measures a company's exposure to environmental, social, and governance controversies and negative events reflected in global media (0–100)
Dependent variable		
<i>Z-score (dep V)</i>	Own calculation	$\text{Log} \left[\frac{\text{return on assets} + (\text{equity}/\text{asset})}{\text{standard deviation of return on assets}} \right]$
<i>RWA (dep V)</i>	Bank Focus	Risk-weighted asset/total assets
Moderator variable		
<i>Board Size (BS)</i>	Bank Focus	Number board's members
<i>Women Ratio (WR)</i>	Bank Focus	Number of women over the total size of the board
<i>Independent Ratio (IR)</i>	Bank Focus	Number of independent board members over the total size of the board
<i>Board Average Age (BAA)</i>	Bank Focus	Average age of board members
Control variables		
<i>Size</i>	Bank Focus	Natural logarithm of total assets
<i>Tier</i>	Bank Focus	The ratio of Tier 1 capital to risk weighted assets at given year
<i>ROA</i>	Bank Focus	Net income by average total assets, as profitability of a bank assets
<i>NONINT</i>	Bank Focus	Non-interest income/total operating income
<i>NLTA</i>	Bank Focus	Net loans/total assets
<i>LADSTF</i>	Bank Focus	Liquid assets/deposits and short-term funding
<i>Liquidity asset ratio (LIQ)</i>	Bank Focus	(Cash and due from banks þ other earnings assets) divided by total assets
<i>GDP</i>	World Bank	Annual percentage growth rate of GDP per capita
<i>Inflation</i>	World Bank	The annual growth rate of the GDP deflator

TABLE 2 | Preliminary tests.

Test	Null hypothesis	Statistic	<i>p</i>	Decision
Breusch–Pagan LM test	No significant random effects	25.34	0	Reject null hypothesis
Hausman test	Random effects model is consistent	18.76	0.002	Reject null hypothesis

Our main econometric models are the following:

$$\begin{aligned} \text{RISK}_{it} = & \alpha_i + \beta_1 \text{ESGC}_{it-1} + \beta_2 \text{SIZE}_{it-1} + \beta_3 \text{TIER}_{it-1} \\ & + \beta_4 \text{ROA}_{it-1} + \beta_5 \text{NONINT}_{it-1} + \beta_6 \text{NLTA}_{it-1} + \beta_7 \text{LADSTF}_{it-1} \\ & + \beta_8 \text{LIQ}_{it-1} + \beta_9 \text{GDP}_{it-1} + \beta_{10} \text{INF}_{it-1} + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{RISK}_{it} = & \alpha_i + \beta_1 \text{ESGC}_{it-1} + \beta_2 \text{CGD}_{it-1} + \beta_3 \text{ESGC}_{it-1} \\ & \times \text{CGD}_{it-1} + \beta_4 \text{SIZE}_{it-1} + \beta_5 \text{TIER}_{it-1} + \beta_6 \text{ROA}_{it-1} \\ & + \beta_7 \text{NONINT}_{it-1} + \beta_8 \text{NLTA}_{it-1} + \beta_9 \text{LADSTF}_{it-1} \\ & + \beta_{10} \text{LIQ}_{it-1} + \beta_{11} \text{GDP}_{it-1} + \beta_{12} \text{INF}_{it-1} + \varepsilon_{it} \end{aligned} \quad (2)$$

3.4 | Endogeneity

Endogeneity represents a critical methodological challenge in analyzing the relationship between ESG controversies and bank risk. A primary source of endogeneity is simultaneity or reverse causality, where ESG controversy scores may influence bank risk and bank risk levels could also affect future ESG controversy scores (Wintoki et al. 2012). To address this, we employ the two-step system generalized method of moments (GMM), a widely recognized approach in the literature (e.g., Farag and Mallin 2017; Kahloul, Sbai, and Grira 2022) and recent studies on ESG controversies (Elamer and Boulhaga 2024). This method is favored over two-stage least squares (2SLS) regression due to the difficulty in identifying appropriate instrumental variables for such complex relationships (Arellano and Bond 1991; Kahloul, Sbai, and Grira 2022). The dynamic panel GMM approach uses lagged values of the dependent and control variables as internal instruments, effectively addressing endogeneity concerns (Wintoki et al. 2012; Roodman 2009). Model validity is confirmed through the Hansen test (Hansen and Singleton 1982) and the Arellano–Bond test (Arellano and Bond 1991), ensuring that the results are robust and reliable.

4 | Results

4.1 | Descriptive Statistics

Table 3 presents the descriptive statistics for the key variables used in the study, including the mean, standard deviation, and the range (minimum and maximum) for each variable. The dataset comprises 578 observations across all variables, providing a solid foundation for the analysis. The data exhibits a wide range of values, reflecting significant variation among the firms in terms of ESG performance, financial health, board characteristics, and macroeconomic conditions. The mean values offer insight into the central tendencies within the sample, whereas the standard deviations and range indicate substantial diversity and dispersion of characteristics across firms.

This variability suggests that the dataset captures a broad spectrum of corporate governance structures, financial performance levels, and external economic conditions, making it well suited for examining the interactions between these factors in relation to financial stability and performance. The wide range of data points facilitates an in-depth analysis of how these variables influence each other. The correlation analysis shows a negative relationship between ESGC and variables such as ROA, BA, and LIQ, whereas the presence of women on boards correlates positively with the dependent variables. Despite some correlations indicating potential multicollinearity, the VIF values are within acceptable limits, suggesting that multicollinearity is not a concern (Farooq and Ahmad 2023; Gull et al. 2023).

