Biodiversity at Risk: How Managerial Myopia and Incentives Shape UK Corporate Environmental Strategies

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Abstract

This study examines how managerial myopia—the focus on short-term financial results—affects corporate biodiversity management, using data from UK-listed firms (2000–2023). The findings show that short-term-oriented managers underinvest in biodiversity initiatives, increasing ecological and financial risks. Salary-based incentives tied to short-term earnings amplify this effect, while greater board national diversity mitigates it by promoting long-term ecological strategies.These results highlight the need for governance reforms, including recalibrating executive compensation and fostering diverse boards, to balance profitability with sustainability. Future research could explore other contexts or adopt qualitative methods to deepen understanding of the governance-sustainability link.

Keywords:
Managerial Myopia; Biodiversity Management; Corporate Governance; Board Diversity; Executive Compensation; Sustainability; Financial Risk
JEL classification: G34; G30; Q56; M14

1. Introduction

The growing urgency of biodiversity loss has elevated environmental risk assessment to a central concern in corporate finance. Investors and regulators now demand greater transparency on how firms manage ecological challenges, with biodiversity risk emerging as a critical factor influencing sustainability strategies (McLennan et al., 2022). Yet, tensions remain between short-term financial goals and long-term environmental imperatives (Stein, 1989), raising concerns about 'managerial myopia'—the tendency of executives to prioritize immediate earnings or share price performance at the expense of enduring value creation. Understanding how this short-termism shapes biodiversity management is crucial, given its implications for both financial stability and ecological resilience. Although short-termism has been widely studied from a corporate governance perspective (Laverty, 2004; Jensen and Meckling, 2019), few studies have examined its consequences for corporate biodiversity management, a domain increasingly recognized as pivotal to sustainable growth and risk mitigation.

At the same time, biodiversity risk is rapidly emerging as a critical issue in sustainable finance. The Task Force on Climate-related Financial Disclosures (TCFD) has begun to incorporate biodiversity considerations into climate metrics (Friedrich et al., 2024), while the European Union (EU) Taxonomy explicitly underscores the need to preserve and restore ecosystems (Paolo et al., 2022). These frameworks push corporations to disclose more detailed environmental impacts, including how they manage ecological resources. From an operational standpoint, biodiversity degradation can disrupt supply chains, erode essential natural capital, and expose firms to litigation or reputational harm (Dasgupta, 2024). As institutional investors and stakeholders increasingly scrutinize corporate disclosures related to biodiversity, managers face intensified pressure to adopt conservation strategies—or risk a market penalty if they fall short of these rising expectations (El Ouadghiri et al., 2025). The question of whether managerial myopia amplifies or attenuates these biodiversity-related vulnerabilities remains underexplored.

Furthermore, a confluence of global trends intensifies the focus on biodiversity. Multilateral organizations such as the United Nations Environment Programme (UNEP) and governmental bodies are coordinating efforts to incorporate ecological metrics into financial risk assessments. Asset managers, influenced by socially responsible investment mandates and fiduciary obligations,

now see biodiversity as both a financial and ethical imperative (Addison et al., 2019; Coqueret et al., 2025). Yet, much of the existing literature treats biodiversity risk as an external factor rather than exploring how internal managerial decision-making horizons—particularly short-termist behaviors—can shape a firm's ability to manage ecological challenges. This paper seeks to bridge that gap by examining how managerial myopia interacts with biodiversity risk to influence corporate financial performance, stock returns, and the firm's overall environmental strategy.

In sum, the intersection of biodiversity risk and managerial myopia demands deeper scholarly attention. By exploring this nexus, we aim to illuminate the mechanisms through which short-sighted managerial behavior compromises both ecological stewardship and long-term financial viability. Such insights bear implications for policymakers, investors, and corporate boards, especially as regulatory bodies tighten disclosure requirements and capital markets increasingly reward firms that integrate sustainability into their core strategies. This study thus contributes to the literature by (i) conceptualizing biodiversity risk as a critical variable in corporate governance research, and (ii) providing empirical evidence on how short-term managerial decisions can undermine—or potentially enhance—effective biodiversity management.

Managerial myopia often leads executives to favor short-term earnings over long-term strategic investments (Laverty, 2004; Stein, 1989). Agency Theory proposes that managers may optimize personal compensation or reputation at the expense of broader shareholder value (Jensen and Meckling, 2019). In the context of biodiversity, a myopic manager might be reluctant to fund conservation projects that yield uncertain or delayed financial returns. Such underinvestment not only undermines long-term ecological resilience but also increases the firm's vulnerability to future disruptions—whether from regulatory sanctions, resource shortages, or stakeholder backlash (Laverty, 2004; Freeman and Reed, 1983). Firms with short-sighted leadership may thus find themselves lacking the necessary infrastructure and adaptability to handle biodiversity-related risks. This observation raises a key research question: does managerial myopia hamper corporate biodiversity management?

Compensation structures can further exacerbate or temper short-term biases in managerial decisions. Under traditional earnings-based remuneration schemes, executives may feel pressure to boost quarterly results, even if doing so compromises environmental or social initiatives that require longer investment horizons (Matsunaga and Park, 2001). Such schemes can encourage managers

to cut discretionary spending on research, innovation, or resource management in order to maintain near-term profitability (Healy, 1985; Guidry et al., 1999). In the sphere of biodiversity management—where returns are typically realized over extended periods—this mindset can be particularly damaging. Managers motivated by salary incentives tied to short-term performance metrics may deprioritize or cancel biodiversity initiatives to safeguard personal income streams. This observation prompts a new research question: Do salary-based incentive structures amplify the adverse relationship between managerial myopia and corporate biodiversity management?

Conversely, governance attributes can mitigate the destructive effects of managerial myopia. Stakeholder theory emphasizes that diverse boards—especially those with a multiplicity of national backgrounds—bring a broader set of perspectives and cultural norms to strategic decision-making (Freeman and Reed, 1983). Directors from different countries often possess varied experiences with environmental regulations, stakeholder expectations, and sustainability standards (Lau et al., 2016). This diversity can foster richer deliberation, reducing the likelihood that a myopic CEO dominates the firm's strategy. Additionally, foreign or ethnically diverse board members may be more attuned to global trends in ecological preservation, advocating for biodiversity investments even when short-term financial returns are unclear (Beji et al., 2021; Issa and Zaid, 2023). Consequently, another pressing research question emerges: Can the presence of a nationally diverse board mitigate the detrimental influence of managerial myopia on biodiversity management?

Our primary empirical analysis shows that managerial myopia significantly exacerbates the financial downside of biodiversity risk. Using both firm-level fixed effects models, the coefficient on the interaction between "myopia" and biodiversity risk exposure is consistently negative and statistically significant at the 1% level. These results indicate that executives with short planning horizons magnify adverse effects on corporate earnings and market valuations when confronted with ecological disruptions. Furthermore, the interaction remains robust across various controls—including firm size, leverage, and growth rate—and persists under multiple model specifications.

Our empirical result indicates that higher levels of salary-based compensation are found to intensify the negative correlation between myopia and biodiversity management, supporting the notion that earnings-based incentives can further dis-incentivize long-term environmental investments. Quantitatively, firms in the highest quartile of managerial myopia combined with aggressive

salary structures exhibit markedly lower biodiversity scores and suffer more pronounced declines in both short-term stock returns and future profitability. Interestingly, these effects are particularly strong in industries where resource extraction or land use changes directly influence biodiversity, underscoring the sector-specific nature of ecological risks.

Conversely, we find empirical result supports that board national diversity appears to mitigate the negative impact of managerial myopia on biodiversity management. Firms with higher proportions of foreign directors or ethnically diverse board members display more proactive conservation strategies, evidenced by more substantial disclosures and higher biodiversity ratings. The positive moderating effect is robust across various model specifications and remains significant even when controlling for potential confounders such as board size and other governance characteristics. Collectively, these findings illustrate that while managerial myopia can pose a formidable barrier to biodiversity management, targeted governance structures—including incentive reconfiguration and board diversity—can help counterbalance short-termist tendencies.

This research extends prior scholarship in corporate governance, sustainable finance, and strategic management by integrating two hitherto separate streams of inquiry: the effects of managerial myopia on corporate decision-making (Laverty, 2004; Stein, 1989; Jensen and Meckling, 2019) and the strategic ramifications of biodiversity risk (Addison et al., 2019; Coqueret et al., 2025). While prior studies have explored how short-termism hampers innovation or CSR initiatives, our work is among the first to quantify the link between myopia and biodiversity management, bringing ecological considerations to the forefront of financial analysis. By examining how managerial compensation structures and board national diversity can exacerbate or mitigate this relationship, we offer actionable insights for both academics and practitioners.

Moreover, our findings contribute to the emerging discourse on sustainability reporting frameworks, including the Task Force on Climate-related Financial Disclosures (TCFD) and the EU Taxonomy. Our evidence that myopic decision-making undermines biodiversity conservation highlights the need for longer-horizon incentives and transparent corporate governance mechanisms. Boards and policy-makers should note that robust disclosure standards alone may not suffice unless complemented by internal governance reforms that counteract short-term behaviors. In this way, our study resonates with the broader ESG literature, reinforcing the argument that environmental stewardship can reinforce a firm's long-term resilience and shareholder value.

