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Biodiversity impact reduction disclosure and firm performance: The role of governance quality

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***Abstract*---**This study explores how biodiversity-related disclosures influence firms' financial stability and examines how corporate governance moderates this relationship. Our analysis covers the period prior to the formalization of the Global Biodiversity Framework (GBF) in 2022, during which biodiversity disclosure practices were less widespread and largely voluntary. Using an international panel of companies from 87 countries over the period 2002-2021, we provide empirical evidence that transparent communication of biodiversity impacts contributes to more resilient financial performance. The findings indicate that firms that acknowledge their effects on ecosystems and incorporate biodiversity preservation into strategic and accounting decisions tend to exhibit stronger financial soundness and sustainability. Moreover, corporate governance quality significantly enhances the extent and credibility of biodiversity disclosures. As biodiversity loss becomes an urgent global risk, our research emphasizes the strategic importance of sound governance in promoting responsible environmental practices and strengthening biodiversity-related transparency.

***Keywords*---**Biodiversity impact reduction, Disclosure, Firms' financial stability, Corporate governance.

1. Introduction

Biodiversity—short for biological diversity—refers to the variety of life forms and ecosystems that exist across the planet. It encompasses genetic diversity within species, the multitude of species themselves, and the complex ecological systems that sustain them (Heywood and Watson, 1995; McNeely et al., 1990). In essence, biodiversity represents the richness and interdependence of living organisms and their habitats. Its decline, whether through species extinction, habitat

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degradation, or human interference, disrupts ecological balance and reduces the resilience of natural systems (Lammerts van Bueren and Duivenvoorden, 1996; Carvajal et al., 2022).

The global community increasingly recognizes biodiversity loss as a major systemic risk. According to the *World Economic Forum* (2023*, 2024), biodiversity decline ranks among the top environmental and economic threats expected to intensify over the next decade. The deterioration of ecosystems undermines food security, economic stability, and human well-being, creating both ecological and financial vulnerabilities. Firms, policymakers, and societies therefore share a collective responsibility to mitigate these effects by integrating biodiversity preservation into business and governance practices (Azizi et al., 2025). Yet, biodiversity loss not only has direct ecological effects, but also impacts the social production environment and the stability of supply chains, posing significant business risks.

The current rate of species extinction is accelerating at an alarming pace, which exacerbates the potential impact on ecosystems, economies, and human well-being. These risks arise from a company's direct impacts on biodiversity and ecosystem services. They also include regulatory challenges, financial uncertainties, and reputational risks, all of which can significantly affect a business's operations, profitability, and long-term sustainability (Elsayed, 2023). Corporate activity affects biodiversity both directly and indirectly. Direct impacts arise from production processes—such as emissions, waste generation, or resource depletion—while indirect effects occur through supply chains and product use (GRI, 2007, 2024). However, corporate responses remain inconsistent. Although regulatory bodies and reporting frameworks increasingly emphasize environmental transparency, biodiversity-related disclosure still lags behind other ESG dimensions (Boiral and Heras-Saizarbitoria, 2017). The limited extent of such reporting reflects both informational challenges and an absence of mandatory requirements.

European requirements on non-financial disclosure are increasingly encouraging firms to implement biodiversity management and report on their impacts and efforts (Boiral and Heras-Saizarbitoria, 2017). As companies face escalating demands for transparency, non-financial disclosures, especially those concerning ESG factors, have garnered considerable attention. However, there is a notable deficiency in disclosures specifically highlighting biodiversity.

Prior research highlights that businesses play a critical role in both causing and mitigating biodiversity loss. Pressures from stakeholders, investors, and regulators are encouraging companies to acknowledge their ecological footprints and disclose related information (Houdet et al., 2012; Wagner, 2023). Nevertheless, transparency about biodiversity risks remains insufficient, intensifying ecological threats and public concern (Adler et al., 2018; Carvajal et al., 2022). Empirical findings suggest that companies that report biodiversity

* World Economic Forum (WEF), 2023. Global Risks Report 2023. WEF, Cologny/Geneva. https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf.

information tend to demonstrate stronger sustainability performance and stakeholder trust (Hassan et al., 2020).