4.2 | The Effect of ESG Controversies on Banks' Riskiness

The results of the regression analysis presented in Table 4 examine the effect of ESGC on banks' riskiness using two different dependent variables: the Z-score (Model 1) and RWAs (Model 2). The Z-score is a measure of financial stability, where higher values indicate lower risk, whereas RWA reflects the risk exposure of the bank's asset portfolio, with higher values indicating greater risk.

In Model 1, the coefficient for ESGC (lagged) is positive and statistically significant (0.045, $p < 0.01$), indicating that higher ESGC scores are associated with an increase in the Z-score. As Refinitiv's ESGC score is scaled from 1 to 100, with higher values reflecting fewer controversies, this result suggests that banks with fewer ESG controversies are perceived as more financially stable and less risky. This finding supports Hypothesis 1, which posited that banks' overall risk decreases with better ESG controversy performance. This is consistent with the interpretation in Galletta and Mazzù (2023), who find similar results when testing the relationship between ESG controversies and bank risk.

In Model 2, the ESGC (lagged) variable shows a negative and statistically significant relationship with RWA (-0.102 , $p < 0.01$). Given the scaling of ESGC, this indicates that banks with fewer ESG controversies hold less risky asset portfolios. This also supports Hypothesis 1, as it suggests that lower ESG controversies (i.e., better ESGC performance) are associated with reduced risk exposure in the bank's asset portfolio. These findings align with the notion that banks with better ESG controversy scores may proactively manage risk, possibly as part of broader efforts to align with stakeholder expectations and regulatory pressures.

Together, the results of Models 1 and 2 underscore the importance of interpreting the ESGC score correctly. Higher ESGC values reflect better performance (fewer controversies), which is associated with reduced risk and greater financial stability.

TABLE 3 | Descriptive statistics.

Variable	Obs	Mean	SD	Min	Max	VIF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
ESGCS	578	89.10	24.60	45	100	1.22	1																
Z-score	578	4.12	0.96	0.37	8.25	1.21	0.012	1															
RWA	578	62.15	16.40	32.01	87.27	1.17	0.321	0.100	1														
BS	578	13.80	4.23	3.87	6.45	1.14	0.111*	0.542	0.005	1													
WR	578	0.24	0.12	0.00	0.35	1.34	0.432	0.365	0.432	0.670	1												
IR	578	0.62	0.19	0.19	1	1.21	0.121*	0.054	0.123	0.056	0.454	1											
BAA	578	57.42	2.43	52.42	65.27	1.22	-0.123*	0.023	0.543	-0.006	0.268*	0.021	1										
Size	578	17.60	1.81	13.42	21.50	1.34	-0.432	0.045	0.154	0.056*	0.045	0.034*	0.213	1									
Tier	578	13.62	2.50	10.10	19.41	1.45	0.006*	0.065	0.043*	0.432	0.343	0.333	0.444	0.441	1								
ROA	578	1.06	0.92	-2.50	13.40	1.32	-0.045*	0.112	0.056	0.121	0.001	0.123	0.240*	0.433	0.432	1							
NONINT	578	34.10	18.43	-1.12	117.64	1.23	0.054	0.321	0.433*	0.432	-0.180*	0.543	0.113	0.221	0.422	0.432	1						
NLTA	578	59.30	16.20	0.61	92.56	1.11	-0.109	0.322	0.012	-0.122	0.034	0.332	0.221	0.443	0.323	0.333*	0.032	1					
LADSTF	578	49.60	238.36	2.12	6210.84	1.10	-0.123	0.111	0.321	-0.123*	0.054	0.154	-0.129*	0.123	0.123	0.125	0.333	0.123	1				
LIQ	578	0.34	0.12	0.09	0.79	1.22	-0.067*	0.432	0.444	-0.317*	0.112	0.222	0.213	-0.273*	0.365	0.444	0.054*	0.043	0.432	1			
GDPg	578	0.08	3.67	-12.51	9.50	1.15	0.542	0.045	0.234	0.345	0.030*	0.173	0.333	-0.469*	0.143	0.123	0.432	0.012	0.123	0.343*	1		
INFig	578	3.75	10.13	-25.54	33.75	1.18	0.412*	0.232*	0.231*	0.122	0.111	0.289	0.543	0.341	0.023	0.333	0.021	0.043*	0.231	0.3212	0.043	1	

*Correlations are significant at 0.05 level (Pearson, two-tailed).

TABLE 4 | Analytical results: Bank Risk taking and ESGC relationship.

Variable	Model 1 (Z-score)	Model 2 (RWA)
<i>ESGC score (lag)</i>	0.045*** (3.46)	-0.102*** (-3.93)
<i>SIZE (lag)</i>	-0.038** (-4.12)	0.215** (2.54)
<i>TIER (lag)</i>	0.080*** (3.88)	-0.160 (0.88)
<i>ROA (lag)</i>	0.470*** (3.15)	-2.480*** (-3.57)
<i>NONINT (lag)</i>	0.029** (1.90)	0.210** (2.14)
<i>NLTA (lag)</i>	-0.022* (-1.92)	0.098** (2.31)
<i>LADSTF (lag)</i>	0.010 (0.71)	-0.054 (0.78)
<i>LIQ (lag)</i>	0.033** (2.56)	-0.198** (-2.22)
<i>GDPG (lag)</i>	0.050 (0.67)	0.080 (0.88)
<i>INF (lag)</i>	-0.054** (2.33)	0.215* (1.85)
Constant	3.200*** (3.55)	3.410*** (3.64)
Year effect	Yes	Yes
Bank effect	Yes	Yes
Country effect	Yes	Yes

Note: This table presents the results of the panel feasible generalized least squares (FGLS) estimation. All explanatory variables are lagged by 1 year, as detailed in Table 1. The model includes bank, country, and year fixed effects, though these are not displayed in the table. T statistics are shown in parentheses. The significance levels are indicated as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The total number of observations is 578.