Lastly, this research offers direct implications for stakeholders, including institutional investors and regulatory bodies, who increasingly focus on biodiversity risks in their capital allocation decisions and policy directives. By demonstrating the damaging feedback loop between managerial myopia and biodiversity degradation, we underscore how forward-looking investment strategies and proactive governance reforms can enhance ecological resilience and financial performance. In light of intensifying pressures—ranging from global climate challenges to consumer activism—our findings suggest that aligning managerial horizons with ecological realities is both a risk-mitigation strategy and a potential source of competitive advantage.

2. Literature Review and Hypothesis Development

2.1. Managerial Myopia

Managerial myopia originated from the theory of time orientation in psychology, referring to managers focusing more on short-term operating returns while ignoring the long-term outcomes of decisions (Laverty, 2004; Stein, 1989). This phenomenon could be attributed to the agency problem (Ross, 1973; Eisenhardt, 1989) and innate characteristics of individuals (Kant et al., 1934). Based on the agency theory and information asymmetry therein, investors only passively accept the information disclosed by managers who have the core information about the company. Inadequate information makes investors prefer short-term metrics to measure performance (Jensen and Meckling, 2019), putting pressure on managers who pursue their own salary, reputation and value as driven by firm performance. The excess compensation from stock volatility (Bolton et al., 2006) and the preservation of reputation (Gopalan et al., 2014) could lead to managers sacrificing the company's long-term value. Additionally, the pressure from outside such as analyst attention (Bhojraj et al., 2009), the frequency of financial report disclosures (Kraft et al., 2018; Graham et al., 2005) and institutional investors' short-term preferences (Bushee, 1998) all affect the myopia of management. On the other hand, short-term preferences are embedded in human nature. People prefer smaller immediate rewards over larger delayed ones (Kirby and Maraković, 1996; Ainslie, 1975). And the longer the wait, the less gain people feel (Thaler, 1981). This innate identity also leads to shortsightedness in managers.

Managerial myopia has a range of economic consequences. First, companies facing short-termism are more likely to emphasise current share prices and earn-

ings. Managers decline their long-term investments (Holden and Lundstrum, 2009), manipulate earnings to achieve goals (Merchant, 1990), and underestimate the factors such as market development and staff training that bring potential benefits (Antia et al., 2010), impairing the firm's competitiveness in future. Moreover, the myopia behaviour of managers significantly reduces corporate innovation. Although R&D cuts in the short term are good for financial performance, they severely inhibit the development of companies (Chang et al., 2015). Also, the more short-sighted management, the greater the likelihood that the company will conceal recognised risks (Schrand and Zechman, 2012) and exacerbate its money laundering behaviour (Saeidi, 2022), posing a danger to the sound business environment. Besides, managerial myopia could also serve as an explanation for companies' engagement in high-interest entrusted loans (Yu and tsung Lee, 2016).

As the concern of sustainability takes hold, it has inspired academics to explore the association between managerial myopia, corporate social responsibility (CSR) and ESG performance (Liu and Zhang, 2023). Managers' short horizons negatively affect CSR scores and the destroyed financial and legal responsibilities due to the short-termism (Ding et al., 2024) further influence commitment to social responsibility. This reverse relationship could be relieved via the involvement of long-term investors (Gloßner, 2019). Meanwhile, managerial myopia also reduces companies' ESG performance because of reduced capital expenditure and repressed green innovation (Lu et al., 2024; Mingqiang et al., 2024), where the enhancement of internal governance (Elamer and Boulhaga, 2024) and external monitoring (Hong et al., 2022) could stifle this negative association. Reversely, companies that comply with CSR and ESG ratings are less likely to conduct earning management (Gong and Ho, 2021) and mitigate managerial myopia through slack financial restraints and high-quality accounting information (Zhang et al., 2023) which alleviate information asymmetry efficiently. The relief effect is more pronounced in more competitive markets and companies under a mandatory CSR disclosure(Zhang et al., 2023; Gong and Ho, 2021).

2.2. Corporate Biodiversity

Biodiversity is under serious threat from biological overexploitation, destruction and degradation of habitat, toxic environment, climate change and other factors (Butchart et al., 2010). Alarming data suggests that there may be 7 billion populations worldwide, with 16 million extinctions per year in tropical forests

alone (Hughes et al., 1997). The World Economic Forum 2022 (McLennan et al., 2022) has prioritised biodiversity risk as one of the top five risks globally. Deep ecology (Naess and Næss, 1990) advocates that humans and nature depend on each other and emphasises the equality and value of all species while rejecting the shallow ecology view that nature only serves humans, which further responds to the importance of biodiversity conservation. Fortunately, more public sectors (Sobkowiak et al., 2020) and companies (Addison et al., 2019) are recognising the economic value of biodiversity (Admiraal et al., 2013; Pearce and Moran, 2013; Dasgupta, 2024) and are aware of the impact that businesses have on biodiversity such as environmental disruption from fossil fuel extraction (Butt et al., 2013).

Three main motivations contribute to why companies make biodiversity disclosures. First, companies conduct biodiversity management to align with social legitimacy (Boiral and Heras-Saizarbitoria, 2017a). Legitimacy theory notes that there is a contractual relationship between an organisation and society (Suchman, 1995; Deegan, 2002), where the survival of the organisation is determined by how to meet the social expectations and fulfil this contract. At a time when biodiversity risk is proliferating, biodiversity disclosure could help companies to be more responsive and socially responsible (Cho and Patten, 2007). Besides, the urgency of biodiversity issues prompts stakeholders to require companies to disclose their behaviour and practices (Jones and Solomon, 2013; Rimmel and Jonäll, 2013; Cragg and Greenbaum, 2002). Based on stakeholder theory (Freeman and Reed, 1983), organisations should consider all stakeholders' interests and expectations when making decisions. Stakeholders' engagement will promote proactive environmental strategies (Buysse and Verbeke, 2003) and increase corporate legitimacy (Boiral and Heras-Saizarbitoria, 2017b), potentially enhancing the effectiveness of biodiversity management. The final motivation is impression management (Bansal and Clelland, 2004; Boiral, 2016). Disclosure could be seen as a tool for managing impressions, which is employed by managers to influence stakeholders' perceptions and justify their actions (Bolino et al., 2008; Bansal and Clelland, 2004)to protect their own image and reputation when the companies are attacked by negative comments outside, further increasing corporate legitimacy (Bansal and Clelland, 2004). Overall, these three motivations are interrelated and influence each other (Chen and Roberts, 2010).

Nevertheless, there are still deficiencies in current biodiversity management. On the one hand, despite the increase in the number of companies disclosing

(Hassan et al., 2020; Adler et al., 2018; Rimmel and Jonäll, 2013), the disclosures are limited and too ambiguous (Skouloudis et al., 2019; Addison et al., 2019). Azizi et al. (2025) argue that these issues are particularly evident in the financial sectors, where only a small proportion of financial institutions disclose information on biodiversity risks and the quality varies widely. Integration of biodiversity considerations into corporate decision-making and strategies is still at an early stage (Maroun and Ecim, 2024; Roberts et al., 2021). On the other hand, there is a lack of research on biodiversity risk pricing (Hutchinson and Lucey, 2024). Maxim et al. (2009) Qualitatively analysed biodiversity risk using the DPSIR model, Giglio et al. (2023) developed a new-based measure of biodiversity risk and demonstrated the validity of such a metric. In addition, Coqueret et al. (2025) constructed a biodiversity intensity factor, upon which they calculated the biodiversity risk premium in the stock market. The shortage of reliable pricing methods will impede firms from accurately measuring the potential losses from biodiversity risk.

Studies of corporate biodiversity also need to consider the impact on each other. Companies with better governance (Hambali and Adhariani, 2024), with female directors (Haque and Jones, 2020; Issa and Zaid, 2023), with awards related to the environment (Hassan et al., 2020), or in industries with high biodiversity risk are more willing to engage in biodiversity management and make biodiversity disclosures (Skouloudis et al., 2019), and these positive associations are moderated by the governance quality of a country (Orazalin et al., 2025). Conversely, biodiversity risk will inhibit profitability and seriously affect business performance (Bach et al., 2024). Regarding the stock market, biodiversity risk could have a significant negative predictive power on stock returns (Ma et al., 2024). However, with the increased investors' biodiversity awareness (El Ouadghiri et al., 2025) and upgraded corporate biodiversity management, it is possible to better cope with share price declines and generate positive impacts (Bassen et al., 2024).

From the literature discussed above, it is clear that research on managerial myopia has focused on the causes leading to it and its economic consequences, while research on corporate biodiversity has mainly covered the motivation and the effects of its disclosure as well as the scarcity of pricing standards. Literature is scarce which examines how managerial myopia affects corporate biodiversity, except for (Zhao et al., 2025), which explored the impedimental effects of managerial myopia on corporate diversity performance in the Chinese context. This paper complements the findings of (Zhou et al., 2025). Our paper builds on

these research gaps to consider whether the above dampening effect exists in UK companies.

2.3. Hypothesis Development

According to the upper echelon theory (Hambrick and Mason, 1984), the behaviours and perceptions of top managers who make decisions based on their personal experiences and habits will affect the behaviour and outcomes of the organisation. Jensen and Meckling (2019) argues that managers usually bear the risks alone in the decision-making process, while the whole company shares the benefits resulting from the decisions. Thus, in order to maximise self-interests, Short-term-orientated managers focus more on the growth of current performance and stock price (Laverty, 2004), which they prefer to achieve at the expense of the long-term interests of the organisation. The impact of managerial myopia on corporate biodiversity management is mainly due to time and risk.