By recognizing biodiversity as a strategic and financial concern, firms can identify environmental risks, explore new market opportunities, and reinforce their reputation for responsible governance (Bebbington and Unerman, 2018). Building on this perspective, the present study investigates how biodiversity-related disclosure influences firms' financial stability and how governance quality shapes this relationship. Using a cross-country dataset covering 87 firms from 2002 to 2021, we provide both theoretical and empirical insights into how these environmental disclosures shape firms' financial stability (proxied by profitability, solvency, liquidity, financial health and efficiency, and financial risk). Our result shows that companies must recognize their effects on biodiversity and integrate strategies to address biodiversity preservation and protection in managerial decisions, accounting, and reporting. However, there is a notable deficiency in disclosures specifically highlighting biodiversity. In addition, this study supplies new evidence that corporate governance plays an important role in increasing pressure on managers to disclose biodiversity-related information. In fact, the lack of transparency in disclosing corporate impacts on ecosystems, wetlands, and biodiversity has contributed to species extinction and the heightened risk of further biodiversity loss.

Specifically, this study contributes to the literature in several key ways. First, it demonstrates the financial implications of biodiversity impact reduction disclosures. Firms must recognise that nature and ecosystems are of essential value either directly or indirectly linked to corporate activity. By providing information about biodiversity and ecosystem health, companies can identify the risks and opportunities, mitigate their environmental effects, improve their performance, and garner long-run financial stability. Second, this study explores the moderating effect of governance quality on disclosure practices. Effective corporate governance is an important driver of biodiversity reporting practices by decreasing managerial discretion and by increasing disclosure quality and supervising management. Our finding suggests that the overall quality of firm-level governance plays a crucial role in reinforcing biodiversity transparency. Third, it offers global evidence that extends prior single-country analyses (e.g., Hassan et al., 2020; Dutta and Dutta, 2024). The results underscore the importance of sound governance. Thus, our work responds to the recent call for cross-country empirical research on biodiversity reporting by offering worldwide evidence based on a broad sample of companies operating in multiple economies. Finally, this study identifies recommendations for enhancing the quality of biodiversity reporting in the context of current and future regulations.

The reminder of this paper is as follows. Section 2 surveys the literature and develops the hypotheses. Section 3 outlines the sample, describes the data and defines the variables used in the empirical analysis. Section 4 reports and discusses the main empirical findings. Section 5 concludes the paper.

2. Literature review and hypotheses development

2.1 Biodiversity impact reduction disclosures and firms' financial stability

The effects of biodiversity loss are far-reaching, impacting ecosystems, human health, and the economy. Hence, the danger posed by the ongoing loss of biodiversity push the public to demand for an urgent need of collective conservation efforts and comprehensive accounting and reporting systems for biodiversity (Treepongkaruna, 2024).

Prior studies confirmed the importance of corporate biodiversity disclosures. They further suggest that proactively managing biodiversity as shared value creation supplies new opportunities and enhanced companies' stakeholder engagements and reputation. Schaltegger et al., (2023) emphasize the importance of management accounting to support effective corporate biodiversity management. Also, they insist that managers must identify how their firms are impacted by biodiversity and how they can contribute to stopping biodiversity loss and to regenerating biodiversity. Firms are increasingly viewed as responsible in deteriorating social, environmental and economic prospects as they prosper at the expense of the broader community and nature (Porter and Kramer, 2018).

Although a substantial body of literature has emerged on corporate social and environmental accounting and reporting, only a limited number of studies have exclusively analysed the biodiversity reporting effects. This suggests that the significance of biodiversity has not been widely recognized or prioritized in corporate sustainability discussions (Gaia and Jones, 2017; Gaia and Jones, 2020).

