



Firm Biodiversity risk exposure and Distance-to-Default

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Outline of the presentation

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1. Objectives
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1. Objectives

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- We examine the effects of this time-varying exposure to biodiversity risk exposure (Giglio et al. 2023) at the firm level, while considering various aspects, on the corporate distance to default.
 - Firms exposed more to biodiversity risk exposure exhibit a lower profitability
 - Climate change exposure (Sautner et al., 2023), board gender diversity and ESG play crucial roles in moderating this relationship.
 - Explore whether other firm-specific characteristics moderate the positive association between biodiversity risk exposure and distance to default.
 - Data on the U.S. companies spanning 2004 to 2020

2. Literature review

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- Biodiversity—the diversity of life on Earth—is fundamental to the health of our environment, society, and economy. In the most extreme scenario, the collapse of ecosystems would bring all business operations to a halt.
 - Despite this, little research has explored how biodiversity risk impacts firms' financial performance (Adamolekun, 2024, IJFMIM).
 - Growing recognition of the link between biodiversity and financial risk has led to the emergence of disclosure frameworks aimed at assessing corporate dependence on, and impact upon, nature (Nedopil, 2022, BSE).

- H_1 : *Firms exposed more to biodiversity risk (i.e., higher biodiversity score) exhibit a lower distance to default (i.e., higher default risk) (Adamolekun, 2024, JIFMIN)*
- H_2 : *Firms exposed more to biodiversity risk (i.e., higher biodiversity score) exhibit a lower profitability (Bach et al., 2024, BSE)*
- H_3 : *The effect of biodiversity risk on the corporate distance to default is less pronounced for firms with more climate change exposure (i.e., - climate change occur in the transcripts of earnings conference calls, firms disclosed climate changes are further exposed to diversity risk) (Feng et al., 2024 BJM; Vu et al., 2025 IRFA).*
- H_4 : *Boards with greater gender diversity signal a firm's heightened attention to biodiversity concerns, enhanced internal monitoring, and lower levels of information asymmetry (Altunbas et al., 2022, JCF).*
- H_5 : *ESG ratings serve as external markers of a company's social capital, stakeholder focus, and credibility—elements that contribute to less effective management of biodiversity-related risks (The cost is higher to achieve ESG objectives).*

- We study the linkage between biodiversity risk and distance to default using the following baseline regression specification:

$$DtD_{i,t} = \alpha + \beta BioR_{i,t} + \gamma_1 X_{i,t} + \gamma_2 Y_{i,t} + \mu_i + \delta_t + \epsilon_{i,t}$$

- where $DtD_{i,t}$ is the distance to default for firm i at year t , α is a constant, and β and γ are the coefficients to be estimated. $BioR_{i,t}$ captures biodiversity risk of firm i in year t using Giglio et al. (2023). Building upon previous studies (e.g., Atif and Ali, 2021; Capasso et al., 2020; Gutierrez-Lopez et al., 2022; Kabir et al., 2021; Nguyen et al., 2023), we incorporate two sets of control variables $X_{i,t}$ $Y_{i,t}$ in the baseline specification for firm and governance characteristics.

- The distance to default (*DtD*) model views a firm's equity as a call option on its assets, leading to bankruptcy when the asset value drops below the debt value:

$$DtD_{i,t} = \frac{\ln\left(\frac{V_{i,t}}{D_{i,t}}\right) + \left(\mu - \frac{\sigma_{V_{i,t}}^2}{2}\right) \cdot T}{\sigma_{V_{i,t}} \sqrt{T}}$$

$$NaiveDtD_{i,t} = \frac{\ln\left(\frac{E_{i,t} + D_{i,t}}{D_{i,t}}\right) + \left(r_{i,t-1} - \frac{naive\sigma_{V_{i,t}}^2}{2}\right) \cdot T}{naive\sigma_{V_{i,t}} \sqrt{T}}$$

- Where $V_{i,t}$ represents the estimated asset value for firm i at time t , while $D_{i,t}$ denotes the firm's corresponding debt. The variable μ captures the yearly anticipated return on the firm's asset, and the volatility of the asset is indicated by $\sigma_{V_{i,t}}$. In line with the methods of Vassalou and Xing (2004), we typically consider a one-year span for the time horizon T .