From the aspect of time, corporate biodiversity management is a long-term task of a company (Adler et al., 2018; Rimmel and Jonäll, 2013), which is not aimed at creating wealth but at bringing benefit to society, making it difficult to generate substantial economic value in the short term. Engagement in biodiversity management may lead to undesirable short-term financial performance, managers would shy away from making such a long-term commitment to avoid investors attributing unfavourable performance to their improper decision, affecting their reputations, despite the potential benefits that may be brought by biodiversity management (Edward Freeman, 2010). Moreover, managers are concerned not only with their reputation but also with their retention in the company (Antia et al., 2010; Manso, 2011). They stress their performance during tenure and choose short-term investments that yield quick profits, reducing investments in biodiversity management. Furthermore, corporate biodiversity is motivated by legitimacy (Deegan, 2002) and a degree of impression management (Boiral, 2016), it is unknown when and how much payback it can bring. These non-economic reasons for the drive do not inspire managers strongly to perform, leading to short-sighted managers being reluctant to manage biodiversity.

In terms of risk, first, the integration of biodiversity management into business decision-making is still in its infant stage (Maroun and Ecim, 2024; Roberts et al., 2021) and lacks standard evaluation criteria and frameworks. On the one hand, companies are exposed to long-term uncertain risks, and on the other

hand, ineffective biodiversity management policies may expose them to significant sunk and opportunity costs, with some financial risks. Myopic managers are usually willing to take lower risks (Coles et al., 2006) to achieve short-term stable performance and tend to choose more conservative investment strategies (Holden and Lundstrum, 2009) when faced with risky investment projects, which makes it prudent for them to engage in biodiversity management. Besides, Narayanan (1985) suggests that until managers are able to assess the value accurately, they will choose to invest in sub-optimal projects in the short term to improve business for higher compensation. The lack of norms of biodiversity risk pricing in the market (Giglio et al., 2023; Hutchinson and Lucey, 2024) would prompt cautious managers to decrease investments in this field in favour of other traditional ones. Building on the literature, we proposed the following hypothesis:

Hypothesis 1: Managerial myopia will impede corporate biodiversity management.

Due to the expensive agency costs and information asymmetry between managers and shareholders, firms always employ remuneration mechanisms to mitigate these issues (Garen, 1994). Although some firms adopt equity-based compensation, earnings are still the ones used most frequently (Murphy and Jensen, 2011). Incentives embedded in managerial compensation may affect their decisions and behaviour. Profitability-based salary could encourage managers to manipulate earnings (Matsunaga and Park, 2001) as they fear penalties from the salary system when the company fails to achieve its required return, inspiring focus on short-term resources and goals (Coles et al., 2006). Meanwhile, earnings-based bonus schemes also incentivise managers to manage short-term earnings (Guidry et al., 1999; Holthausen et al., 1995; Healy, 1985), such as reducing R&D (Tong and Zhang, 2024), to maximise their bonuses. As a result, managers will intentionally engage in myopic behaviours and decisions in their pursuit of high compensations, further exacerbating the consequences of managerial myopia. As biodiversity management is a long-term strategy, myopic managers will downplay its role and reduce investment in it when chasing salaries. Based on the literature, we proposed the following hypothesis:

Hypothesis 2.1: Higher salary could intensify the negative impact of managerial myopia on biodiversity management.

Board diversity is closely linked to the management and performance of businesses. Much of the existing literature suggests that board diversity such as age (Zajac and Westphal, 1996), tenure (Kosnik, 1990), gender (Huse et al., 2009), etc. positively impacts a company's performance, in which diversity of ethnicity and nationality plays a significant role (Erhardt et al., 2003; Estélyi and Nisar, 2016). Ethnic diversity may produce higher-quality ideas (Milliken and Martins, 1996) and reduce decision-making bias brought by the similarity-attraction effect (Byrne, 1997), allowing boards to make choices more responsive to stakeholders' needs. From a CSR perspective, directors from different nations have access to a wider social community, diverse knowledge (Lau et al., 2016) and cultures interact, encouraging companies to keep abreast of hot societal issues. Moreover, boards with diverse national backgrounds are aware of international situations and opportunities (Tihanyi et al., 2005), enabling directors to acquire new insights in certain areas. This promotes corporate acceptance of environmental management and the adoption of proactive policies (Christmann and Taylor, 2001), like reducing pollution (Eskeland and Harrison, 2003) and energy consumption to increase biodiversity (Beji et al., 2021). Biodiversity as a major concern has attracted much attention. Foreign directors with various opinions discuss and consult on this issue to promote the development of corporate biodiversity management. According to the literature, we proposed the following hypothesis:

Hypothesis 2.2: Board national diversity mitigates the negative impact of managerial myopia on biodiversity management.

3. Data Description

3.1. Biodiversity Risk and Concern Data

Effective measures for quantifying biodiversity risks and exposures associated with corporate biodiversity have begun to emerge. Giglio et al. (2023) made an early attempt to measure the extent of corporate-level biodiversity performance over time using statistical methods. Inspired by their methodology, He et al. (2024) introduced biodiversity-related indices for China. Subsequently, Rao et al. (2024) developed biodiversity risk and concern indices for Indian corporations. Drawing motivation from these studies, we employ a text analysis approach to construct biodiversity risk and concern indices using annual reports, as the language used in these reports provides valuable insights into a firm's strategy and concerns regarding biodiversity.

The initial step is to collect textual data from the financial reports of FTSE 350-listed companies, covering the period from 2013 to 2023. The final dataset comprises 1,157 valid firm-year observations. Next, we utilized the biodiversity dictionary developed by Giglio et al. (2023), which includes terms related to biodiversity, such as *biodiversity, ecosystem(s), ecology, ecological, habitat(s), species, rainforest(s), deforestation, fauna, flora, marine, tropical, freshwater, wetland, wildlife, coral, aquatic, desertification, carbon sink(s), ecosphere* and *biosphere*. Using this dictionary, we conducted text mining within the annual reports, recording the frequency of biodiversity-related terms.

To construct the Biodiversity Risk Index, we assigned a value of 1 if the term frequency exceeded two occurrences in a given report and 0 otherwise. This approach allowed us to establish a biodiversity risk index at the firm-year level. Meanwhile, the Biodiversity Concern Index, an alternative biodiversity measure, is calculated as the ratio of the biodiversity keyword character count to the total character count of the annual report. These two biodiversity measures captured distinct aspects of corporate biodiversity engagement. The Biodiversity Risk Index is a binary measure that evaluates a firm's basic exposure to biodiversity risks by counting the occurrences of biodiversity-related terms in the annual reports. In contrast, the Biodiversity Concern Index provides a continuous measure, reflecting the intensity of corporate attention to biodiversity issues. Given these distinctions, the two indices complement each other in assessing corporate biodiversity engagement. The data are available for download at https://tinyurl.com/45futd8y

3.1.1. Trends in Biodiversity Risk and Concern Indices

Figure 1 presents the trends of the Biodiversity Risk Index and the Biodiversity Concern Index for UK FTSE 350 companies from 2013 to 2023. Both indices exhibit a general upward trend, reflecting increasing risk exposure and corporate attention to biodiversity, as indicated by the growing frequency of biodiversity-related terms in annual reports.

During the early years (2013–2019), the indices follow a relatively steady upward trajectory with minor fluctuations. However, both the Biodiversity Risk Index and the Biodiversity Concern Index experience a significant surge after 2019. This sharp increase may coincide with the release of the UK's 25-Year Environment Plan (2018) and the EU Sustainable Finance Action Plan (2018), both of which emphasize corporate responsibility in biodiversity protection and encourage firms to integrate biodiversity risks into their sustainability strategies.

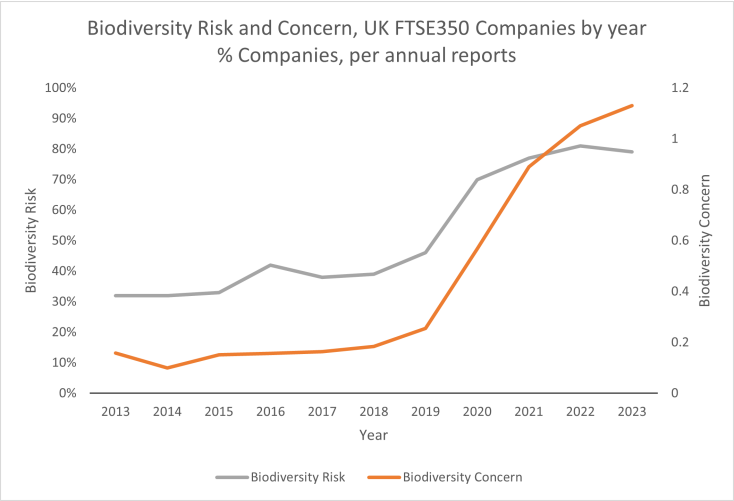

Figure 1: This figure illustrates the trends in biodiversity risk and concern indices for FTSE 350 companies from 2013 to 2023.

Since then, corporate attention to biodiversity has remained consistently high, with the Biodiversity Risk Index peaking sharply in 2022 and the Biodiversity Concern Index reaching its highest level in 2023. Biodiversity risk scores are generally higher than concern scores, though the gap narrows over time, suggesting that companies are increasingly prioritizing biodiversity in their strategic planning.

The overall trends align with the Chinese data, though the UK data is at a slightly lower level. Both exhibit a similar gradual upward trajectory in the early years, followed by a sharp rise after key policy releases. Similar trends are also observed in the Indian data. In contrast, the biodiversity indices show only partial alignment with the US data, which displays the lowest intensity. This may be due to differences in text sources: the US data is drawn from 10-K reports, which typically provide more detailed information and have a higher word count compared to the annual reports used in other studies.

