Beyond Climate: The Impact of Biodiversity, Water, and Pollution on the CDS Term Structure

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Outline

Introduction I

➢ Infrastructure investing
- 79% of all GHG emissions & 88% of adaptation costs[1]
- Significant investments with long-term operation

➢ Financing conditions & market timing (CDS)

➢ Under-researched areas beyond Climate change
- Biodiversity
- Pollution (prevention)
- Water

➢ Double materiality & Disclosure

➢ Main results
- General "Long-termism"
- Without losing sight of short-term political events
- Differences across materiality direction and environmental areas

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[1]2021 UN report

Credit Default Swap I

Figure: CDS contract

Literature I
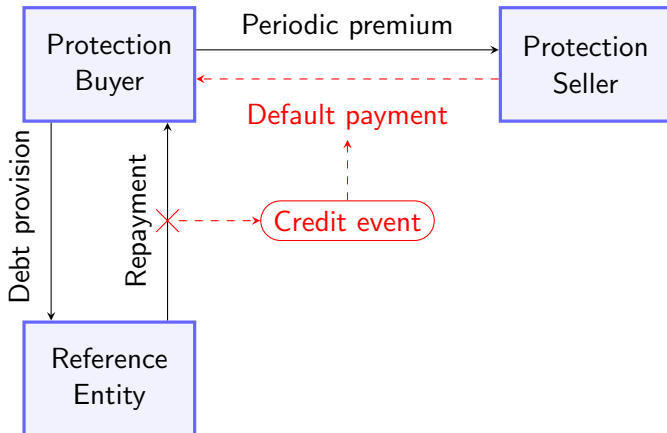
➢ ESG ↔ Financial outcomes
 Stock returns (e.g. Bolton and Kacperczyk (2021) and Hsu et al. (2022))
 Downside risk (e.g. Hoepner et al. (2018))
 Credit risk (e.g. Barth et al. (2022), Blasberg et al. (2022), and Kölbel et al. (2022))

➢ ESG (long-term) investment horizon
 (e.g. Gibson et al. (2020) and Starks et al. (2017))

➢ EUTSF ↔ Financial markets
 (e.g. Alessi and Battiston (2022), Bassen et al. (2022), Dumrose et al. (2022), Hoepner and Schneider (2022), Lucarelli
 et al. (2020), and Sautner et al. (2022))

Data I

January 2008 - January 2018

Sources:

➢ EIRiS ESG Indicators

➢ Thomson Reuters
  - CDS spreads
  - Firm-specific control variables

➢ Sustainability Accounting Standards Board (SASB)
  - Sector & Industry classification

➢ French's data library & Investing.com
  - (International) Macro-economic controls

EIRiS I

"Ethical Investment Research Service"

➢ Global leader in provision of ESG ratings

➢ Independent, not-for-profit organisation

➢ FTSE4Good (until 2013)

➢ Revenues from investors until Moody's takeover (2019)
  →Deterioration in quality (Li et al., 2022)

➢ Excellent track record with academics and NGOs (Hoepner et al., 2017)

EIRiS II

Figure: KPI matrix

EIRiS III
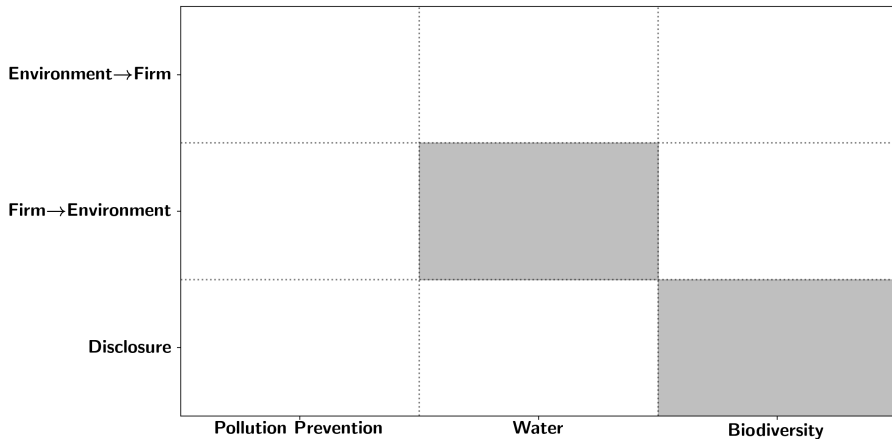
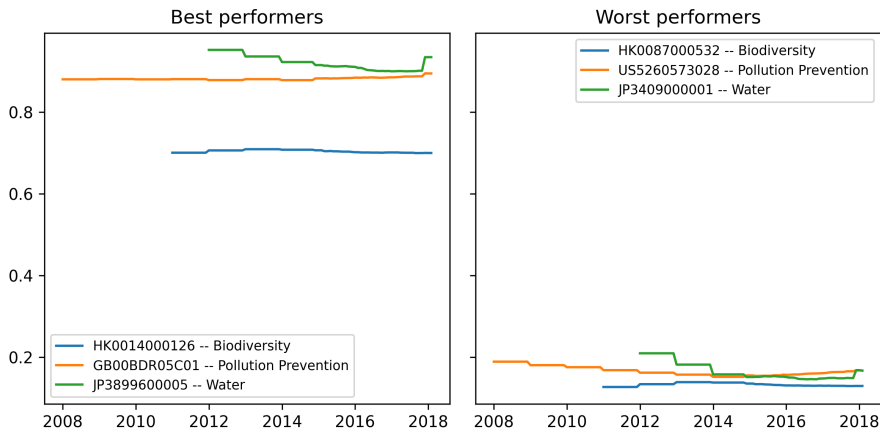1. Translate qualitative assessment into numerical values
   →Positive polarity