Table 2.
Descriptive Statistics

| | N | Mean | Std. | Min | P25 | Median | P75 | Max |
|-----------------|-------|--------|--------|--------|--------|--------|--------|--------|
| DtD | 12382 | 6.137 | 4.560 | -2.089 | 2.905 | 5.217 | 8.720 | 20.939 |
| BioR | 12382 | 0.019 | 0.135 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| Board_Diversity | 7619 | 17.192 | 9.851 | 0.000 | 11.110 | 16.670 | 25.000 | 42.860 |
| ESGr | 7626 | 41.496 | 18.268 | 9.660 | 26.580 | 38.800 | 55.040 | 80.210 |
| ROA | 12377 | 0.067 | 0.100 | -0.365 | 0.038 | 0.079 | 0.122 | 0.235 |
| MB | 12378 | 2.076 | 1.248 | 0.765 | 1.256 | 1.660 | 2.419 | 8.815 |
| Ln[Age] | 12382 | 2.798 | 0.457 | 1.099 | 2.485 | 2.890 | 3.178 | 3.434 |
| Ln[TA] | 12382 | 7.661 | 1.610 | 2.437 | 6.522 | 7.542 | 8.699 | 13.221 |
| Cash/TA | 12382 | 0.158 | 0.169 | 0.005 | 0.035 | 0.096 | 0.214 | 0.789 |
| Debt/Equity | 12382 | 0.497 | 0.482 | 0.002 | 0.159 | 0.359 | 0.661 | 2.535 |
| Capex/PPE | 12368 | 0.221 | 0.131 | 0.026 | 0.122 | 0.188 | 0.286 | 0.604 |

This table reports descriptive statistics of all variables employed in our main models. Variables are defined and measured in Appendix 1.

Appendix 1.
Description of variables.

| Variable | Description | Source and references |
|---|--|-------------------------------------|
| Dependent variables | | |
| <i>DiD</i> | Distance to default | Calculated from Compustat |
| <i>Naïve DiD</i> | Naïve distance to default | Calculated from Compustat |
| Independent variable: Biodiversity score | | |
| <i>BioCount</i> | Dummy variable equals 1 if company mentions biodiversity at least twice in the firm's 10-K report; otherwise, it is set to 0 | Gilio et al. (2023) |
| <i>BioNegative</i> | Dummy variable equals 1 if company mentions negative biodiversity sentences minus the number of positive biodiversity sentences; otherwise, it is set to 0 | Gilio et al. (2023) |
| <i>BioRegulation</i> | Dummy variable equals 1 if company mentions biodiversity in at least two sentences and at least one of them is about regulation in the 10-K statements; ; otherwise, it is set to 0 | Gilio et al. (2023) |
| Firm specific control variables | | |
| ROA | Operating income before depreciation, minus depreciation, and amortization, and then divided by total assets. | Compustat |
| M/B | The ratio of market value of assets to the book value of total asset. | Compustat |
| <i>Ln[Age]</i> | Natural logarithm of firm age. Firm age is the number of years since firm's accounting data available on Compustat. | Compustat |
| <i>Ln[TA]</i> | Natural logarithm of total assets. | Compustat |
| <i>Cash/TA</i> | Cash divided by total assets. | Compustat |
| <i>Debt/Equity</i> | The ratio of debt to equity. | Compustat |
| <i>Capex/PPE</i> | Capital expenditures divided by property, plant, and equipment. | Compustat |
| Board and Governance related variables | | |
| <i>bgd</i> | Board gender diversity, measured by the fraction of female directors on boards. | LSEG |
| <i>CEO-Chair separation</i> | Dummy variable equal 1 if CEO is not Chairman and 0 otherwise. | LSEG |
| <i>Climate governance</i> | Climate governance, computed by a composite index including three individual components (i.e., the existence of environmental committee; climate-related incentives for top managers; and the sustainability reporting), This index captures the effectiveness of climate change related governance mechanisms on default risks. | LSEG |
| <i>Governance quality</i> | Overall LSEG Governance Score, capturing the effectiveness of a firm's governance mechanism. | LSEG |
| <i>BoardSkills</i> | Board Specific Skills, measured by the percentage of board members who have either an industry specific background or a strong financial background | LSEG |
| <i>Board average tenure</i> | Average Board Tenure, measured by the average number of years each board member has been on the board | LSEG |
| <i>Board size</i> | The total number of board members | LSEG |
| <i>Board Independent</i> | The percentage of independent directors on board. | LSEG |