Figure 2 and Figure 3 illustrate the trend of the biodiversity risk and biodiversity concern indices within the UK FTSE350 companies across nine main sectors. The sectors are grouped by the first 2 digits of SIC code, including Construction, Finance, Manufacturing (manu), mining, Public, Retail, Services, Transportation (trans), and Wholesale.

Most biodiversity risk and concern indices have shown upward trends over

the past decade, with a sharp surge after 2019. Biodiversity risk remains highest in the mining, public services, and construction sectors, which show consistent increases over time. Finance, manufacturing, and transportation sectors demonstrate moderate but steadily rising risk levels, while retail and services remain comparatively lower, though both exhibit gradual upward trends.

Biodiversity concern indices follow a similar trend, with the construction sector reaching the highest scores, exceeding 2.5 by 2023. Mining and manufacturing also show notable increases in concern, closely aligning with their respective risk levels. Transportation and wholesale sectors experience sharp growth in concern after 2020, whereas finance and retail maintain comparatively lower concern levels, despite rising risks.

Overall, Figure 2 and Figure 3 underscore the urgency of bridging the gap between risk and concern, particularly in sectors lagging in awareness, to ensure long-term sustainability.

3.2. Managerial Myopia Data

To capture managerial myopia, we focus on myopic managerial behaviour and utilize abnormal cuts in expenditures on long-term investments as a proxy (Wahal and McConnell, 2000; Chen et al., 2015). In this context, expenditures on long-term investments (LTI) are defined as the sum of property, plant, and equipment ($PP\&E$), research and development ($R\&D$), and selling, general, and administrative ($SG\&A$) expenses. This approach is based on the premise that corporate managers are highly sensitive to stock price performance and are often averse to short-term declines in stock prices. Consequently, they may avoid pursuing long-term investments that generate value over extended periods but impose immediate costs. To quantify this phenomenon, we construct following regression:

$$LTI_{i,t} = PP\&E_{i,t} + R\&D_{i,t} + SG\&A_{i,t} \tag{1}$$

$$LTI_{i,t} = \alpha_0 + \alpha_1 PP\&E_{i,t-1} + \alpha_2 R\&D_{i,t} + \alpha_3 SG\&A_{i,t} + \varepsilon_{i,t} \tag{2}$$

Where $PP\&E_{i,t}$, $R\&D_{i,t}$, and $SG\&A_{i,t}$ represent the expenditures on PP&E, R&D, and SG&A for company i in year t, respectively. i denotes the different FTSE 350-listed companies, and $E_{i,t}$ expresses the deviation from the trend. A negative $\varepsilon_{i,t}$ indicates that these costs are lower than predicted, reflecting the extent of managerial myopia. A value of 1 is assigned in such cases, and 0 otherwise. The final metrics of managerial myopia are presented below:

$$MM_{i,t} = \begin{cases} 1, & \varepsilon_{i,t} < 0 \\ 0, & \varepsilon_{i,t} \geq 0 \end{cases} \tag{3}$$

3.3. Control Variables

We control for a set of firm-level factors, consistent with prior studies by Zhao et al. (2025) and Brochet et al. (2015). These variables include firm size (*Size*), firm age (*Age*), leverage ratio (*LEV*), cash flow ratio (*CFO*), return on assets (*ROA*), firm growth (*GROW*), Tobin's Q (*TOBINQ*), and fixed asset ratio (*TANG*), all of which are potentially correlated with managerial myopia. In addition, we account for board characteristics by including board size (*BOARD*). The inclusion of these control variables ensures that the analysis adequately captures firm-specific characteristics that may influence the dependent variable. Detailed definitions of these variables are provided in Table 1.

3.4. Data Preparation and Sample Selection

Before conducting the empirical analysis, we refined the dataset to ensure a qualified sample. First, we excluded firm observations with incomplete financial reports for the period 2013 to 2023. Second, to mitigate the impact of statistical outliers, we winsorized the upper and lower 5% tails of the distribution for all variables used in the regression analysis. Following this data cleansing process, the final sample comprises data from FTSE 350-listed companies over the period 2013 to 2023, resulting in 1,157 firm-year observations.

Our selected sample period spans from 2013 to 2023. The release of the UK Natural Environment White Paper in 2011 emphasized the importance of integrating natural capital considerations into economic decisions. However, in the two years following its release (2011–2012), companies disclosed only a limited amount of biodiversity-related information. A noticeable increase in the volume and quality of disclosed data began in 2013, making it a more appropriate starting point for analysis. Additionally, the Companies Act 2006 (Strategic Report and Directors' Report) Regulations came into effect in 2013, requiring UK-listed companies to include information about environmental matters, including biodiversity, in their annual reports if they were material to the business. These regulatory developments encouraged FTSE 350 listed firms to enhance their reporting on biodiversity risks and sustainability efforts. Therefore, this study selects 2013 as the starting point for the sample period used for the empirical study.

4. Empirical Strategy

4.1. Model specification

To empirically investigate the influence of managerial myopia on corporate biodiversity performance, we conduct a fixed-effects panel regression analysis, drawing on methodologies from Zhao et al. (2025), as outlined in Equation 4:

$$Biodiv_{i,t} = \beta_0 + \beta_1 MM_{i,t} + \gamma' Controls_{i,t} + \delta_{ind} + \theta_t + \varepsilon_{i,t} \tag{4}$$

where $Biodiv_{i,t}$ is the dependent variable, representing the biodiversity risk exposure of firm i in year t; $MM_{i,t}$ is the primary independent variable, which denotes the degree of managerial myopia of firm i in year t; $Controls_{i,t}$ is a set of firm-level control variables as described in Section 3.2; δ_{ind} captures firm fixed effects, controlling for time-invariant unobserved heterogeneity across firms; θ_t represents year fixed effects, capturing time-varying characteristics and common shocks that are consistent across all units within each year; and $\varepsilon_{i,t}$ is the standard error term.

5. Empirical Analysis

5.1. Descriptive statistics

We report the descriptive statistics of our main variables in Table 2, including the mean, standard deviation, minimum, median, and maximum values for each variable. The maximum value for corporate biodiversity risk is 3.367, with a minimum of 0.000 and a mean of 0.430, indicating that FTSE 350-listed companies exhibit varying levels of biodiversity risk exposure, with the average level suggesting moderate risk exposure across the sample. However, the standard deviation of managerial myopia is 4.384, with a maximum value of 13.266, a minimum of 0.000, and a mean of 2.935. This suggests significant variation in managerial myopia across firms. The distribution of other control variables aligns with existing literature.

5.2. Baseline regression results

Following Equation 4, Table 3 and Table 4 present the baseline regression results assessing the influence of managerial myopia on corporate biodiversity risk and biodiversity concern, respectively.

In Table 3, Columns (1) and (2) report the regression results without additional firm-level controls, where the coefficients for managerial myopia are

negative (−0.025 and −0.016) and statistically significant at the 1% level. This indicates a significant negative relationship between managerial myopia and biodiversity risk. This negative association persists and remains statistically significant at the 1% level even after controlling for other firm-level factors, as shown in Columns (3) and (4). These findings illustrate that firms with greater levels of managerial myopia are inclined to exhibit weaker biodiversity performance, thus supporting the main hypothesis in this study.

Table 4 extends the analysis to biodiversity concern indices, providing insights into firms' attention and responsiveness to biodiversity challenges. Columns (1) and (2), which exclude firm-level controls, reveal negative coefficients for managerial myopia (-0.388 and -0.164), both significant at the 1% level. This suggests that firms with greater managerial myopia are less likely to exhibit strong biodiversity concern, reflecting reduced strategic focus on biodiversity-related issues. The negative association remains statistically significant at the 1% level in Columns (3) and (4) after incorporating firm-level controls. The magnitude of the coefficients decreases slightly with the inclusion of controls, indicating that firm-specific factors partially mediate the relationship. Tangibility exhibits a significant negative effect on biodiversity concern in Column (4), whereas age shows a strong positive association in Column (1), illustrating the role of firm characteristics in shaping biodiversity awareness.

Overall, the biodiversity risk analysis reflects firms' exposure to biodiversity-related threats, while the concern analysis captures their proactive engagement and awareness. Consequently, the analyses in Table 3 and Table 4 provide robust empirical support for the study's hypothesis that managerial myopia adversely impacts corporate biodiversity performance, with implications for both risk exposure and strategic responsiveness.

5.3. Endogeneity Analysis

This study investigates the impact of managerial myopia on corporate biodiversity. To address potential endogeneity concerns and establish causal inference, we employ the Instrumental Variable/Two-Stage Least Squares (IV-2SLS) approach. The primary challenge in this analysis is that managerial myopia may be influenced by potential bias arising from omitted variables and reverse causality, making standard regression analysis insufficient to draw causal conclusions.

To overcome this, we use the industry-level average myopia (*iv_myopia*) as an instrument for firm-level myopia. This instrument is calculated by grouping firms based on their Standard Industrial Classification (SIC) codes and taking

the mean myopia value for each industry. The appropriateness of *iv_myopia* as an instrument is supported by the following considerations:

1. Exogeneity: *iv_myopia* is exogenous to the model as it captures industry-level trends and does not directly influence individual firms' biodiversity outcomes, satisfying the exclusion restriction.