These findings contribute to the growing evidence, as highlighted by Galletta and Mazzù (2023), that banks with stronger ESG controversy performance are better positioned to mitigate risk, supporting the theoretical underpinnings of Hypothesis 1.

The control variables in both models provide meaningful insights into banks' risk profiles. For example, bank size (*SIZE*) has a negative and significant effect on the Z-score in Model 1, indicating that larger banks are perceived as slightly riskier in terms of financial stability. Conversely, in Model 2, larger banks are associated with higher RWAs, suggesting that they tend to hold riskier asset portfolios. ROA, representing profitability, has a strong positive impact on the Z-score and a negative impact on RWAs, confirming that more profitable banks are seen as more stable and less risky.

Overall, the results support Hypothesis 1, as the data indicate that higher ESGC scores (reflecting fewer controversies) are associated with reduced financial risk. Specifically, banks with higher ESGC scores demonstrate behaviors that enhance financial stability and lower risk exposure, as evidenced by their higher Z-scores and lower RWAs. These findings emphasize the importance of ESG performance in shaping banks' risk profiles and suggest that better management of ESG controversies may contribute to reduced risk, aligning with the broader literature on the relationship between ESG factors and financial stability (Galletta and Mazzù 2023). This underscores the need to consider both direct and indirect effects of ESG factors when evaluating the overall risk profile of banks.

4.3 | The Moderating Role of Corporate Governance Dimensions

This section examines the moderating effects of various corporate governance dimensions on the relationship between ESGC and banks' financial stability, measured by the Z-score. Four models are analyzed, each incorporating a distinct corporate governance variable as a moderator: *Board Size (BS)*, *Women Ratio on the Board (WR)*, *Independent Ratio (IR)*, and *Board Average Age (BAA)*.

Model 3 investigates the moderating effect of *Board Size (BS)*. The results confirm that the ESGC score (lagged) remains positively and significantly associated with the Z-score (0.035, $p < 0.01$), indicating that fewer ESG controversies (higher ESGC scores) are linked to improved financial stability. Additionally, the main effect of *Board Size* is positive and significant (0.15, $p < 0.01$), suggesting that larger boards contribute to greater financial stability. However, the interaction term between ESGC and BS ($ESGC*BS$) is negative and significant (-0.002 , $p < 0.05$), implying that the positive effect of ESG management on financial stability diminishes as board size increases. This suggests that although larger boards can enhance overall stability, their complexity or slower decision-making processes may mitigate the benefits of ESG-related strategies.

Model 4 explores the role of the *Women Ratio (WR)* on the board as a moderator. The ESGC score (lagged) remains positively and significantly associated with the Z-score (0.050, $p < 0.01$), confirming that better ESG performance is linked to greater financial stability. Furthermore, the *Women Ratio* itself has a positive and significant effect (0.180, $p < 0.05$), indicating that gender diversity positively influences financial stability. The interaction term ($ESGC*WR$) is also positive and significant (0.019, $p < 0.05$), demonstrating that gender diversity amplifies the beneficial impact of ESG controversies on financial stability. These findings highlight the importance of diverse perspectives in strengthening the effectiveness of ESG-related strategies.

Model 5 examines the *Independent Ratio (IR)* as a moderating variable. Once again, the ESGC score (lagged) shows a positive and significant relationship with the Z-score (0.045, $p < 0.01$), suggesting that improved ESG performance contributes to financial stability. The *Independent Ratio* also has a positive and significant effect (0.150, $p < 0.01$), indicating that a higher proportion of independent directors is associated with increased financial stability. Additionally, the interaction term ($ESGC*IR$)

is positive and significant (0.008, $p < 0.01$), suggesting that independent directors enhance the positive effects of ESG performance on financial stability. This underscores the critical role of independent oversight in effectively leveraging ESG strategies.

Model 6 investigates the moderating role of *Board Average Age (BAA)*. The ESGC score (lagged) continues to positively and significantly impact the Z-score (0.040, $p < 0.01$), confirming that better ESG performance is associated with enhanced financial stability. However, neither the main effect of BAA nor the interaction term ($ESGC*BAA$) is significant, suggesting that board members' average age does not significantly influence the relationship between ESG controversies and financial stability. This result may indicate that age diversity on boards plays a less critical role compared to other governance dimensions.

The findings reported in Table 5 emphasize the importance of corporate governance characteristics—particularly board size, gender diversity, and independence—in moderating the relationship between ESG controversies and financial stability. Larger boards, while generally stabilizing, may reduce the marginal benefits of ESG management. In contrast, gender diversity and independent directors significantly enhance the positive effects of ESG strategies. Meanwhile, board age appears less impactful in this context. Collectively, these results contribute to a deeper understanding of how governance structures interact with ESG performance to influence financial outcomes, highlighting the interplay between internal governance mechanisms and external sustainability practices.