Corporate biodiversity disclosure has been studied through multiple theoretical perspectives that explain why organizations communicate information beyond financial performance.

From an **institutional theory** standpoint (Meyer and Rowan, 1977), firms' reporting practices are shaped by the social and regulatory environments in which they operate. Organizations respond to external pressures—including regulatory requirements, investor expectations, and professional norms—by aligning their reporting practices with accepted institutional logics to maintain credibility and social acceptance (Deegan, 2002).

Legitimacy theory (Dowling and Pfeffer, 1975) complements this view by suggesting that firms disclose environmental and social information to demonstrate that their operations are consistent with prevailing societal norms and values. Biodiversity-related communication, therefore, serves as a mechanism through which companies seek to preserve their "license to operate" and demonstrate responsiveness to environmental expectations (Meyer and Rowan, 1977).

In this sense, Rimmel and Jonäll (2013) employed a legitimacy theory framework to examine the quantity, location and intentions behind firms' biodiversity disclosure in 29 Swedish firms, revealing limited reporting. The findings of this study show that few of the companies studied have a record of providing

continuous biodiversity information. Those companies that provide the most biodiversity information are in the lower-risk sector.

Under **stakeholder theory** (Freeman, 1984), biodiversity reporting is a means of accountability toward stakeholders affected by or interested in corporate activities. Providing information about how the organization manages its environmental impacts helps reduce information asymmetry and builds trust with investors, regulators, customers, and communities (Gray et al., 2003). The theory also implies that transparent disclosures on biodiversity issues enable firms to address the informational needs of diverse stakeholder groups (Deegan, 2002). The concept of responsibility is rooted in agency theory, where the agent must account for and justify their actions to the principal (Jensen and Meckling, 1976). This relationship can be described as one of stewardship where the agent discloses information to the principal to meet the principal's informational needs (Gray and Jenkins, 1993). Stakeholder theory expands legitimacy theory as it helps to identify which stakeholder group expectations the organisation should take into accounts in order to comply with its social contract (Gaia and Jones, 2020).

Prior researches provide evidence that companies are responsible for biodiversity losses. They are facing growing biodiversity risks due to increasing pressure from stakeholders to reduce their negative impact on ecosystems (Orazalin et al., 2024; Hambali and Adhariani 2024). From that point of view, Schneider et al., (2014) adopt a stakeholder accountability perspective to investigate the extent of biodiversity reporting and the way in which biodiversity information was communicated by 78 New Zealand local authorities. Their results indicate that most local authorities did not discharge their accountability to stakeholders, revealing the need for a framework to guide local authorities.

Likewise, Gaia and Jones (2017) examine whether the explanations for biodiversity conservation used by UK local councils are line with shallow, intermediate or deep philosophies. They show that UK local councils explained biodiversity's importance mainly in terms of its instrumental value, in line with shallow philosophies such as human welfare ecology and resource conservation. In addition, this study provides evidence that UK local councils sought to raise awareness of biodiversity' importance by highlighting values that are important for the stakeholders that are able to contribute towards biodiversity conservation. Li et al., (2025) investigate the impact of biodiversity risk exposure on firm efficiency. Analysing 23,750 firm-year observations from 2001 to 2020, they identify a significant negative relationship between biodiversity risk and firm efficiency. This indicates that increased external financing needs and higher capital costs, driven by biodiversity risk, are key channels contributing to reduced firm efficiency. Firms with higher biodiversity risk exposure demonstrate lower efficiency, especially those with greater idiosyncratic volatility. These findings highlight the economic costs and operational challenges posed by biodiversity risk, offering new insights into its direct impact on firm efficiency.