2. Relevance: *iv_myopia* is strongly correlated with firm-level myopia, as shown in the first-stage regression results.

The first-stage regression yields a positive and significant coefficient for *iv_myopia*, 1.014, at the 1% significance level in Table 5. Additionally, the Kleibergen-Paap rk Wald F-statistic of $4,260.970$ confirms that the instrument is neither under- nor weakly identified. These results validate the strength and relevance of the instrument. In the second-stage regression, the coefficient of firm-level myopia is negative, -0.014, and significant at the 1% level, providing robust evidence that managerial myopia negatively impacts corporate biodiversity performance in terms of risk.

Extending the analysis to biodiversity concern (Table 6), the second-stage regression reveals a significant negative coefficient for firm-level myopia, indicating that managerial myopia also adversely affects biodiversity concern, though the magnitude of the effect is smaller compared to biodiversity risk.

The IV-2SLS results for both biodiversity risk and biodiversity concern provide robust evidence that managerial myopia adversely impacts corporate biodiversity performance across multiple dimensions, ensuring that the observed relationship is not driven by endogeneity or reverse causality, supporting a causal inference.

6. Robustness Tests

6.1. Propensity score matching

To avoid the potential sample selection bias, we apply the propensity score matching (*PSM*) method to conduct a 1:1 matching as a robustness check (Caliendo and Kopeinig, 2008). Specifically, we define the firms exposed to managerial myopia as the treatment group, and others as the control group.

We select control variables, including *size*, *leverage*, *growth*, *ROA*, *Tobin's Q*, *tangibility*, *cash flow*, and *age*, as covariates for a logistic regression to calculate the propensity scores of firms in the treatment group (those exposed to managerial myopia). These propensity scores are then used to identify matched counterparts from the control group (firms without myopia) that exhibit similar

characteristics to those in the treatment group. This matching ensures a robust comparison of biodiversity outcomes between the two groups while minimizing biases arising from differences in firm-level characteristics.

Table 7, Column (1) presents the results for biodiversity risk after applying PSM. The coefficient for managerial myopia is negative (−0.018) and statistically significant at the 1% level, indicating that managerial myopia is associated with lower biodiversity outcomes, even after addressing potential sample selection bias. Among the control variables, size has a significant negative coefficient (−0.058), suggesting that larger firms tend to have lower biodiversity performance in the matched sample. Similarly, Column (2) presents results for biodiversity concern, where the coefficient for managerial myopia is negative (−0.163), though not statistically significant, indicating a weaker relationship between managerial myopia and biodiversity concern under the matched sample.

These results validate the robustness of the primary findings, demonstrating that the observed negative relationship between managerial myopia and biodiversity outcomes is not driven by observable sample selection bias.

6.2. Alternative specification

Taking into account the possibility that the estimation results may have been influenced by model specifications, this study employs an alternative model to validate the findings. In the context of biodiversity risk exposure, the dependent variable is censored at zero when the biodiversity-related term frequency in financial reports does not exceed two occurrences. The Tobit model, proposed by McDonald and Moffitt (1980), is widely recognized as the most appropriate method for handling censored variables. In this study, Tobit regression is employed as an alternative specification to address the potentially censored nature of the two knowledge-related dependent variables, ensuring robust and unbiased estimates. The Tobit regression results for biodiversity risk and biodiversity concern are presented in Columns (3) and (4) of Table 7, respectively. Both coefficients for myopia are negative and statistically significant at the 1% level (risk: -0.084, concern: -0.289), which further substantiates our baseline findings and ensures the results are not affected by functional misspecification biases.

6.3. Mechanism tests: Dynamic effects of managerial myopia

To examine the dynamic effects of managerial myopia on biodiversity outcomes, we re-estimate the baseline model using lagged one-period managerial

myopia (*L.myopia*) as the independent variable. This approach captures the impact of prior-year managerial myopia on current-year biodiversity performance.

The results, presented in Columns (5) and (6) of Table 7, show that the coefficient for *L.myopia* is negative (-0.001 for biodiversity risk and -0.118 for biodiversity concern). The effect is statistically significant at the 10% level for biodiversity concern but not for biodiversity risk. This suggests that the dynamic influence of managerial myopia is more pronounced in firms' proactive engagement and strategic prioritization of biodiversity issues, as reflected in biodiversity concern. In contrast, biodiversity risk, being binary and more indicative of immediate exposure, may be less sensitive to lagged managerial behavior.

Overall, the findings indicate that the adverse effects of managerial myopia on biodiversity outcomes are not only immediate but also persist over time, albeit with varying magnitudes. These results provide additional validation for the baseline model, demonstrating the enduring influence of managerial myopia on corporate biodiversity outcomes.

6.4. Other robustness check: Controlling for industry-level heterogeneity

To address potential unobserved heterogeneity at the industry level, we re-estimate the model by including industry fixed effects. This addition ensures that the estimated relationship between managerial myopia and biodiversity performance is not confounded by time-specific, firm-specific, or year-industry-specific shocks.

The results, presented in Columns (7) and (8) of Table 7, demonstrate that the inclusion of industry fixed effects does not alter the primary findings. The coefficient for managerial myopia remains negative (-0.016 for biodiversity risk and -0.168 for biodiversity concern) and statistically significant at the 1% level. These results provide robust evidence that managerial myopia has a significant adverse effect on biodiversity performance, even when industry-specific variations are considered. This robustness check reinforces the proposition that managerial myopia hinders firm-level biodiversity performance. The results highlight the importance of addressing short-termism at both the firm and industry levels to improve biodiversity outcomes.

7. Moderation effects analysis

We examine how institutional factors moderate the firm-specific corporate biodiversity with key moderators such as salary level and board national diversity.

7.1. Salary level

Executive salary plays a critical role in influencing firms' investment in research and development (R&D) (Lu et al., 2020), a key factor associated with managerial myopia. In this study, we examine the moderating effect of salary-based incentive on the relationship between managerial myopia and biodiversity performance. To do so, we include an interaction term between the managerial myopia variable and the salary variable *myopia_salary*. The salary variable is measured as the logarithm of the total compensation size of the management team.

The regression results of biodiversity risk, presented in Column (1) of Table 8, indicate that the coefficient for the interaction term (*myopia_salary*) is 0.000 and not statistically significant. This suggests that executive salary levels do not significantly moderate the relationship between managerial myopia and biodiversity risk. However, the main effect of salary on biodiversity risk is negative (−0.160) and statistically significant at the 1% level, indicating that higher executive salaries are associated with poorer biodiversity risk outcomes. This suggests that compensation structures prioritize short-term profits at the expense of biodiversity risk management.

Column (1) of Table 9 presents the biodiversity concern regression results. The interaction term (*myopia_salary*) has a significant negative effect on the relationship between managerial myopia and biodiversity concern (coefficient: −0.260, $p < 0.05$). In contrast, the main effect of salary on biodiversity concern is not statistically significant. This implies that executive compensation alone does not directly shape corporate biodiversity concern. These results, when compared with biodiversity risk, suggest that while salary levels have a direct negative impact on biodiversity risk, their influence on biodiversity concern emerges primarily through their interaction with managerial myopia.

7.2. Board nationality diversity

Nationality diversity reflects the presence of foreign directors from various nationalities on the board, potentially shaping management behaviour and corporate disclosure practices (Fuente et al., 2017). Building on this literature, our study examines the relationship between managerial myopia and biodiversity, recognizing that both variables are associated with board nationality diversity. To account for the potential influence of board nationality diversity on these variables, we adopt the methodology of Hambali and Adhariani (2024), using national diversity as a key moderating variable.

In terms of biodiversity risk, the empirical results of Table 8 Column (2) show a significant positive coefficient for the interaction term between myopia and board diversity (*myopia_nationmix*), suggesting that greater board nationality diversity mitigates the negative effect of short-term managerial myopia by promoting efficient biodiversity risk management. Furthermore, the main effect of *nationmix* is positive (0.559) and statistically significant at the 1% level, indicating that increased board nationality diversity is directly associated with improved biodiversity risk exposure.

For biodiversity concern, as shown in Column (2) of Table 9, the interaction term (*myopia_nationmix*) has a positive coefficient (0.143), though it is not statistically significant. This suggests that the moderating effect of board nationality diversity on the relationship between managerial myopia and biodiversity concern is weaker compared to biodiversity risk. Similarly, the main effect of board nationality diversity on biodiversity concern is also not statistically significant. This distinction may arise because board nationality diversity enhances a firm's ability to respond to complex regulatory environments and effectively address stakeholder pressures, as reflected in the biodiversity risk index. However, it may not directly influence a firm's long-term sustainability strategies, which depend more on internal priorities and managerial commitment, as captured by biodiversity concern.

Overall, these results imply that while board nationality diversity helps mitigate biodiversity risk, its impact on biodiversity concern is less pronounced.

8. Further Analysis

We test cross-sectional heterogeneity of our baseline results by focusing on three dimensions: the level of firm size, the presence of female director, and the degree of listing duration. By conducting subgroup analysis, we divide our comprehensive sample into two distinct subgroups for each analysis and compare the results of them.

8.1. Firm size

Udayasankar (2008) examines how firms of different sizes exhibit varying levels of performance in corporate social responsibility (*CSR*) activities. *CSR* involves integrating sustainable practices into a company's core operations, and biodiversity performance naturally aligns with these efforts. To account for the potential effect of firm size differences on corporate biodiversity performance,

we conduct a subgroup analysis based on firm size. The sample is divided into large and small firms using the median size as the threshold. The results for the large and small firm subgroups are then compared to examine differences in the relationship between managerial myopia and biodiversity performance.