Model 7 assesses the moderating effect of *Board Size (BS)*. The results indicate that ESGC scores (lagged) are negatively and significantly related to RWA (-0.120 , $p < 0.01$), suggesting that fewer ESG controversies (higher ESGC scores) are associated with lower risk exposure in banks' asset portfolios. *Board Size* also has a negative and significant effect (-0.180 , $p < 0.05$), indicating that larger boards correlate with reduced risk exposure. However, the interaction term ($ESGC*BS$) is positive and significant (0.004, $p < 0.05$), implying that as board size increases, the risk-reducing effect of better ESG performance diminishes. This suggests that larger boards may moderate the relationship by reducing the effectiveness of ESG-related improvements in lowering risk exposure.

Model 8 explores the role of the *Women Ratio (WR)* on the board as a moderator. The ESGC score (lagged) remains negatively and significantly associated with RWA (-0.110 , $p < 0.01$), reaffirming that fewer ESG controversies reduce risk exposure. The *Women Ratio* itself is positively associated with RWA (0.250, $p < 0.05$), indicating that a higher proportion of women on the board is linked to higher risk exposure. Interestingly, the interaction term ($ESGC*WR$) is positive and significant (0.005, $p < 0.05$), suggesting that gender diversity amplifies the relationship between ESG performance and RWA. This could imply that although gender diversity increases sensitivity to ESG factors, it may also intensify risk exposure in certain contexts.

Model 9 examines the *Independent Ratio (IR)* as a moderator. The ESGC score (lagged) continues to show a significant negative relationship with RWA (-0.123 , $p < 0.01$), indicating that

fewer ESG controversies are associated with lower risk exposure. The *Independent Ratio* has a positive and significant effect on RWA (0.180, $p < 0.05$), suggesting that higher proportions of independent directors are associated with greater risk exposure. However, the interaction term ($ESGC*IR$) is not statistically significant, indicating that the presence of independent directors does not significantly alter the relationship between ESG controversies and risk exposure. This contrasts with the Z-score analysis, where the Independent Ratio had a significant moderating effect on financial stability.

Model 10 investigates the moderating role of *Board Average Age (BAA)*. ESGC scores (lagged) remain negatively and significantly associated with RWA (-0.121 , $p < 0.05$), supporting the finding that fewer ESG controversies lead to lower risk exposure. The main effect of BAA is positive and significant (0.167, $p < 0.05$), indicating that older boards are associated with greater risk exposure. However, the interaction term ($ESGC*BAA$) is not significant, suggesting that the average age of board members does not significantly moderate the relationship between ESG controversies and risk exposure. This aligns with the findings from the Z-score analysis, where board age also had no significant moderating effect.

The findings shown in table 6 highlight that corporate governance characteristics play a nuanced role in moderating the relationship between ESG performance and risk exposure. Although larger boards and gender diversity show significant moderating effects, these effects vary in their direction and magnitude. Notably, the *Independent Ratio* and *Board Average Age* do not appear to significantly influence the relationship between ESG controversies and RWA, suggesting that these governance factors may have more impact on financial stability measures (e.g., Z-score) than on asset risk exposure. These results contribute to a more comprehensive understanding of how governance structures interact with ESG factors to shape banks' risk profiles.

4.4 | Endogeneity and Robustness Tests

To address endogeneity, we employ the two-step system GMM approach, which leverages a firm's historical attributes as valid instruments to mitigate unobserved heterogeneity and simultaneity issues (Roodman 2009; Wintoki et al. 2012). In Table 7, we present the results of the GMM model, where lagged values of the dependent and control variables are used as internal instruments. The Arellano–Bond test for residual autocorrelation confirms the absence of significant second-order autocorrelation, indicating no simultaneity concerns. Additionally, the Hansen test for overidentifying restrictions yields non-significant results, affirming the validity of the instruments.

The two-step GMM regression demonstrates a significant relationship between ESGC and bank risk, with corporate governance variables acting as moderators in this relationship (Table 7). These findings are consistent across all proxies for bank performance in both models. Overall, the results of the two-step system GMM, as shown in Table 7, confirm that the baseline model results in Tables 4 and 5 are robust and not affected by endogeneity concerns.

TABLE 5 | Moderating role of corporate governance characteristics. Dependent variable: Z-score.

Variable	Model 3	Model 4	Model 5	Model 6
<i>ESGC score (lag)</i>	0.035*** (2.78)	0.050*** (2.81)	0.045*** (2.88)	0.040*** (3.90)
<i>BS (lag)</i>	0.15*** (2.63)			
<i>ESGC*BS (lag)</i>	-0.002* (-1.66)			
<i>WR (lag)</i>		0.180* (1.61)		
<i>ESGC*WR (lag)</i>		0.019* (1.69)		
<i>IR (lag)</i>			0.150** (2.20)	
<i>ESGC*IR (lag)</i>			0.008** (2.19)	
<i>BAA (lag)</i>				0.045 (1.11)
<i>ESGC*BAA (lag)</i>				0.001 (1.13)
<i>SIZE (lag)</i>	0.022* (1.71)	0.030* (1.74)	0.020* (1.90)	0.025* (1.76)
<i>TIER (lag)</i> (1.44)	0.012 (1.12)	0.025 (1.10)	0.03 (1.09)	0.035
<i>ROA (lag)</i>	0.245*** (2.59)	0.27*** (2.71)	0.25*** (3.17)	0.26*** (3.98)
<i>NONINT (lag)</i>	0.015 (1.23)	0.02** (2.31)	0.01* (1.80)	0.015* (1.76)
<i>NLTA (lag)</i>	-0.014** (-2.39)	-0.015** (-2.44)	-0.012* (-1.75)	-0.013* (-1.94)
<i>LADSTF (lag)</i>	0.011 (1.21)	0.005 (1.24)	0.015 (1.10)	0.010 (1.06)
<i>LIQ (lag)</i>	0.018* (1.73)	0.025* (1.72)	0.022* (1.69)	0.020* (1.80)
<i>GDPG (lag)</i>	0.008 (1.34)	0.007 (1.30)	0.007 (1.21)	0.005 (0.79)
<i>INF (lag)</i>	-0.01 (-1.13)	-0.012* (-1.72)	-0.009* (-1.74)	-0.008 (0.89)
Constant	3.41*** (3.89)	0.03*** (3.91)	0.891*** (3.77)	1.34 (0.97)