| | | |
|---|--|-----------------------------|
| <i>Board average tenure</i> | Average Board Tenure, measured by the average number of years each board member has been on the board | LSEG |
| <i>Board size</i> | The total number of board members | LSEG |
| <i>Board Independent</i> | The percentage of independent directors on board. | LSEG |
| National control variables | | |
| <i>GDP growth</i> | National GDP growth | World Bank |
| <i>Inflation</i> | Inflation rate | International Monetary Fund |
| Other variables | | |
| <i>cc Expo</i> | Relative frequency with which bigrams related to climate change occur in the transcripts of earnings conference calls. | Sautner et al. (2023) |
| <i>ESG</i> | ESG Rating, which is estimated as the average of the environment, social and governance scores. It evaluates firms' environmental (E) performance in three categories: resource use, emissions, and innovation, and Social (S) commitments in four areas: workplace, human rights, community, and product responsibility, and Governance (G) is evaluated in three dimensions: management, shareholders, and corporate social responsibility strategy. | LSEG |
| <i>EPS</i> | Country Environmental Policy Stringency Index. | OECD |
| <i>CO2/TA</i> | Carbon risk, measured by total estimated CO2 equivalent emission divided by total assets | LSEG |
| <i>Log[1+Total Emissions_{t-1}]</i> | Carbon emissions, measured by the natural log of one plus the one-year lagged carbon emissions | LSEG |
| <i>Environmental score</i> | Environmental engagement score | LSEG |
| <i>Post2009</i> | Dummy variable equal 1 if the year is after 2009 and 0 otherwise. | Author's estimation |
| <i>Post2015</i> | Dummy variable equal 1 if the year is after 2015 and 0 otherwise. | Author's estimation |

H₁: Firms exposed more to biodiversity risk (i.e., higher biodiversity score) exhibit a lower distance to default (i.e., higher default risk) (Adamolekun, 2024, JIFMIN) 6/17/2025

Table 4. Fixed Effects Regression baselines with BioCount

| | Dependent variable: | | |
|-------------------------|---------------------------|----------------------------|----------------------------|
| | dd_num_4_w5 | | |
| | (1) | (2) | (3) |
| biocount | -1.087*** (0.190) | -0.442*** (0.164) | -0.442*** (0.164) |
| Board_Diversity_w5 | | 0.008* (0.004) | 0.008* (0.004) |
| ESGr_Score_w5 | | 0.022*** (0.003) | 0.022*** (0.003) |
| ROA_w5 | | 11.471*** (0.415) | 11.471*** (0.415) |
| MB_w5 | | 1.111*** (0.032) | 1.111*** (0.032) |
| LOG_age_w5 | | 0.541*** (0.087) | 0.541*** (0.087) |
| LOG_TA_w5 | | 0.069* (0.037) | 0.069* (0.037) |
| CASH_w5 | | 0.112 (0.309) | 0.112 (0.309) |
| DE_w5 | | -3.190*** (0.074) | -3.190*** (0.074) |
| CAPEX_w5 | | 0.141 (0.338) | 0.141 (0.338) |
| Observations | 12,382 | 7,608 | 7,608 |
| R ² | 0.003 | 0.439 | 0.439 |
| Adjusted R ² | -0.002 | 0.434 | 0.434 |
| F Statistic | 32.882*** (df = 1; 12322) | 591.086*** (df = 10; 7540) | 591.086*** (df = 10; 7540) |

| | Dependent variable: | | | |
|-------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| | dd_num_4 | | | |
| | (1) | (2) | (3) | (4) |
| negative_dum | -1.519*** (0.304) | -0.497 (0.325) | | |
| Board_Diversity | | 0.001 (0.006) | | 0.001 (0.006) |
| ESGr_Score | | 0.034*** (0.004) | | 0.034*** (0.004) |
| ROA | | 8.182*** (0.402) | | 8.177*** (0.402) |
| MB | | 0.726*** (0.033) | | 0.725*** (0.033) |
| LOG_age | | 0.917*** (0.129) | | 0.913*** (0.129) |
| LOG_TA | | -0.118** (0.051) | | -0.119** (0.051) |
| CASH | | 1.819*** (0.420) | | 1.841*** (0.419) |
| DE | | -0.003 (0.004) | | -0.003 (0.004) |
| CAPEX | | 0.709 (0.435) | | 0.691 (0.435) |
| regulation | | | -1.020*** (0.289) | -0.664** (0.299) |
| Observations | 12,382 | 7,608 | 12,382 | 7,608 |
| R ² | 0.002 | 0.169 | 0.001 | 0.170 |
| Adjusted R ² | -0.003 | 0.162 | -0.004 | 0.162 |
| F Statistic | 24.995*** (df = 1; 12322) | 153.868*** (df = 10; 7540) | 12.473*** (df = 1; 12322) | 154.178*** (df = 10; 7540) |