The findings from the subgroup analysis in Table 10 indicate that managerial myopia has a significant negative impact on biodiversity risk in both large firms (-0.012) and small firms (-0.019). The results suggest that the adverse effect of managerial myopia is slightly more pronounced in smaller organizations, possibly due to their limited resources and heightened vulnerability to short-term decision-making pressures. Among the control variables, leverage and Tobin's Q show positive and statistically significant coefficients in small firms. These findings suggest that financial flexibility and market valuation pressures drive biodiversity-related risk disclosures in smaller organizations. However, cash flow (CFO) exhibits a negative and significant coefficient (-1.082, $p < 0.10$) in large firms, indicating that large firms with limited cash flow may prioritize short-term profit instead of biodiversity risk management.

The results for biodiversity concern are presented in Table 11. The coefficient for managerial myopia is negative and significant for large firms, indicating that managerial myopia reduces biodiversity concern in larger organizations. For small firms (Column 2), the results are not statistically significant, which may be due to a lack of substantial resources and biodiversity-related strategic focus. Smaller firms tend to prioritize short-term profits and operational survival, placing less emphasis on biodiversity investments.

Compared biodiversity risk and concern results, the firm size subgroup analysis reveals distinct dynamics: Biodiversity risk is more significantly impacted in small firms, likely due to their limited resources and higher financial constraints, whereas biodiversity concern is more sensitive to managerial myopia in large firms, reflecting their greater stakeholder pressures and formalized sustainability practices.

8.2. Presence of female directors

Motivated by prior studies on the impact of board gender diversity on biodiversity disclosures and the role of female directors in initiating and supporting sustainability practices (Haque and Jones, 2020; Issa and Zaid, 2023), we conduct a subsample analysis to compare the baseline model results for firms with and without female directors.

Table 12 and Table 13 present the heterogeneity analysis, examining whether the presence of female directors influences the relationship between managerial myopia and biodiversity performance. Comparing the results, we observe that biodiversity risk is not statistically significant for managerial myopia, regardless of the presence of female directors. This may be because biodiversity risk, as a basic binary measure, does not fully capture the nuanced role of female directors.

In contrast, the results for biodiversity concern in firms with female directors show a significant negative coefficient for managerial myopia. Biodiversity concern reflects biodiversity-related strategic engagement, which aligns more closely with governance mechanisms like board diversity and transparency initiatives. This finding likely reflects the ability of female directors to enhance transparency in corporate biodiversity disclosures, thereby bringing to light the adverse impacts of managerial short-termism on biodiversity strategies.

8.3. Listing duration

In historical contexts, firm age serves as a boundary condition for a firm's ability to translate strategies into meaningful performance outcomes (Coad et al., 2018). As a subset of firm age, firm listing duration closely tracks with firm age and may potentially impact the relationship between managerial myopia and biodiversity performance. To examine how this relationship varies with listing duration, we divide FTSE 350 firms into two subgroups—long-listed firms and short-listed firms—based on the median listing duration.

From the analysis of biodiversity risk (Table 14), myopia shows a significant negative coefficient, reinforcing the negative association with biodiversity risk regardless of listing duration. However, the stronger negative coefficient for firms with a longer listing duration (-0.019) compared to those with a shorter duration (-0.014) suggests that long-listed firms are exposed to a higher level of biodiversity risk. Similarly, in Table 15, the results for biodiversity concern show a statistically significant coefficient in long-listed firms only. These findings may be attributed to the expectation of sustained environmental performance over time, as long-listed firms often have a larger base of institutional investors who demand the integration of biodiversity considerations into operations to align with ESG principles. Consequently, managerial myopia may be more detrimental in these firms, as it conflicts with the sustainability expectations of such investors.

9. Conclusion

This study provides evidence that short-term managerial decision-making, or managerial myopia, significantly hinders corporate biodiversity management. Firms led by myopic executives are less likely to invest in long-term ecological initiatives, increasing their vulnerability to environmental disruptions and potential reputational harm. Moreover, our results demonstrate that salary-based incentives, especially those tied heavily to short-term earnings, amplify the negative association between myopia and biodiversity efforts. In such settings, managers appear more inclined to sacrifice conservation initiatives to secure near-term financial gains. By contrast, the presence of nationally diverse boards can temper these adverse effects. Firms that incorporate directors from various cultural and regulatory backgrounds show stronger biodiversity performance, suggesting that diverse perspectives mitigate short-termist behaviors and enhance the strategic commitment to environmental stewardship.

The findings carry several practical implications. For corporate governance, they underscore the importance of reconfiguring incentive systems to reward longer-term outcomes and reduce the emphasis on quarterly metrics. Such reforms may help align managerial decisions with broader ecological and societal interests. From a sustainability standpoint, greater board diversity emerges as a compelling governance tool to encourage constructive debate on environmental issues and promote more resilient ecological strategies. Policymakers could further reinforce these trends by adopting frameworks that incentivize board diversity and require more transparent disclosures on biodiversity practices—mirroring advances seen in climate-related financial reporting.

Notwithstanding the robustness of our empirical analyses, this research faces certain limitations. For instance, the measures of biodiversity risk and managerial myopia may not capture the full complexity of environmental challenges or managerial behaviors across all industries. Future studies could explore additional governance attributes (e.g., ownership structures or executive networks) and extend the analysis to different geographic contexts. Expanding qualitative research—such as interviews or case studies—would also enhance our understanding of the specific processes through which boards influence biodiversity strategies. Overall, our study highlights the critical role of managerial horizons in ecological investment decisions and suggests a practical path for firms and policymakers seeking to integrate sustainability objectives into financial decision-making.

Table 1: Variable Definitions

Type	Variable Name	Definition
Control Variable	**Firm Size (SIZE)**	Natural logarithm of the total assets of the firm.
	Leverage (LEV)	Debt-to-asset ratio.
	Firm Growth (GROW)	Revenue growth rate.
	Return on Assets (ROA)	Ratio of net profit to total assets.
	Tobin's Q (TOBINQ)	(Total market value + Total liabilities) / Total assets.
	Fixed Asset Ratio (TANG)	Net fixed assets / Total assets.
	Cash Flow Ratio (CFO)	Net cash flow from operating activities / Total assets.
	Board Size (BOARD)	Natural logarithm of the total number of board members.
	Firm Age (AGE)	Natural logarithm of the number of years since listing.

Table 2: Descriptive Statistics

This table presents the descriptive statistics for the variables used in the analysis. The statistics include the number of observations (N), mean, standard deviation (SD), minimum (Min), median, and maximum (Max) values for each variable.

Variable	N	Mean	SD	Min	Median	Max
Biodiversity Risk	1,157	0.518	0.500	0.000	1.000	1.000
Biodiversity Concern	1,157	0.433	0.849	0.000	0.000	4.043
Myopia	1,157	2.935	4.384	0.000	0.241	13.266
Size	1,157	22.376	2.060	18.396	22.154	28.120
Leverage (lev)	1,157	0.565	0.234	0.055	0.570	0.995
Growth (grow)	1,157	0.167	3.055	-13.316	0.031	19.089
ROA (roa)	1,157	0.075	0.097	-0.147	0.058	0.544
Tobin's Q (tobinq)	1,157	1.934	3.095	0.043	1.123	26.265
Tangibility (tang)	1,157	0.264	0.267	0.000	0.177	0.957
Cash Flow (cfo)	1,157	0.104	0.097	-0.059	0.084	0.540
Age	1,157	3.530	0.762	1.792	3.466	4.868

Table 3: Baseline Regression Results: Biodiversity Risk

This table presents the baseline regression results exploring the relationship between myopia and biodiversity risk. The dependent variable across all models is biodiversity risk. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	(1)	(2)	(3)	(4)
Myopia	-0.025^{***}	-0.016^{***}	-0.020^{***}	-0.016^{***}
	(0.004)	(0.003)	(0.003)	(0.003)
Size			0.017	-0.079
			(0.056)	(0.048)
Leverage (lev)			0.102	0.195
			(0.228)	(0.199)
Growth ($grow$)			-0.003	-0.006^{**}
			(0.003)	(0.003)
ROA (roa)			0.092	0.324
			(0.236)	(0.227)
Tobin's Q ($tobinq$)			0.023^{***}	0.022^{**}
			(0.009)	(0.009)
Tangibility ($tang$)			0.709^{**}	0.507^{**}
			(0.277)	(0.216)
Cash Flow (cfo)			-0.416	-0.373
			(0.257)	(0.233)
Age			0.936^{***}	0.060
			(0.153)	(0.196)
Constant	0.342^{***}	0.204^{***}	-3.606^{***}	1.504
	(0.011)	(0.033)	(1.076)	(1.142)
Firm Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes
Observations (N)	1,157	1,157	1,157	1,157
Adjusted R^2	0.072	0.319	0.209	0.336

Table 4: Baseline Regression Results: Biodiversity Concern

This table presents the baseline regression results examining the relationship between myopia and biodiversity concern. The dependent variable across all models is biodiversity concern. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	(1)	(2)	(3)	(4)
Myopia	-0.388^{***}	-0.164^{***}	-0.251^{***}	-0.168^{***}
	(0.081)	(0.059)	(0.070)	(0.057)
Size			1.505	-0.855
			(1.064)	(0.892)
Leverage (lev)			2.649	5.221
			(4.008)	(3.805)
Growth ($grow$)			-0.104	-0.124
			(0.085)	(0.080)
ROA (roa)			0.881	5.569
			(4.008)	(3.964)
Tobin's Q ($tobinq$)			0.418^{**}	0.353
			(0.183)	(0.231)
Tangibility ($tang$)			-3.025	-8.143^{*}
			(4.046)	(4.723)
Cash Flow (cfo)			-4.401	-3.433
			(6.352)	(6.139)
Age			21.936^{***}	-2.432
			(2.957)	(4.778)
Constant	7.674^{***}	2.414^{***}	-104.923^{***}	28.106
	(0.238)	(0.705)	(23.463)	(25.084)
Firm Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes
Observations (N)	1,157	1,157	1,157	1,157
Adjusted R^2	0.032	0.287	0.171	0.298