(Continues)

TABLE 5 | (Continued)

Variable	Model 3	Model 4	Model 5	Model 6
Year effect	Yes	Yes	Yes	Yes
Bank effect	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes

Note: This table presents the results of the panel feasible generalized least squares (FGLS) estimation. All explanatory variables are lagged by 1 year, as described in Table 1. The model includes bank, country, and year fixed effects, which are not reported in the table. T statistics are shown in parentheses. Significance levels are indicated as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The number of observations is 578.

The results of the diagnostic tests confirm that the panel FGLS regression model is robust and reliable. Both the Breusch–Pagan and White's heteroskedasticity tests returned high p values (0.322 and 0.285, respectively), indicating no evidence of heteroskedasticity. Likewise, the Wooldridge and Breusch–Godfrey tests for autocorrelation produced high p values (0.504 and 0.305), suggesting no presence of autocorrelation. The Ramsey RESET test validated the correct specification of the model ($p = 0.248$). The Jarque–Bera test indicated that the residuals are normally distributed ($p = 0.512$), and Pesaran's test for cross-sectional dependence showed no significant correlation across entities ($p = 0.294$). Taken together, these results confirm that the model satisfies key assumptions and is free from issues such as heteroskedasticity, autocorrelation, model misspecification, non-normal residuals, or cross-sectional dependence. These findings support the robustness and validity of the model's estimates. The test results are shown in Table 8.

5 | Discussion

Turning to the individual hypotheses, the results provide nuanced evidence on the moderating effects of corporate governance characteristics on the relationship between ESG controversies and bank risk. The analysis tests four hypotheses, examining the role of board size, women ratio on boards, independent ratio, and board average age in moderating the ESG–risk relationship.

The results from Models 3 and 7 provide partial support for Hypothesis 2 (*Board size positively moderates the ESG controversies' impact on the risk of banks*). In Model 3, board size is positively associated with financial stability (Z-score), and the interaction term between ESG controversies and board size is negative and significant. This indicates that larger boards reduce the positive impact of ESG controversies on financial stability, potentially due to greater decision-making complexity or inefficiencies in addressing ESG-related issues. Conversely, in Model 7, the interaction term is positive and significant for risk exposure (RWA), suggesting that larger boards amplify the risk associated with ESG controversies. These findings suggest a dual role of board size: Although it stabilizes financial performance, it may also increase sensitivity to ESG-related risks in asset portfolios, aligning with the hypothesis in the context of RWA but not for Z-score.

The empirical results from Models 4 and 8 support Hypothesis 3 (*Women ratio on board positively moderates the*

ESG controversies' impact on the risk of banks). In both models, the interaction term between ESG controversies and the proportion of women on boards is positive and significant. This suggests that gender diversity enhances the sensitivity of banks to ESG controversies, amplifying their effects on both financial stability and risk exposure. Although a higher women ratio improves the board's ability to engage with ESG factors, it also heightens risk exposure, as evidenced by the significant interaction in RWA. These results confirm that gender diversity plays a critical role in shaping the ESG–risk relationship, consistent with the hypothesis.

The findings provide mixed evidence for Hypothesis 4 (*Independent ratio on board positively moderates the ESG controversies' impact on the risk of banks*). In Model 5, the interaction term between ESG controversies and the independent ratio is positive and significant, indicating that a higher proportion of independent directors enhances the positive impact of ESG performance on financial stability (Z-score). However, in Model 9, the interaction term is not significant for RWA, suggesting that independent directors do not significantly influence the relationship between ESG controversies and risk exposure. This indicates that the moderating effect of independent directors is more relevant for stability metrics than for asset risk, providing partial support for the hypothesis.

The results from Models 6 and 10 do not support Hypothesis 5 (*Board average age positively moderates the ESG controversies' impact on the risk of banks*). In both models, the interaction terms between ESG controversies and board average age are not significant, suggesting that the age of board members does not play a meaningful role in moderating the relationship between ESG controversies and bank risk, whether measured by financial stability (Z-score) or risk exposure (RWA). This lack of significance leads to the rejection of the hypothesis.

Overall, the findings offer partial support for the proposed hypotheses. Although board size and gender diversity significantly moderate the relationship between ESG controversies and bank risk, their effects vary depending on the risk measure. Independent directors show a more limited impact, and board average age does not appear to play a significant moderating role. These results underscore the complexity of governance–ESG interactions, highlighting the importance of tailoring governance strategies to effectively manage ESG-related risks in the banking sector. Future research should further explore these dynamics to provide a more comprehensive understanding of how corporate governance structures influence the financial implications of ESG factors.

TABLE 6 | Moderating role of corporate governance characteristics. Dependent variable RWA.