A study conducted by Bach et al., (2024) in the United States shows that biodiversity risk significantly hinders performance of firms during the 2001-2021 period. Besides decreasing sales growth and profitability, biodiversity risk

increases in the cost of goods sold, as explained by the Cobb-Douglas production function. Interestingly, they show that the effect is stronger for firms in biodiversity-sensitive industries, weaker for firms with more product innovation, and remains insignificant for firms with top-tier performance. In addition, Cheong et al., (2024) empirically investigate the relation between biodiversity conservation and tourism firm performance. They find robust evidence that firms that are actively involved in reducing their impact on ecosystem and species biodiversity experience better financial performance and also reveal that this positive relationship is more pronounced for firms pursuing a differentiation strategy.

Building upon theoretical perspectives and prior literature, we expect that firms' financial stability is enhanced by disclosing information about biodiversity and ecosystem health. Therefore, we formulate our hypothesis as follows:
Hypothesis 1: biodiversity impact reduction disclosure affects positively firms' financial stability.

2.2 The role of corporate governance mechanisms

The agency theory (Jensen and Meckling, 1976) highlights the importance of transparent voluntary disclosures in order to combat climate change and promote sustainability (Liao et al., 2015; Dilling et al., 2024). This theory indicates that corporate governance is a crucial tool to oversight and deter aberrant activities of managers. Governance mechanisms exercising control over management's ability to subvert the interests of stakeholders for their own benefit vary widely, ranging from regulations to boards of directors to external stakeholders (Rupley et al., 2012). The board of directors and its associated committees function as control mechanisms within the company, aiming to curb managers' opportunistic behaviour, reducing information asymmetry, and to ensure that managers act in the best interest of shareholders (Prado-Lorenzo et al., 2009; Lakhal et al., 2023).

In the past two decades, literature has extensively explored the connections between various corporate governance mechanisms and environmental disclosure (Khan et al., 2013; Cucari et al., 2018; Luo and Tang, 2021; Hambali and Adhariani 2024). They find solid evidence that companies facing complex demands and increasing pressures from various stakeholders are more likely to adopt good corporate governance to combat climate change and promote sustainability.

The idea that companies with strong corporate governance are more responsive to stakeholder demands is supported by the fact that such firms tend to proactively engage in sustainability and climate change mitigation efforts (Rupley et al., 2012; Chan et al., 2014). Different corporate governance practices can facilitate access to critical resources, promote sustainability activities, and increase decision-making.

The effective board governance and incentive-based mechanisms play an important role in introducing green projects, implementing carbon mitigation initiatives, and developing reporting practices (Haque and Ntim, 2018). This supports the notion that governance arrangements may enhance transparency and mitigate information asymmetry by disclosing relevant environmental

information to stakeholders. Furthermore, several studies concluded that companies with good corporate governance are less likely to waver in their commitment to carbon-reduction goals and can be expected to mobilise their employees to manage the transition towards a low-carbon future (Gerged, 2021; Luo and Tang, 2021).

The findings of most past empirical studies confirm that, well governed firms have been noted to have greater firms' financial stability and performance than poor governed firms (Bhagat and Bolton, 2008; Enache and Hussainey, 2020; Nguyen, et al., 2022; Bui and Krajcsák, 2024). Indeed, they affirmed that effective corporate governance practices enhancing corporate accountability are the key elements in the working of market discipline and transparency.

As a result, and belonging to previous literature, corporate governance characteristics are analysed in this paper to highlight their impact on the relation between biodiversity impact reduction disclosure and firms' financial stability. Therefore, our second hypothesis is as follows:
Hypothesis 2: biodiversity impact reduction disclosure is more prominent in the presence of good corporate governance.

3. Research design

3.1 Sample and data

This study examines the relationship between biodiversity disclosure, corporate governance, and firms' financial stability using an international dataset of publicly listed companies from **87 countries** over the period **2002-2021**. The initial dataset was filtered to exclude financial institutions and firms with incomplete records, yielding a balanced panel of **3,514 companies**, representing **over 63,000 firm-year observations**. Unlike prior biodiversity-related research (e.g. Adler et al., 2018; Bach et al., 2024; Li et al., 2025), our study uses a relatively large dataset to assess corporate biodiversity reporting at the international level.