Table 5: Endogeneity Analysis: IV-2SLS Regression Results - Biodiversity Risk
This table presents the results of an Instrumental Variables Two-Stage Least Squares (IV-2SLS) regression. The instrument used is the industry-level average myopia ($iv_$myopia). The first stage uses $iv_$myopia to predict $myopia$, and the second stage estimates the effect of $myopia$ on biodiversity risk ($biodiversity$). Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	First Stage ($myopia$)	Second Stage ($biodiversity$)
Myopia		-0.014^{***}
		(0.004)
IV Myopia ($iv_$myopia)	1.014^{***}	
	(0.019)	
Size	0.196	-0.079^{**}
	(0.342)	(0.032)
Leverage (lev)	-1.865	0.196
	(1.229)	(0.131)
Growth ($grow$)	0.026	-0.006^{*}
	(0.017)	(0.003)
ROA (roa)	0.510	0.323
	(2.161)	(0.201)
Tobin's Q ($tobinq$)	0.132	0.022^{***}
	(0.094)	(0.007)
Tangibility ($tang$)	-1.594	0.508^{**}
	(1.662)	(0.160)
Cash Flow (cfo)	3.830^{*}	-0.377^{*}
	(2.192)	(0.223)
Age	0.559	0.057
	(1.505)	(0.138)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	1,157	1,149
Adjusted R^2	0.441	0.335
Kleibergen-Paap rk Wald F-statistic		4,260.970

Table 6: Endogeneity Analysis: IV-2SLS Regression Results - Biodiversity Concern
This table presents the results of an Instrumental Variables Two-Stage Least Squares (IV-2SLS) regression. The instrument used is the industry-level average myopia (iv_myopia). The first stage uses iv_myopia to predict $myopia$, and the second stage estimates the effect of $myopia$ on biodiversity concern ($biodiversity2$). Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	First Stage ($myopia$)	Second Stage ($biodiversity2$)
Myopia		-0.154^{*}
		(0.079)
IV Myopia (iv_myopia)	1.014^{***}	
	(0.019)	
Size	0.196	-0.853
	(0.342)	(0.668)
Leverage (lev)	-1.865	5.224^{**}
	(1.229)	(2.657)
Growth ($grow$)	0.026	-0.124
	(0.017)	(0.076)
ROA (roa)	0.510	5.565
	(2.161)	(3.890)
Tobin's Q ($tobinq$)	0.132	0.351^{**}
	(0.094)	(0.162)
Tangibility ($tang$)	-1.594	-8.140^{**}
	(1.662)	(3.273)
Cash Flow (cfo)	3.830^{*}	-3.454
	(2.192)	(5.903)
Age	0.559	-2.449
	(1.505)	(2.909)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	1,157	1,149
Adjusted R^2	0.441	0.298
Kleibergen-Paap rk Wald F-statistic		4,260.970

Table 7: Robustness Checks

This table presents the results of robustness checks using different specifications: (1)-(2) Propensity Score Matching (PSM); (3)-(4) Tobit Model; (5)-(6) Lagged Myopia; and (7)-(8) Industry Fixed Effects (FE). The dependent variable is biodiversity risk in columns (1), (3), (5), and (7) and biodiversity concern in columns (2), (4), (6), and (8). Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	PSM (1)	PSM (2)	Tobit (3)	Tobit (4)	Lagged Myopia (5)	Lagged Myopia (6)	Industry FE (7)	Industry FE (8)
Myopia	-0.018^{***}	-0.163	-0.084^{***}	-0.289^{***}			-0.016^{***}	-0.168^{***}
	(0.004)	(0.105)	(0.012)	(0.082)			(0.003)	(0.057)
Lagged Myopia ($L.myopia$)					-0.001	-0.118^{*}		
					(0.003)	(0.063)		
Size	-0.058	-1.879	0.105^{**}	0.965^{*}	-0.066	-0.470	-0.079	-0.855
	(0.062)	(1.362)	(0.044)	(0.505)	(0.056)	(0.991)	(0.048)	(0.892)
Leverage (lev)	-0.041	0.851	0.039	1.573	0.212	4.338	0.195	5.221
	(0.240)	(6.271)	(0.312)	(3.307)	(0.223)	(4.223)	(0.199)	(3.805)
Growth ($grow$)	-0.007^{*}	-0.052	-0.011	-0.087	-0.005	-0.087	-0.006^{**}	-0.124
	(0.004)	(0.095)	(0.011)	(0.101)	(0.003)	(0.092)	(0.003)	(0.080)
ROA (roa)	0.547^{*}	9.798	0.696	4.189	0.427	6.424	0.324	5.569
	(0.323)	(6.907)	(0.624)	(6.137)	(0.278)	(4.481)	(0.227)	(3.964)
Tobin's Q ($tobinq$)	0.011	0.295	0.018	-0.421	0.022^{**}	0.401^{*}	0.022^{**}	0.353
	(0.026)	(0.699)	(0.031)	(0.353)	(0.011)	(0.235)	(0.009)	(0.231)
Tangibility ($tang$)	0.852^{**}	-10.080	1.159^{***}	3.070	0.629^{*}	-8.068	0.507^{**}	-8.143^{*}
	(0.334)	(7.826)	(0.263)	(3.172)	(0.330)	(6.363)	(0.216)	(4.723)
Cash Flow (cfo)	-0.362	-4.012	-1.618^{**}	-3.390	-0.765^{***}	-9.053	-0.373	-3.433
	(0.354)	(8.792)	(0.762)	(7.474)	(0.264)	(7.218)	(0.233)	(6.139)
Age	-0.047	-1.486	-0.055	0.741	-0.158	-2.968	0.060	-2.432
	(0.218)	(6.085)	(0.102)	(1.218)	(0.275)	(5.947)	(0.196)	(4.778)
Constant	1.451	50.109	-3.107^{**}	-28.007^{**}	1.774	21.940	1.504	28.106
	(1.491)	(35.976)	(0.993)	(11.470)	(1.395)	(29.986)	(1.142)	(25.084)
Firm/Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	No	No	No	No	No	Yes	Yes
Observations (N)	657	657	1,157	1,157	941	941	1,157	1,157
Adjusted R^2	0.391	0.334			0.304	0.284	0.336	0.298

Table 8: Moderating Effects of Salary Level and Board National Diversity: Biodiversity Risk
This table presents the results of regression models analyzing the moderating effects of salary level and board national diversity on the relationship between myopia and biodiversity risk. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	(1) Salary Level	(2) Board National Diversity
Myopia	-0.017^{***}	-0.009^{***}
	(0.003)	(0.002)
Salary	-0.160^{***}	
	(0.042)	
Myopia × Salary (*myopia_salary*)	0.000	
	(0.005)	
Board National Diversity (*nationmix*)		0.559^{***}
		(0.053)
Myopia × Board Diversity (*myopia_nationmix*)		0.021^{**}
		(0.009)
Size	−0.045	-0.085^{**}
	(0.049)	(0.038)
Leverage (*lev*)	0.216	0.269
	(0.201)	(0.164)
Growth (*grow*)	-0.005^{*}	-0.006^{**}
	(0.003)	(0.003)
ROA (*roa*)	0.435^{*}	0.203
	(0.230)	(0.198)
Tobin's Q (*tobinq*)	0.024^{***}	0.026^{***}
	(0.009)	(0.009)
Tangibility (*tang*)	0.471^{**}	0.275
	(0.210)	(0.202)
Cash Flow (*cfo*)	−0.223	−0.253
	(0.234)	(0.239)
Age	0.047	−0.129
	(0.196)	(0.183)
Constant	2.088^{*}	2.037^{**}
	(1.144)	(0.979)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	1,157	1,157
Adjusted R^2	0.354	0.438

Table 9: Moderating Effects of Salary Level and Board National Diversity: Biodiversity Concern

This table presents the results of regression models analyzing the moderating effects of salary level and board national diversity on the relationship between myopia and biodiversity concern. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	(1) Salary Level	(2) Board National Diversity
Myopia	-0.168^{***}	-0.183^{***}
	(0.057)	(0.065)
Salary	-0.713	
	(0.981)	
Myopia × Salary (*myopia_salary*)	-0.260^{**}	
	(0.124)	
Board National Diversity (*nationmix*)		-1.947
		(1.435)
Myopia × Board Diversity (*myopia_nationmix*)		0.143
		(0.278)
Size	-0.750	-0.849
	(0.928)	(0.896)
Leverage (*lev*)	5.327	4.927
	(3.758)	(3.789)
Growth (*grow*)	-0.115	-0.124
	(0.081)	(0.079)
ROA (*roa*)	4.928	6.498
	(4.320)	(3.964)
Tobin's Q (*tobinq*)	0.306	0.360
	(0.239)	(0.230)
Tangibility (*tang*)	-7.877^{*}	-7.263
	(4.708)	(4.628)
Cash Flow (*cfo*)	-2.143	-4.147
	(6.204)	(6.168)
Age	-1.902	-1.705
	(4.757)	(4.609)
Constant	29.578	26.366
	(25.072)	(24.838)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	1,157	1,157
Adjusted R^2	0.303	0.301