Note: *p<0.1; **p<0.05; ***p<0.01

H₂: Firms exposed more to biodiversity risk (i.e., higher biodiversity score) exhibit a lower profitability (Bach et al., 2024, BSE)

| | <i>Dependent variable:</i> | | |
|-------------------------|----------------------------|---------------------------|---------------------------|
| | (1) | ROA_w5 (2) | (3) |
| biocount | -0.031*** (0.004) | -0.023*** (0.005) | -0.023*** (0.005) |
| Board_Diversity_w5 | | 0.00001 (0.0001) | 0.00001 (0.0001) |
| ESGr_Score_w5 | | 0.0002*** (0.0001) | 0.0002*** (0.0001) |
| MB_w5 | | 0.023*** (0.001) | 0.023*** (0.001) |
| LOG_age_w5 | | 0.030*** (0.002) | 0.030*** (0.002) |
| LOG_TA_w5 | | 0.009*** (0.001) | 0.009*** (0.001) |
| CASH_w5 | | -0.247*** (0.008) | -0.247*** (0.008) |
| DE_w5 | | -0.013*** (0.002) | -0.013*** (0.002) |
| CAPEX_w5 | | 0.043*** (0.009) | 0.043*** (0.009) |
| Observations | 12,377 | 7,608 | 7,608 |
| R ² | 0.004 | 0.230 | 0.230 |
| Adjusted R ² | -0.001 | 0.223 | 0.223 |
| F Statistic | 52.571*** (df = 1; 12317) | 250.603*** (df = 9; 7541) | 250.603*** (df = 9; 7541) |

H₃: The effect of biodiversity risk on the corporate distance to default is less pronounced for firms with more climate change exposure (i.e., - climate change occur in the transcripts of earnings conference calls, firms disclosed climate changes are further exposed to diversity risk) (Feng et al., 2024 BJM; Vu et al., 2025 IRFA).

| | Dependent variable: | | | |
|--------------------------------------|---|----------------------|----------------------|----------------------|
| | dd_num_4_w5 | | | |
| | (1) | (2) | (3) | (4) |
| biocount | -0.893*** (0.230) | -0.893*** (0.230) | 0.426 (0.420) | 2.129** (1.046) |
| cc_expo_w5 | -0.464 (0.458) | -0.464 (0.458) | | |
| Gov_Pillar_Score_w5 | | | 0.003 (0.002) | |
| log(est_co2_emission_total) | | | | 0.094*** (0.037) |
| Board_Diversity_w5 | 0.007* (0.004) | 0.007* (0.004) | 0.007* (0.004) | 0.008* (0.005) |
| ESGr_Score_w5 | 0.023*** (0.003) | 0.023*** (0.003) | 0.021*** (0.003) | 0.023*** (0.003) |
| ROA_w5 | 11.446*** (0.415) | 11.446*** (0.415) | 11.424*** (0.416) | 12.025*** (0.479) |
| MB_w5 | 1.109*** (0.032) | 1.109*** (0.032) | 1.111*** (0.032) | 1.095*** (0.036) |
| LOG_age_w5 | 0.534*** (0.087) | 0.534*** (0.087) | 0.539*** (0.088) | 0.626*** (0.094) |
| LOG_TA_w5 | 0.067* (0.037) | 0.067* (0.037) | 0.078** (0.038) | -0.025 (0.053) |
| CASH_w5 | 0.096 (0.309) | 0.096 (0.309) | 0.140 (0.309) | 0.499 (0.353) |
| DE_w5 | -3.192*** (0.074) | -3.192*** (0.074) | -3.192*** (0.074) | -3.075*** (0.085) |
| CAPEX_w5 | 0.179 (0.339) | 0.179 (0.339) | 0.143 (0.338) | 0.692* (0.389) |
| biocount:cc_expo_w5 | 4.475*** (1.599) | 4.475*** (1.599) | | |
| biocount:Gov_Pillar_Score_w5 | | | -0.016** (0.007) | |
| biocount:log(est_co2_emission_total) | | | | -0.202*** (0.078) |
| Observations | 7,608 | 7,608 | 7,608 | 5,770 |
| R ² | 0.440 | 0.440 | 0.440 | 0.450 |
| Adjusted R ² | 0.435 | 0.435 | 0.435 | 0.443 |
| F Statistic | 493.625*** (df = 12; 7538) 493.625*** (df = 12; 7538) 493.268*** (df = 12; 7538) 388.482*** (df = 12; 5700) | | | |

H₄: Boards with greater gender diversity signal a firm's heightened attention to biodiversity concerns, enhanced internal monitoring, and lower levels of information asymmetry (Altunbas et al., 2022, JCF).