Financial and accounting variables were collected from the **Worldscope** and **Datastream** databases, while information on biodiversity and sustainability reporting was drawn from **Global Reporting Initiative (GRI)** databases and company sustainability reports. This multi-source approach enhances the reliability and coverage of our data across different regulatory environments.

3.2 Empirical model

In order to examine the relationship between biodiversity impact reduction disclosure and firms' financial stability, as well as the moderating role of corporate governance on this relationship, we apply the Ordinary Least Squares (OLS) regression method. Generally, OLS regression is well suited for describing and testing our hypotheses and in line with previous studies (Bach et al., 2024; Hambali and Adhariani, 2024). Hence, our models are as follows:

$$Stability_{it} = \beta_0 + \beta_1 BIR + \beta_2 Size + \beta_3 ROA + \beta_4 Tobin's\ Q + \beta_5 GRI + \varepsilon_{it} \quad (1)$$

$$Stability_{it} = \beta_0 + \beta_1 BIR + \beta_2 GOV + \beta_3 BIR \times GOV + \beta_4 Size + \beta_5 ROA + \beta_6 Tobin's\ Q + \beta_7 GRI + \varepsilon_{it} \quad (2)$$

Where:
We measure the dependent variable "Stability" as an index of several variables of financial stability (profitability, solvency, liquidity, financial health and efficiency, and financial risk) constructed through the principal component analysis (PCA) method.

The independent variable "BIR": is a dichotomous variable that equals to 1 if the company reports on its impact on biodiversity or on activities to reduce its impact on the native ecosystems and species, as well as the biodiversity of protected and sensitive areas, and 0 otherwise (Cheong et al., 2024; Dutta and Dutta, 2024).
Governance (GOV): is the total score of corporate governance, with a maximum of 100 points.

Based on the existing literature (Cheong et al., 2024; Dutta and Dutta, 2024), this study includes several control variables namely Firm size (Size), Return on assets (ROA), Tobin's Q, and Global Reporting Initiative (GRI):
Size: is equal to log (total assets). Treepongkaruna (2024) and Cheong et al., (2024) find a negative correlation between firm size and biodiversity impact reduction score.
ROA: is measured as operating income/total assets. Treepongkaruna (2024) and Cheong et al., (2024) illustrate that profitability impacts negatively the biodiversity impact reduction score.
Tobin's Q: is measured as total asset value of firm/total market value of firm. Cheong et al., (2024) find a positive relationship between Tobin's Q and biodiversity impact reduction score.
GRI: is a dummy variable that equals to 1 if the company reports sustainability disclosures, 0 otherwise.

4. Results and discussion

4.1 Descriptive statistics and correlation matrix

Table 1 summarizes the descriptive statistics for the variables used in the analysis. On average, only around **22%** of the sample firms disclose biodiversity-related information (biodiversity impact reduction disclosure), indicating that biodiversity reporting remains relatively limited at the global level. This result is consistent with prior findings that biodiversity issues receive less disclosure attention than other environmental aspects such as emissions or energy use (Treepongkaruna, 2024; Dutta and Dutta, 2024). It is probable that increased agency problems drive managers to avoid voluntarily disclosing biodiversity impacts. This means that firms do not find that the benefits of providing biodiversity disclosures are outweighing the cost of the same. Indeed, the small number of companies reporting biodiversity-related information could be attributed to the absence of mandatory requirement of corporate biodiversity disclosures. Yet, starting 2026, organizations shall explain how it has determined which of its sites and which products and services in its supply chain have the most significant actual and potential impacts on biodiversity (GRI, 2024). Table I also reveals that only 33.68% of the sample firms have decided to disseminate information relating to GRI sustainability reporting. The mean value of profitability is positive and equals to 0.084. The minimum is -0.111 and the maximum is 0.314. Dutta and Dutta (2024) find a positive mean value of the

profitability that equals to 0.66. The mean value of solvency is 0.227 between minimum (0.004) and maximum (0.500). The mean value of liquidity is equal to 1.847. The mean value of equity to total assets and gross margin are respectively 0.410 and 0.703.