2. Rank transformation
   - Same scale $(0, 1)$
     → Ease of interpretation

   - Using all available (cross-sectional) data at each point in time

   - Median percentile for equal scores
     → Captures "difficulty"

   - Results are robust to within sector rank transformation

Figure: Best and Worst $RankScore$ examples

Hypotheses I

- ➤ Two (opposite) views of ESG performance on credit risk
  1. **Risk mitigation** (Barth et al., 2022)

  2. Overspending

- ➤ $RankScore$ measures firm's performance (both directions)

- ➤ Infrastructure firms are key in environmental-compatible development, often operating with long-term projects

- ➤ Flattening credit spread curve emphasizes long-term goals

Long-termism hypothesis - Performance

Infrastructure firms with higher $RankScore$ values exhibit on average flatter CDS term structure, indicating **long-termism**.

Hypotheses II

➢ The effect of corporate risk disclosure on credit risk[2]
  1 Risk perception effect

  2 **Information uncertainty effect**

➢ $RankScore$ assesses reporting quality

Long-termism hypothesis - Disclosure

Infrastructure firms with more qualitative disclosure reduce firm's opaqueness resulting in a long-term focused decrease in credit risk premia, flattening the CDS term structure.

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[2]See e.g. Kölbel et al. (2022)

Long-termism I

We perform the following one-month predictive regression:

$$CDS_{i;t+1}^{LT-ST} = \alpha + \beta RankScore_{i;t} + \Gamma X_{i;t} + \Theta Y_t + \mu_i + \tau_t + \epsilon_{i;t+1},$$

μ_i & τ_t	Industry & time fixed effects
$\epsilon_{i;t+1}$	Double clustered s.e. on firm- and time-level

Long-termism hypotheses

We expect $\boxed{\beta < 0}$, effectively flattening the credit spread term structure curve.

Table: Materiality: Environment→Firm

	(I) 5Y-1Y	(II) 5Y-1Y	(III) 5Y-1Y	(IV) 10Y-1Y	(V) 10Y-1Y	(VI) 10Y-1Y	(VII) 10Y-5Y	(VIII) 10Y-5Y	(IX) 10Y-5Y
PollutionPrevention	−29.37 (−1.45)			−43.76* (−1.76)			−14.04** (−2.24)		
Water		−43.68*** (−2.62)			−58.03*** (−2.87)			−13.95*** (−2.75)	
Biodiversity			−69.19*** (−2.80)			−93.81*** (−3.29)			−25.53*** (−3.69)
No. Obs.	7189	3725	6360	7107	3687	6278	7108	3687	6279
R-squared	0.134	0.317	0.209	0.172	0.391	0.259	0.236	0.396	0.291
Controls	True	True	True	True	True	True	True	True	True

Note: t statistics in parentheses. * p<.1, ** p<.05, ***p<.01

Long-termism - Materiality: Firm→Environment

Table: Materiality: Firm→Environment

	(I) 5Y-1Y	(II) 5Y-1Y	(III) 10Y-1Y	(IV) 10Y-1Y	(V) 10Y-5Y	(VI) 10Y-5Y
$PollutionPrevention$	-50.52^{***}		-72.58^{***}		-22.57^{***}	
	(-2.83)		(-3.34)		(-3.43)	
$Biodiversity$		-33.05		-32.52		1.85
		(-1.14)		(-0.82)		(0.13)
No. Obs.	7189	5197	7107	5147	7108	5148
R-squared	0.151	0.208	0.192	0.264	0.254	0.322
Controls	True	True	True	True	True	True

Note: t statistics in parentheses. * p<.1, ** p<.05, ***p<.01

Long-termism - Disclosure

Table: Disclosure

	(I)	(II)	(III)	(IV)	(V)	(VI)
	5Y-1Y	5Y-1Y	10Y-1Y	10Y-1Y	10Y-5Y	10Y-5Y
$Pollution Prevention$	-29.26		-38.07^*		-10.32^*	
	(-1.49)		(-1.67)		(-1.89)	
$Water$		-40.65^{**}		-64.65^{***}		-23.35^{***}
		(-2.23)		(-2.96)		(-4.04)
No. Obs.	7189	3725	7107	3687	7108	3687
R-squared	0.138	0.315	0.173	0.403	0.232	0.439
Controls	True	True	True	True	True	True

Note: t statistics in parentheses. * p<.1, ** p<.05, ***p<.01

Political shifts I

➢ Exploit shift towards right-wing politics (Trump & Brexit)

➢ Detrimental effect on (global) environmental efforts

➢ Unexpected nature
  $\Rightarrow$ Highlight causal nature $RankScore$ on term structure

We find:

➢ Political shock $\Rightarrow$ Reversal in the effect of taxonomy performance

➢ Only for regulatory linked domains (Pollution vs. water)

➢ Focus on the short-end

Conclusion

Long-term focus in infrastructure firms' financing conditions of environmental areas beyond climate

➢ Water & Biodiversity risks impacting firm are long-term issues, less strong evidence for Pollution prevention

➢ Effects of firm's commitment to pollution prevention are stronger in the long-term, no difference for biodiversity

➢ Disclosure quality corroborates long-termism

Political shocks lead to reversal of short-end impact

Danke!

Questions?

Appendix

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