Fixed Effects Regression: the effect of gender diverse board

Dependent variable:

dd_num_4

| | (1) | (2) |
|--------------------------|--------------------------|----------------------------|
| biocount | -2.390*** (0.480) | -1.460*** (0.443) |
| Board_Diversity | 0.035*** (0.006) | -0.001 (0.006) |
| ESGr_Score | | 0.034*** (0.004) |
| ROA | | 8.175*** (0.402) |
| MB | | 0.725*** (0.033) |
| LOG_age | | 0.891*** (0.129) |
| LOG_TA | | -0.118** (0.051) |
| CASH | | 1.822*** (0.419) |
| DE | | -0.003 (0.004) |
| CAPEX | | 0.699 (0.435) |
| biocount:Board_Diversity | 0.062** (0.026) | 0.047** (0.024) |
| Observations | 7,619 | 7,608 |
| R ² | 0.010 | 0.171 |
| Adjusted R ² | 0.002 | 0.163 |
| F Statistic | 25.629*** (df = 3; 7558) | 140.983*** (df = 11; 7539) |

Note:

*p<0.1; **p<0.05; ***p<0.01

H₅: ESG ratings serve as external markers of a company's social capital, stakeholder focus, and credibility—elements that contribute to less effective management of biodiversity-related risks (The cost is higher to achieve ESG objectives).

Fixed Effects Regression: the effect of ESG Ratings

Dependent variable:

dd_num_4

| | (1) | (2) |
|-------------------------------|--------------------------|----------------------------|
| biocount | -0.228 (0.631) | 0.501 (0.585) |
| ESGr_Score | 0.038*** (0.003) | 0.035*** (0.004) |
| Board_Diversity | | 0.002 (0.006) |
| ROA | | 8.164*** (0.402) |
| MB | | 0.725*** (0.033) |
| LOG_age | | 0.918*** (0.129) |
| LOG_TA | | -0.119** (0.051) |
| CASH | | 1.867*** (0.419) |
| DE | | -0.003 (0.004) |
| CAPEX | | 0.637 (0.435) |
| biocount:ESGr_Score | -0.028** (0.014) | -0.031** (0.013) |
| Observations | 7,626 | 7,608 |
| R² | 0.024 | 0.171 |
| Adjusted R² | 0.016 | 0.163 |
| F Statistic | 60.714*** (df = 3; 7565) | 141.173*** (df = 11; 7539) |

Note:

* p<0.1; ** p<0.05; *** p<0.01

Robustness check

Table 5. Robustness check with Naive DD

| | <i>Dependent variable:</i> | | |
|-------------------------|---------------------------------------|--|--|
| | naive_dd_continuous_1_w5 | | |
| | (1) | (2) | (3) |
| biocount | -1.277 ^{***} (0.204) | -0.682 ^{***} (0.186) | -0.682 ^{***} (0.186) |
| Board_Diversity_w5 | | 0.007 (0.005) | 0.007 (0.005) |
| ESGr_Score_w5 | | 0.019 ^{***} (0.003) | 0.019 ^{***} (0.003) |
| ROA_w5 | | 11.841 ^{***} (0.469) | 11.841 ^{***} (0.469) |
| MB_w5 | | 1.341 ^{***} (0.036) | 1.341 ^{***} (0.036) |
| LOG_age_w5 | | 0.426 ^{***} (0.098) | 0.426 ^{***} (0.098) |
| LOG_TA_w5 | | 0.324 ^{***} (0.041) | 0.324 ^{***} (0.041) |
| CASH_w5 | | -0.595 [*] (0.349) | -0.595 [*] (0.349) |
| DE_w5 | | -3.295 ^{***} (0.083) | -3.295 ^{***} (0.083) |
| CAPEX_w5 | | -0.795 ^{**} (0.382) | -0.795 ^{**} (0.382) |
| Observations | 12,382 | 7,608 | 7,608 |
| R ² | 0.003 | 0.420 | 0.420 |
| Adjusted R ² | -0.002 | 0.415 | 0.415 |
| F Statistic | 39.273 ^{***} (df = 1; 12322) | 545.969 ^{***} (df = 10; 7540) | 545.969 ^{***} (df = 10; 7540) |