Table I: Descriptive statistics

Variables	Mean	Std. Dev	Min	Max
Stability	-0.005	1.316	-1.869	2.236
Profitability	0.084	0.119	-0.111	0.314
Solvency	0.227	0.164	0.004	0.500
Liquidity	1.847	1.037	0.716	4.052
Financial risk	0.410	0.209	0.095	0.743
Financial health and efficiency	0.703	0.334	0.175	1
Governance (GOV)	48.434	22.706	0.105	99.447
Size	22.196	1.516	19.801	24.625
ROA	0.065	0.053	-0.008	0.162
Tobin's Q	1.702	0.866	0.928	3.593

Global Reporting Initiative (GRI)	Freq.	Percent	Cum.
0	47,876	66.32	66.32
1	24,310	33.68	100.00
Total	72,186	100.00	

Biodiversity impact reduction disclosures (BIR)	Freq.	Percent	Cum.
0	47,865	77.39	77.39
1	13,988	22.61	100.00
Total	61,853	100.00	

We check the multicolinearity problem between the independent variables explaining the financial stability. We use the Pearson Correlation Matrix and VIF Statistics (Variance Inflation Factors Statistics). Results reported on table II provide evidence that the multicolinearity problem will not impact our analysis, given that all the coefficients of correlations present values lower than 0.8 (Kennedy 1985). The VIF statistics confirm our finding. Table II exhibits that the higher VIF is equal to 1.46 and that the mean of VIF is lower than 2 (Neter et al., 1990).

Table II: Correlation matrix

	VIF	BIR	GOV	Size	ROA	Tobin's Q	GRI
BIR	1.33	1.0000					
GOV	1.18	0.2272*	1.0000				
Size	1.25	0.2379*	0.2763*	1.0000			
ROA	1.00	0.0349*	0.0717*	-0.1112*	1.0000		
Tobin's Q	1.02	-0.1165*	-0.0413*	-0.3622*	0.4870*	1.0000	
GRI	1.46	0.4619*	0.3388*	0.3471*	0.0269*	-0.1144*	1.0000
Mean VIF	1.21						

4.2 Empirical results

4.2.1 The effect of biodiversity impact reduction disclosure on firms' financial stability

Hypothesis testing is conducted via ordinary least squares (OLS) regression to estimate the influence of biodiversity impact reduction disclosure on firms' financial stability. Our results supported on table III show a positive and statistically significant association between biodiversity impact reduction disclosure and companies' financial stability at the 1% level. This evidence is consistent with hypothesis 1, revealing that companies that are actively committed to issue biodiversity-related information enjoy better financial stability and long-term sustainability (represented by profitability, solvency, liquidity, financial health and efficiency, and financial risk). This means that firms that are actively involved in reducing their impact on ecosystem and species biodiversity are able to generate profit, increase the value of invested capital, repay its short and long-term liabilities, manage risks, absorb shocks, and survive in the long run.

Our result is in accordance with legitimacy theory (Dowling and Pfeffer, 1975) suggesting that companies looking for legitimacy aim to guarantee that their operations align with the norms, values, and expectations of the societies in which they operate. To achieve this, they often adopt strategies and practices that reflect societal concerns and values (Meyer and Rowan, 1977).

Also, our finding confirms stakeholder theory asserts that social and environmental disclosures serve as a mechanism through which the company demonstrates its accountability to its stakeholders. These disclosures provide transparency about the company's actions and impact on various stakeholders (Gray et al., 2003; Deegan, 2002). Stakeholder theory expands legitimacy theory as it helps to identify which stakeholder group expectations the organisation should take into accounts in order to comply with its social contract (Gaia and Jones, 2020).