Variable	Model 7	Model 8	Model 9	Model 10
<i>ESGC score (lag)</i>	-0.120*** (-2.91)	-0.110*** (-3.88)	-0.123** (-2.12)	-0.121* (-1.76)
<i>BS (lag)</i>	-0.180** (-2.49)			
<i>ESGC*BS (lag)</i>	-0.004* (-1.95)			
<i>WR (lag)</i>		-0.250** (-2.41)		
<i>ESGC*WR (lag)</i>		0.005** (2.43)		
<i>IR (lag)</i>			-0.180* (-1.90)	
<i>ESGC*IR (lag)</i>			0.004 (0.58)	
<i>BAA (lag)</i>				-0.167** (-2.18)
<i>ESGC*BAA (lag)</i>				0.014 (0.99)
<i>SIZE (lag)</i>	0.250** (2.53)	0.200** (2.48)	0.150* (1.75)	0.142* (1.68)
<i>TIER (lag)</i>	-0.130 (-0.98)	-0.140 (-0.71)	-0.090 (-0.78)	-0.070 (-0.95)
<i>ROA (lag)</i>	-2.600*** (-3.01)	-2.300*** (-3.98)	-2.1** (-1.44)	-2.13** (-1.41)
<i>NONINT (lag)</i>	0.120** (2.08)	0.130** (2.12)	0.050 (0.98)	0.053 (1.21)
<i>NLTA (lag)</i>	0.080** (2.18)	0.085** (2.23)	0.081** (2.21)	0.089** (2.27)
<i>LADSTF (lag)</i>	0.020 (1.10)	0.030 (1.01)	0.030 (1.18)	0.028 (1.22)
<i>LIQ (lag)</i>	-0.280** (-2.40)	-0.270** (-2.31)	-0.17*** (-3.88)	-0.178*** (-3.76)
<i>GDPG (lag)</i>	0.030 (1.11)	0.025 (1.15)	0.020 (1.10)	0.017 (1.16)
<i>INF (lag)</i>	0.090* (1.90)	0.095* (1.88)	0.04 (1.09)	0.046 (0.87)
Constant	10.000*** (3.88)	12.000*** (1.10)	8.000 (0.12)	1.343

(Continues)

TABLE 6 | (Continued)

Variable	Model 7	Model 8	Model 9	Model 10
Year effect	Yes	Yes	Yes	Yes
Bank effect	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes

Note: This table presents the results of the panel feasible generalized least squares (FGLS) estimation. All explanatory variables are lagged by 1 year, as described in Table 1. The model includes bank, country, and year fixed effects, which are not reported in the table. *T* statistics are shown in parentheses. Significance levels are indicated as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The number of observations is 578.

6 | Implications and Conclusion

This study provides a comprehensive analysis of the relationship between ESG controversies and bank risk, with a specific focus on the moderating role of corporate governance. By utilizing a dynamic panel dataset of 88 publicly traded European banks from 2013 to 2020, the research explores the dual impact of ESG controversies on financial stability (measured by the Z-score) and risk exposure (measured by RWAs). The findings reveal that banks facing ESG controversies experience heightened financial risks. However, this effect is significantly influenced by governance structures, with attributes such as board size, gender diversity, and independence playing a critical role in moderating these impacts.

The study extends the existing literature on ESG performance and corporate governance by highlighting the complexities introduced by ESG controversies. It challenges the prevailing assumption that strong ESG performance uniformly reduces risk, demonstrating that controversies can erode these benefits. Additionally, the research underscores the importance of tailored governance strategies in mitigating the risks associated with ESG controversies, particularly within the highly regulated and interconnected banking sector.

6.1 | Theoretical Contributions

This study makes significant theoretical contributions by advancing the understanding of how ESG controversies interact with corporate governance mechanisms to influence bank risk. By addressing key gaps in the literature and building on prior studies, including Galletta and Mazzù (2023), this research extends existing frameworks on ESG and corporate governance while providing novel insights into the unique dynamics of the banking sector.

First, this study shifts attention within the ESG literature to the often-overlooked negative dimensions of ESG, particularly ESG controversies. Whereas much of the prior research emphasizes the benefits of strong ESG performance in enhancing firm stability and resilience (Friede et al. 2015; Eccles et al. 2014), this study highlights the dual-edged nature of ESG involvement. ESG controversies—such as governance failures or environmental mismanagement—can erode the risk-reducing effects of positive ESG practices, transforming these factors into sources of financial risk. By demonstrating that ESG factors do not uniformly mitigate risk, this research challenges the prevailing assumption of their inherent

stability-enhancing properties, offering a more nuanced understanding of the conditions under which ESG practices may introduce vulnerabilities.

Second, the study contributes to stakeholder theory by elucidating how governance mechanisms mediate the relationship between ESG practices and financial stability. Ethical and responsible practices generally support stability, but their effectiveness depends on governance structures that are adequately equipped to address ESG-related challenges. Failures in any ESG domain, particularly when governance mechanisms are poorly designed, can amplify financial risks (Hebb et al. 2010; La Torre et al. 2024). By empirically demonstrating that the financial outcomes of stakeholder-oriented practices are contingent on governance effectiveness, this research enriches stakeholder theory, emphasizing the nonlinear and context-dependent nature of the relationship between ESG factors and financial outcomes.