Table 10: Heterogeneity Analysis: Firm Size (Large/Small) - DIFF 1: Biodiversity Risk
This table presents the regression results examining the effect of myopia on biodiversity risk across different firm sizes. Column (1) represents large firms, while column (2) represents small firms. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	(1) Large Firms	(2) Small Firms
Myopia	-0.012^{**}	-0.019^{***}
	(0.005)	(0.004)
Size	-0.097	-0.097
	(0.061)	(0.060)
Leverage (lev)	-0.283	0.464^{*}
	(0.282)	(0.248)
Growth ($grow$)	-0.007	-0.003
	(0.004)	(0.004)
ROA (roa)	0.135	0.439
	(0.336)	(0.311)
Tobin's Q ($tobinq$)	0.031	0.022^{**}
	(0.056)	(0.009)
Tangibility ($tang$)	0.194	0.590^{**}
	(0.401)	(0.238)
Cash Flow (cfo)	-1.082^{*}	-0.004
	(0.548)	(0.254)
Age	-0.277	0.257
	(0.344)	(0.244)
Constant	3.705^{*}	0.858
	(2.004)	(1.319)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	577	580
Adjusted R^2	0.361	0.320

Table 11: Heterogeneity Analysis: Firm Size (Large/Small) - DIFF 1: Biodiversity Concern
This table presents the regression results examining the effect of myopia on biodiversity concern across different firm sizes. Column (1) represents large firms, while column (2) represents small firms. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	(1) Large Firms	(2) Small Firms
Myopia	-0.300^{**}	-0.079
	(0.115)	(0.049)
Size	-1.226	-0.193
	(1.682)	(1.397)
Leverage (lev)	3.953	5.538
	(7.937)	(3.464)
Growth ($grow$)	-0.111	-0.029
	(0.118)	(0.097)
ROA (roa)	0.373	5.525
	(8.624)	(4.483)
Tobin's Q ($tobinq$)	3.540^{***}	0.232
	(1.271)	(0.208)
Tangibility ($tang$)	-18.255	0.232
	(12.644)	(3.872)
Cash Flow (cfo)	-12.199	-0.131
	(11.715)	(6.982)
Age	-13.325	6.713
	(8.799)	(5.696)
Constant	77.437	-19.895
	(57.086)	(29.207)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	577	580
Adjusted R^2	0.380	0.225

Table 12: Heterogeneity Analysis: Presence of Female Directors (Yes/No) - DIFF 2: Biodiversity Risk

This table presents the results of heterogeneity analysis based on the presence of female directors (Yes/No). The dependent variable is biodiversity risk. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	Female Directors (Yes)	Female Directors (No)
Myopia	−0.009	−0.016
	(0.005)	(0.015)
Size	−0.075	−0.048
	(0.051)	(0.043)
Leverage (lev)	0.162	0.249
	(0.226)	(0.182)
Growth ($grow$)	−0.005	−0.000
	(0.004)	(0.001)
ROA (roa)	0.381	−0.104
	(0.274)	(0.130)
Tobin's Q ($tobinq$)	0.024**	0.002
	(0.010)	(0.004)
Tangibility ($tang$)	0.736**	0.037
	(0.300)	(0.071)
Cash Flow (cfo)	−0.513*	0.147
	(0.288)	(0.138)
Age	−0.091	−0.128
	(0.230)	(0.249)
Constant	1.866	1.535
	(1.269)	(1.172)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	932	225
Adjusted R^2	0.329	0.164

Table 13: Heterogeneity Analysis: Presence of Female Directors (Yes/No) - DIFF 2: Biodiversity Concern

This table presents the results of heterogeneity analysis based on the presence of female directors (Yes/No). The dependent variable is biodiversity concern. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses.

VARIABLES	Female Directors (Yes)	Female Directors (No)
Myopia	-0.219^{**}	-0.059
	(0.096)	(0.131)
Size	-0.853	-0.471
	(0.980)	(1.189)
Leverage (lev)	5.241	-1.400
	(4.210)	(3.469)
Growth ($grow$)	-0.103	0.017
	(0.098)	(0.043)
ROA (roa)	5.847	-7.620
	(4.971)	(8.467)
Tobin's Q ($tobinq$)	0.419^{*}	-0.256
	(0.253)	(0.305)
Tangibility ($tang$)	-9.476	0.558
	(6.382)	(1.570)
Cash Flow (cfo)	-3.792	6.474
	(8.072)	(5.046)
Age	-4.228	1.690
	(5.078)	(9.525)
Constant	33.056	6.653
	(27.113)	(26.994)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	932	225
Adjusted R^2	0.327	0.170

Table 14: Heterogeneity Analysis: Listing Duration (Long/Short) - DIFF 3: Biodiversity Risk
This table presents the results of heterogeneity analysis based on listing duration (long/short). The dependent variable is biodiversity risk. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses. Fisher's test is conducted for model specification.

VARIABLES	Long Listing Duration (1)	Short Listing Duration (2)
Myopia	-0.019^{***}	-0.014^{***}
	(0.004)	(0.004)
Size	0.021	-0.119^{**}
	(0.084)	(0.054)
Leverage (lev)	0.403	0.132
	(0.301)	(0.268)
Growth ($grow$)	-0.008^{**}	-0.002
	(0.004)	(0.006)
ROA (roa)	0.241	0.425
	(0.278)	(0.356)
Tobin's Q ($tobinq$)	0.014	0.020^{**}
	(0.029)	(0.010)
Tangibility ($tang$)	0.823^{***}	0.226
	(0.297)	(0.511)
Cash Flow (cfo)	-0.371	-0.399
	(0.335)	(0.322)
Age	0.117	-0.126
	(0.871)	(0.342)
Constant	-1.102	2.922^{**}
	(3.681)	(1.393)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	595	562
Adjusted R^2	0.359	0.333
Fisher's test (P value)	0.000	

Table 15: Heterogeneity Analysis: Listing Duration (Long/Short) - DIFF 3: Biodiversity Concern

This table presents the results of heterogeneity analysis based on listing duration (long/short). The dependent variable is biodiversity concern. Coefficients marked with ***, **, and * are significant at 1%, 5%, and 10% levels, respectively. Standard errors are shown in parentheses. Fisher's test is conducted for model specification.

VARIABLES	Long Listing Duration (1)	Short Listing Duration (2)
Myopia	-0.247^{**}	-0.088
	(0.099)	(0.057)
Size	0.243	-1.592^{*}
	(2.037)	(0.878)
Leverage (lev)	3.909	6.491
	(8.931)	(4.008)
Growth ($grow$)	-0.137	-0.112
	(0.108)	(0.146)
ROA (roa)	-0.144	13.246^{**}
	(5.264)	(6.546)
Tobin's Q ($tobinq$)	0.105	0.301
	(0.776)	(0.250)
Tangibility ($tang$)	-7.400	-14.546
	(6.710)	(9.895)
Cash Flow (cfo)	-7.103	-3.983
	(9.132)	(8.741)
Age	30.063	0.774
	(30.482)	(8.824)
Constant	-125.011	34.788
	(125.345)	(33.519)
Firm/Year Fixed Effects	Yes	Yes
Observations (N)	595	562
Adjusted R^2	0.326	0.290
Fisher's test (P value)	0.000	

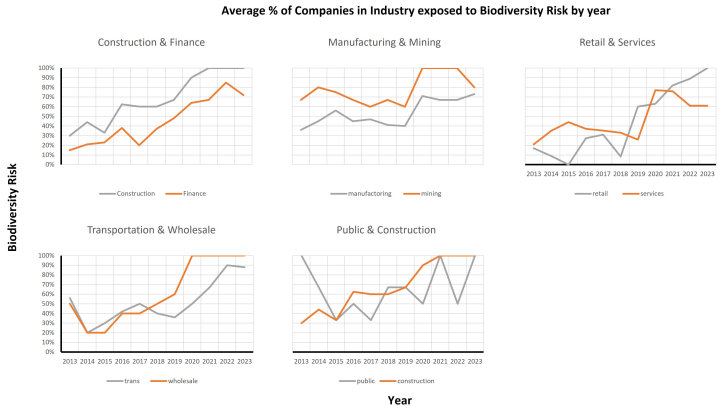

Figure 2: This figure shows the trends in biodiversity risk across nine main industries in the FTSE 350 from 2013 to 2023.

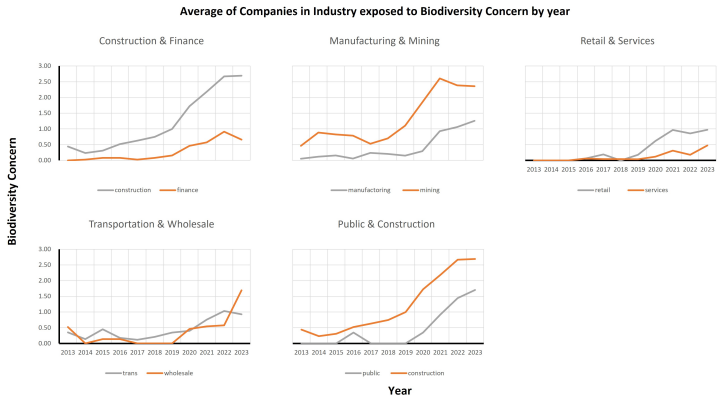

Figure 3: This figure shows the trends in biodiversity concern across nine main industries in the FTSE 350 from 2013 to 2023.

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