The positive association between biodiversity impact reduction disclosure and companies' financial stability can be further understood by the fact that companies that engage in responsible practices, such as reducing their impact on ecosystem and species biodiversity, provide a crucial signal of reduced information asymmetry and good financial health. Therefore, this behaviour boosts shareholders' trust on company's transparency and credibility; and thereby it reinforces market perceptions of the company's stability and growth potential. Besides, our result indicates that in order to satisfy shareholders' demand and to sustain investors' trust, managers often resort to increase the level of environmental awareness as a means to grapple agency problems and to improve dividend policy.

Regarding control variables, table III presents that the coefficient of firm size (Size) is negative and statistically significant at 1% level. This suggests that larger firms have less financial stability. Similarly, the Global Reporting Initiative (GRI) affects negatively the financial stability. This finding means that firms with improved sustainability practices tend to have less financial stability. Results show, in addition, a positive and statistically significant association between the ROA,

Tobin's Q, and the financial stability. This reveals that more performed firms have greater financial stability.

Table III: The effect of biodiversity impact reduction disclosure (BIR) on companies' financial stability

Variables	Stability Coefficients P > | t |
BIR	0.117 (0.000)***
Size	-0.321 (0.000)***
ROA	0.067 (0.000)***
Tobin's Q	0.280 (0.000)***
GRI	-0.035 (0.023)**
Constant	6.576 (0.000)***
Year/industry FE	YES
Observations	47,025
F (5,47000)	1635.07
Prob > F	0.000
R-squared	0.1482

This table supplies the OLS regression modelling the impact of biodiversity impact reduction disclosure (BIR) on companies' financial stability for an international sample of 3,514 listed companies over 20-year period (2002-2021). The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

4.2.2 The moderating role of corporate governance mechanisms

The second model incorporates the moderating effect of corporate governance quality (Table IV). The coefficient of GOV is positive and statistically significant at 5% level. This provides robust evidence that strong corporate governance has a positive impact on company's financial stability. Moreover, the interaction term between biodiversity disclosure and governance (*BIR* × *GOV*) is **positive and significant**, supporting hypothesis 2 that strong governance mechanisms reinforce the beneficial impact of biodiversity disclosure on financial stability. This supporting the view that greater corporate governance motivated managers to provide biodiversity-related information and to involve in decreasing the impact of firms on ecosystem and species biodiversity.

This result aligns with agency theory (Jensen and Meckling, 1976) that sheds light on the importance of transparent voluntary disclosure in order to combat climate change and promote sustainability (Liao et al., 2015; Dilling et al., 2024). Effective governance structures encourage managers to act in the best interests of

shareholders and to pursue long-term sustainability objectives. Well-governed firms are more likely to institutionalize biodiversity reporting as part of their strategic and risk management processes (Prado-Lorenzo et al., 2009; Lakhal et al., 2023).

Yet, companies facing complex demands and increasing pressures from various stakeholders are more likely to adopt good corporate governance to combat climate change and enhance sustainability. The idea that companies with strong corporate governance are more responsive to stakeholder demands is supported by the fact that such firms tend to proactively engage in sustainability and climate change mitigation efforts (Rupley et al., 2012; Chan et al., 2014).

Table IV: The moderating role of corporate governance on the association between biodiversity impact reduction disclosure (BIR) and companies' financial stability

Variables	Stability Coefficients P > | t |
BIR	0.105 (0.010)***
GOV	0.000 (0.016)**
BIR × GOV	0.002 (0.000)***
Size	-0.372 (0.000)***
ROA	0.115 (0.000)***
Tobin's Q	0.006 (0.000)***
GRI	-0.025 (0.119)
Constant	8.051 (0.000)***
Year/industry FE	YES
Observations	46,515
F (8,46487)	935.28
Prob > F	0.000
R-squared	0.1386

This table gives the OLS regression modelling the moderating role of corporate governance on the correlation between biodiversity impact reduction disclosure (BIR) and companies' financial stability for an international sample of 3,514 listed companies over 20-year period (2002-2021). The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

4.2.3 Robustness checks

To check the robustness of our results, we perform additional regressions (Table V). We use the GMM method to test the effect of biodiversity impact reduction disclosure on companies' financial stability, moderating role of corporate governance. The direction and significance of coefficients remained stable across model specifications, reinforcing the reliability of our conclusions.