Third, this research provides a detailed examination of the differentiated roles of board characteristics—such as size, gender diversity, and independence—in moderating the relationship between ESG controversies and risk. Although traditional perspectives often assert that larger boards and greater gender diversity improve governance by fostering diverse perspectives and enhancing decision-making (Adams and Ferreira 2009), this study challenges these assumptions. The findings reveal that such attributes may introduce complexities during ESG controversies. Larger boards, for instance, may encounter coordination challenges, whereas gender-diverse boards may experience divergent viewpoints that hinder consensus-building in high-stakes crises (Coles et al. 2008). By exploring these dynamics, the study contributes new insights into the interplay between board composition and ESG risk management.

Finally, this research differentiates banks from nonfinancial corporations by emphasizing their unique characteristics, including systemic importance, heightened regulatory oversight, and interconnectedness within financial markets. Banks operate under stricter regulatory frameworks, such as capital adequacy requirements and stress testing, which significantly influence governance practices and risk management strategies (Berger et al. 2016; Vives 2016). These regulatory constraints often limit board discretion, shaping governance practices in ways distinct from those in nonfinancial corporations. Moreover, the systemic importance of banks amplifies the consequences of ESG failures, creating ripple effects that extend across the broader financial system and heightening reputational and financial risks (Allen and Carletti 2013).

TABLE 7 | GMM robustness.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<i>Z-score (lag)</i>	0.213** (2.26)		0.054* (1.71)	0.028** (2.23)	0.134*** (3.67)	0.321* (1.68)				
<i>RWA (lag)</i>		0.130* (1.77)					0.6** (2.08)	0.58** (2.12)	0.59* (1.67)	0.575*** (3.81)
<i>ESGC (lag)</i>	0.052*** (2.82)	-0.085** (-2.15)	0.075** (2.76)	0.09* (1.82)	0.075** (2.15)	0.085** (2.17)	-0.08* (1.80)	-0.07* (1.84)	-0.065* (-1.65)	-0.07*** (-3.66)
<i>BS (lag)</i>			0.152* (1.72)				0.14** (2.20)			
<i>ESGC*BS (lag)</i>			0.013** (2.07)				0.012* (1.75)			
<i>WR (lag)</i>				0.22** (2.07)				0.167* (1.68)		
<i>ESGC*WR (lag)</i>				0.015* (1.82)				0.014** (2.11)		
<i>IR (lag)</i>					0.185 (0.65)				0.175 (0.48)	
<i>ESGC*IR (lag)</i>					0.012 (0.67)				0.011 (0.42)	
<i>BAA (lag)</i>						0.157 (0.52)				0.145 (0.52)
<i>ESGC*BAA (lag)</i>						0.011 (0.51)			0.01 (0.42)	
<i>SIZE (lag)</i>	0.123*** (3.17)	0.213** (2.21)	0.212 (0.42)	0.195 (0.45)	0.197 (0.82)	0.195 (0.38)	0.185 (0.47)	0.18 (0.38)	0.185 (0.35)	0.191 (0.36)
<i>TIER (lag)</i>	-0.045** (-3.54)	-0.121* (-2.30)	-0.112 (-0.28)	-0.115 (-0.33)	-0.100 (-0.84)	-0.105 (-0.27)	-0.11 (-0.95)	-0.1 (-0.26)	-0.105 (-0.32)	-0.11 (0.28)
<i>ROA (lag)</i>	0.233 (0.35)	0.321* (-1.73)	0.312 (0.28)	0.305 (0.89)	0.295 (0.67)	0.296 (0.52)	0.355 (0.76)	0.295 (0.80)	0.285 (0.22)	0.292 (0.52)
<i>NONINT (lag)</i>	0.018 (0.17)	0.025* (1.69)	0.032 (0.59)	0.02 (0.79)	0.022 (0.75)	0.021 (0.61)	0.025 (0.84)	0.02 (0.73)	0.02 (0.15)	0.018 (0.16)

(Continues)

TABLE 7 | (Continued)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<i>NLTA (lag)</i>	-0.007 (0.32)	-0.015** (-2.27)	-0.021 (0.69)	-0.018 (-0.98)	-0.016 (-0.76)	-0.017 (-0.71)	-0.018 (-0.73)	-0.017 (-0.76)	-0.019 (-0.61)	-0.015 (-0.62)
<i>LADSTF (lag)</i>	0.001* (1.75)	0.002* (1.70)	0.0015 (0.73)	0.0016 (0.79)	0.0017 (0.66)	0.0018 (0.46)	0.017 (0.63)	0.016 (0.66)	0.0015 (0.51)	0.0016 (0.62)
<i>LIQ (lag)</i>	-0.056** (1.81)	-0.07** (-2.07)	-0.065 (-0.98)	-0.062 (-0.89)	-0.068 (-0.88)	-0.065 (-0.49)	-0.061 (-0.29)	-0.058 (-0.29)	-0.059 (-0.28)	-0.06 (0.29)
<i>GDPG (lag)</i>	0.023*** (2.58)	0.028* (1.91)	0.035 (0.92)	0.038 (0.22)	0.033 (0.13)	0.032 (0.67)	0.032 (0.34)	0.03 (0.61)	0.033 (0.12)	0.031 (0.11)
<i>INF (lag)</i>	-0.002* (1.67)	-0.003 (-1.65)	-0.004 (-0.29)	-0.003 (-0.97)	-0.002 (-0.51)	-0.003 (-0.66)	-0.002 (0.76)	-0.002 (-0.54)	-0.002 (0.41)	-0.002 (-0.33)
F-stat	298.2***	1789***	2226***	1291**	1567*	2784**	1558***	157.5**	2308**	1352***
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1) p value	-3.602***	-1.981**	-3.680***	-3.410***	-2.051***	-4.000***	-3.193***	-1.873*	-3.280***	-3.046***
AR(2) p value	-1.075	0.0323	-0.928	-0.703	0.0766	-0.629	-1.443	-0.0577	-0.784	-1.176
Hansen J-statistics	51.05	40.56	42.90	48.05	38.50	45.36	42.57	30.95	41.67	42.47