Table 10. Fixed Effects Regression with Lag BioCount.

| | <i>Dependent variable:</i> |
|-------------------------|----------------------------|
| | dd_num_4_w5 |
| biocount_lag1 | -0.442*** (0.164) |
| Board_Diversity_w5_lag1 | 0.008* (0.004) |
| ESGr_Score_w5_lag1 | 0.022*** (0.003) |
| ROA_w5_lag1 | 11.471*** (0.415) |
| MB_w5_lag1 | 1.111*** (0.032) |
| LOG_age_w5_lag1 | 0.541*** (0.087) |
| LOG_TA_w5_lag1 | 0.069* (0.037) |
| CASH_w5_lag1 | 0.112 (0.309) |
| DE_w5_lag1 | -3.190*** (0.074) |
| CAPEX_w5_lag1 | 0.141 (0.338) |
| Observations | 7,608 |
| R ² | 0.439 |
| Adjusted R ² | 0.434 |
| F Statistic | 591.086*** (df = 10; 7540) |



Table 11. Fixed Effects Regression Biocount Before and After Paris Agreement 2015].

| | Dependent variable: | | |
|-------------------------|--|--|--|
| | dd_num_4_w5 | | |
| | (1) | (2) | (3) |
| biocount | -1.401 ^{***} (0.255) | -1.236 ^{***} (0.264) | 0.032 (0.205) |
| Board_Diversity_w5 | 0.008 [*] (0.004) | -0.003 (0.008) | 0.011 ^{**} (0.005) |
| ESGr_Score_w5 | 0.023 ^{***} (0.003) | 0.016 ^{***} (0.004) | 0.019 ^{***} (0.003) |
| ROA_w5 | 11.458 ^{***} (0.415) | 11.965 ^{***} (0.962) | 9.903 ^{***} (0.469) |
| MB_w5 | 1.112 ^{***} (0.032) | 2.005 ^{***} (0.087) | 0.965 ^{***} (0.033) |
| LOG_age_w5 | 0.543 ^{***} (0.087) | 0.831 ^{***} (0.201) | 0.537 ^{***} (0.093) |
| LOG_TA_w5 | 0.070 [*] (0.037) | 0.385 ^{***} (0.073) | 0.052 (0.042) |
| CASH_w5 | 0.151 (0.309) | -2.006 ^{***} (0.597) | 0.715 ^{**} (0.349) |
| DE_w5 | -3.192 ^{***} (0.073) | -5.261 ^{***} (0.170) | -2.700 ^{***} (0.078) |
| CAPEX_w5 | 0.108 (0.337) | -2.136 ^{***} (0.590) | 0.533 (0.400) |
| biocount:Post_Paris | 1.548 ^{***} (0.316) | | |
| Observations | 7,608 | 2,907 | 4,701 |
| R ² | 0.441 | 0.496 | 0.442 |
| Adjusted R ² | 0.436 | 0.485 | 0.435 |
| F Statistic | 541.180 ^{***} (df = 11; 7539) | 280.118 ^{***} (df = 10; 2846) | 368.124 ^{***} (df = 10; 4644) |



5. Findings and Conclusions



- Firms with exposure to risks that emanate from ecological degradation are exposed to severe financial distress or increased default risk.
- Firms with exposure to biodiversity risk exhibits lower profitability
- Climate change expose and board diversity reduces the relationship between biodiversity risk and firm default risk while ESG intensifies them.
- Board gender diversity, emblematic of a firm's pro-climate orientation, reduces information asymmetry, and enhances internal monitoring, intensifying the positive correlation between climate exposure and distance to default. Secondly, firms with strong ESG ratings, representing social capital, trust, and a stakeholder-focused culture, are requiring more costs thus affecting firm's default risks.

5. Findings and Conclusions



- Our analysis corroborates the protective role of biodiversity risk in mitigating default risk, and increasing the profitability.
- More investigations will be done on the effects from factors like board gender diversity and robust ESG ratings. Socially responsible firms have the capacity to cultivate greater social capital and trust among their stakeholders, fostering a stakeholder-oriented culture that mitigates the firm's exposure to risks



*Thank you for your
attention!*