Table V: Robustness analysis

Variables	Stability Coefficients P > | t |	Stability Coefficients P > | t |
l.Stability	0.873 (0.000)***	0.846 (0.000)***
BIR	0.336 (0.000)***	0.259 (0.073)*
GOV		0.007 (0.000)***
BIR × GOV		0.009 (0.000)***
Size	0.069 (0.003)***	0.035 (0.112)
ROA	1.145 (0.092)*	1.619 (0.004)***
Tobin's Q	0.100 (0.002)***	0.099 (0.000)***
GRI	-0.862 (0.000)***	-0.524 (0.009)***
Constant	-1.635 (0.001)***	-0.670 (0.125)
Year/industry FE	YES	YES
Observations	47,025	46,515
F (8,5112)	842.01	853.87
Prob > F	0.000	0.000

This table gives the robustness regression modelling the correlation between biodiversity impact reduction disclosure (BIR) and companies' financial stability, and the moderating role of corporate governance on this relation for an international sample of 3,514 listed companies over 20-year period (2002-2021). The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

5. Conclusion

Prior research examined the impacts of specific company factors on biodiversity reporting practices. Although empirical evidence on the role of biodiversity and corporate governance on firms' financial stability is limited. Thus, the present

study extends the accounting, governance, and biodiversity literatures by empirically investigating the relationship between biodiversity impact reduction disclosure and firms' financial stability, as well as the moderating role of corporate governance on this association.

Using a sample of global companies across 87 countries over the 2002 to 2021 period, our result finds a positive and significant association between biodiversity impact reduction disclosure and companies' financial stability. This means that companies that are actively committed to issue biodiversity-related information experience better financial stability and long-term sustainability (represented by profitability, solvency, liquidity, financial health and efficiency, and financial risk). Besides, this study shows that strong corporate governance has a positive impact on companies' financial stability. This supports the view that greater corporate governance motivated managers to provide biodiversity-related information and to be involved in decreasing the impact of firms on ecosystem and species biodiversity.

These findings contribute to the growing debate on how corporate reporting on ecological issues translates into tangible economic outcomes. They highlight the **strategic importance of biodiversity disclosure** as a mechanism for risk management and value creation, particularly in an era of escalating ecological and regulatory pressures.

The results of our research have several implications for firms, regulators, policymakers, and stakeholders. First, from a policy perspective, our evidence supports the integration of biodiversity considerations into sustainability reporting standards and governance codes. Regulators and standard setters may encourage firms to provide more systematic and comparable biodiversity-related information, enhancing the transparency and accountability of corporate environmental performance. Second, they shed light on the importance of biodiversity disclosure in enhancing firms' financial stability and sustainability. Firms must recognise that nature and ecosystems are of essential value either directly or indirectly linked to corporate activity. By providing information about biodiversity and ecosystem health, companies can identify the risks and opportunities, mitigate their environmental effects, improve their performance, and garner long-run financial stability. Finally, they highlight the positive impact of strong corporate governance on biodiversity reporting suggesting that firms and managers should pay careful consideration to improve firms' biodiversity reporting practices. The corporate governance is a crucial driver of biodiversity reporting practices, in decreasing managerial discretion, increasing disclosure quality, and supervising management.

Despite its broad coverage, this study has certain limitations. Biodiversity disclosure was measured using binary indicators, which may not fully capture variations in disclosure quality or scope. Future research could adopt more nuanced textual or content-based measures to better reflect reporting depth. Additionally, extending the analysis to smaller firms or specific sectors could yield more context-sensitive insights into the governance-biodiversity-finance nexus.

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