Note: The table presents the results of the two-step system GMM regressions. The Arellano-Bond test for AR(2) is conducted to check for autocorrelation issues, whereas the Hansen test assesses potential over-identification restrictions in the model. *T* statistics are shown in parentheses. All regressions include bank, country, and year fixed effects, although these are not displayed in the table. The significance levels are denoted as follows: ****p* < 0.01, ***p* < 0.05, **p* < 0.1. The total number of observations is 578.

TABLE 8 | Robustness tests.

Test	Statistic	<i>p</i>	Notes
Breusch–Pagan heteroskedasticity test	0.98	0.322	No heteroskedasticity detected
White's heteroskedasticity test	1.15	0.285	No heteroskedasticity detected
Wooldridge autocorrelation test	0.45	0.504	No autocorrelation detected
Breusch–Godfrey autocorrelation test	1.05	0.305	No autocorrelation detected
Ramsey RESET specification test	1.12	0.248	Functional specification correct
Jarque–Bera normality test	1.35	0.512	Residuals are normally distributed
Pesaran's cross-sectional dependence test	1.05	0.294	No cross-sectional dependence detected

The interconnected nature of banks within the financial system further compounds governance challenges, as exposure to counterparty risks and reliance on interbank markets increase sensitivity to external shocks and ESG controversies (Acharya et al. 2012). ESG controversies in this context may undermine trust among critical stakeholders—such as investors, regulators, and counterparties—leading to destabilization that is more acute than in nonfinancial firms. By situating the analysis within the specific context of banking, this study provides valuable insights into the unique governance dynamics of the sector, addressing a critical gap in the literature.

Through these contributions, the study bridges ESG and corporate governance literature, offering a comprehensive framework for understanding how governance mechanisms interact with ESG controversies to shape financial risk. This enriched perspective advances theoretical debates on governance and ESG practices while also laying the groundwork for future research in this domain.

6.2 | Practical Implications

This study offers actionable insights for multiple stakeholders in the financial sector, including bank executives, policymakers, and investors, by shedding light on the interplay between ESG controversies, governance structures, and risk.

For bank executives, the findings underscore the importance of tailoring governance structures to address ESG controversies effectively. Strong governance is not a one-size-fits-all solution; board composition must be carefully aligned with the specific challenges posed by ESG controversies. For instance, larger boards should implement clear mechanisms to facilitate coordination, whereas gender-diverse boards need strategies to harness diverse perspectives constructively, avoiding potential conflicts during decision-making processes.

Policymakers can draw on these results to develop more refined regulations that balance promoting sound governance practices with mitigating unintended consequences. Recognizing that certain board configurations, such as increased diversity or size, may introduce complexity in managing ESG risks, regulatory guidelines could emphasize the importance of expertise, clarity in governance roles, and the establishment of ESG-specific committees to ensure effective oversight.

Investors, too, should reconsider their approach to evaluating governance in banks. Traditional metrics may not capture the nuanced interactions between board characteristics and ESG controversies. Instead, investors should assess how governance structures influence a bank's resilience in the face of ESG challenges. Advocating for governance reforms tailored to ESG risk management could significantly enhance a bank's stability and long-term value.

By addressing these stakeholders, this study highlights the practical importance of aligning governance configurations with ESG objectives. In the banking sector, where managing risk is paramount, these insights are particularly critical as regulatory pressures and stakeholder expectations around ESG practices continue to rise. Aligning governance structures with ESG strategies can help banks mitigate risk effectively while meeting the demands of a rapidly evolving financial landscape.

6.3 | Limitations and Future Research

Despite these contributions, the study is not without limitations. First, the analysis is confined to publicly traded European banks, limiting the generalizability of the findings to other regions or financial institutions, such as community banks or non-bank entities. Second, the governance variables employed in this study—board size, gender diversity, independence, and average age—do not capture all aspects of board effectiveness. Factors such as director tenure, expertise in ESG, and the presence of ESG-specific committees could provide additional insights. Third, although the study uses a robust methodological approach, the reliance on secondary data and the inherent limitations of ESG controversy scores may introduce biases or measurement errors.

Future research could address these limitations by expanding the scope of analysis to include banks from different geographic regions and varying regulatory environments. Additionally, incorporating a broader range of governance variables, such as ESG-specific expertise and the presence of sustainability committees, would provide a more holistic understanding of governance effectiveness in managing ESG risks. Longitudinal studies that account for evolving ESG practices and regulatory changes over time could also enhance our understanding of these dynamics. Lastly, exploring the interplay between ESG controversies and other forms of risk, such as reputational or

operational risk, could provide valuable insights for both academia and practice.

In conclusion, this study contributes to the ongoing discourse on ESG and corporate governance by emphasizing the need for tailored governance strategies to effectively manage the risks associated with ESG controversies. The findings hold practical implications for bank executives, regulators, and investors, offering actionable insights for enhancing risk management frameworks in the financial sector.

Acknowledgments

Open access publishing facilitated by Università degli Studi di Firenze, as part of the Wiley - CRUI-CARE agreement.

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