



# Discussion to “Biodiversity Risk”

by S. Giglio, T. Kuchler, J. Stroebel, and X. Zeng

**Mauricio Larrain E.**

**University of los Andes, Chile**

# Tour de force on biodiversity risk

- Measures bio risk from different and novel angles
  - News-based measure of aggregate bio risk
  - Firm and industry-level measures of exposure to bio risk
  - Bio risk exposure across U.S. counties
- Finds evidence that bio risks affect equity prices
- Stresses differences between climate and bio risks

# Service to profession

## Biodiversity Risk

[Download Paper](#) [Aggregate Risks](#) [Industry Exposures](#) [Spatial Exposures](#) [Download Data](#)

## Download Data

**Download:** [Biodiversity Data Codebook.pdf](#)

### 1. Aggregate Risks

- Daily NYT Risk Indices  
**Download (2000-2022):** [nyt\\_indices.csv](#)
- Monthly Google Biodiversity Attention Index  
**Download (2004-2022):** [google\\_biodiversity\\_attention\\_index.csv](#)

### 2. Biodiversity Risk Exposure

- Annual firm-level 10k-Based Biodiversity Scores  
**Download (2001-2020):** [10k\\_biodiversity\\_scores.csv](#)
- Industry-level Survey-Based Biodiversity Scores  
**Download (2023):** [survey\\_biodiversity\\_scores.csv](#)
- Industry-level Holding-Based Biodiversity Scores  
**Download (2023):** [holding\\_biodiversity\\_scores.csv](#)
- County-level Biodiversity Scores  
**Download (2010-2020):** [county\\_biodiversity\\_scores.csv](#)
- Country-level Biodiversity Scores  
**Download (2010-2022):** [country\\_biodiversity\\_scores.csv](#)

# Very relevant for Chile

- Geography spans arid desert to Antarctica
- Mountains, oceans, fjords, archipelagos
- Variety of climate and ecosystem -> variety forms life
- 30.000+ species (plants, animals, seaweed, fungus, bacteria, etc)



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# Chile se convierte en el primer país de Latinoamérica en crear un Comité de Capital Natural

La iniciativa -que será presidida por Medio Ambiente, pero que tendrá su secretaría técnica a cargo de Hacienda- establecerá una plataforma de gobernanza que entregará información y conocimiento ambiental en la toma de decisiones financieras, de presupuesto público y producción en el país.

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# (1) Is Biodiversity Risk Priced or not?

- Giglio et al. (2023) find that bio risks are already priced in U.S. stock prices
- Garel et al. (2023) find bio risks are not priced
- Coqueret and Giroux (2023) contrasts both papers and finds bio risks are not priced
- What is happening? Different bio measures? Different methodologies?



## (2) Event Study around COP15

- UN Biodiversity Conference (COP15) took place in Oct. 2021 (Kunming) and Dec. 2022 (Montreal)
- Raised awareness of biodiversity (spike in NYT-Biodiversity News Index)
- Pre-post change in equity prices, for companies with high versus low bio risk exposure
- Qualify as plausible shocks to investors' expectations of transition and regulatory risks

# (3) Is Bio Risk priced in Corporate Bonds?

- Asset pricing: look beyond stock prices
- Bio risk exposure could lead to higher default probability and higher financing costs
- Look at CDS spreads: represent a firm's credit risk
- Analysis of CDS term structure allows to study the effects of bio risk on various horizons

## (4) Effects on Financial Stability?

- Let  $BIO_i$  be the biodiversity score of industry  $i$  (e.g., 10-based score)
- Then, exposure of loan portfolio of bank  $b$  to bio risk:

$$BIO_b = \sum_i \left( \frac{Loan_{bi}}{Loan_b} \right) * BIO_i$$

- And exposure of banking system to bio risk:

$$BIO = \sum_b \left( \frac{Loan_b}{Loan} \right) * BIO_b$$

# Effects on Financial Stability?

- Provides aggregate exposure (macro prudential) and individual exposures (micro prudential)
- Can add time dimension to look at dynamics
- Can perform analysis for insurance companies and pension fund companies (replace loan exposure by securities exposure)



# Thanks!