Environmental Covenants and Lenders' Economic Incentives

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What are environmental covenants?

- Action Covenants: Require the borrower to take specific actions to remediate pollution.
- Information Covenants: Require the borrower to disclose information about pollution.
- Compliance Covenants: Require the borrower to comply with environmental laws and regulations. (These are in all contracts.)

Action Covenant

"if the Administrative Agent or any Lender has formed a reasonable belief that material violations of Environmental Laws may exist or Hazardous Materials may be present on the Real Property in amounts or under circumstances which could reasonably be expected to result in a liability exceeding a Material Environmental Amount, then,"

"[perform] of any cleanup, remediation, containment, operation, maintenance, monitoring or restoration work, whether on or off of the Real Property"

"restore the Real Property to the maximum extent practicable, which shall include, without limitation, the repair of any surface damage."

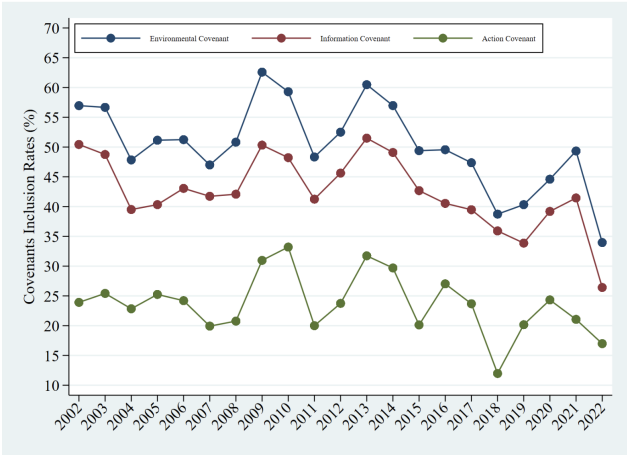
Information Covenant

"The Borrower will, and will cause each of its Subsidiaries to, permit any representatives designated by the Administrative Agent or any Lender, upon reasonable prior notice, to visit and inspect its properties, to examine and make extracts from its books and records, including environmental assessment reports and Phase I or Phase II studies,"

Compliance Covenant

"The Borrower will, and will cause each of its Subsidiaries to, comply with all laws, rules, regulations and orders of any Governmental Authority applicable to it or its property (including, without limitation, ERISA and Environmental Laws)"

Covenant Use Over Time



Covenant use over time.

What we know about Environmental Covenants in Debt Contracts

Very brief summary of the main research questions that the literature has addressed:

1. Is public environmental enforcement a complement (e.g. Choy et al., 2023) or substitute (e.g. Demerjian et al., 2025) for private monitoring (i.e. Environmental Covenants)?

- Choy et al. find complementarity using changes in *ex post* measures of enforcement.
- Demerjian et al. find substitution using changes in *ex ante* measures of enforcement.

2. Are lender's environmental commitments (e.g. the Equator Principles) associated with environmental covenant use (e.g. Amiram et al., 2021).

- Yes.*

Objective in this paper:

Examine borrower pollution activities as a hidden action problem between the borrower and the lender.

The hidden action problem

- Pollution is an externality.
- What matters to lenders is how this externality is internalized:
  1. Ineffectively (the costs stay external): Lenders may not care.
  2. Effectively and timely: Lenders care, but general contract terms are sufficient (i.e. other contract terms suffice).
  3. Effectively but **not** timely: Lenders care, but general contract terms are not sufficient.

Enforcement in the US is (historically) often effective, but not timely.

What is being hidden

Company	Year	Amount
Anaconda Smelter	2022	$126M
U.S. Magnesium	2021	$60M
Atlantic Richfield Company	2020	$150M
Nuclear Metals	2019	$125M
Doe Run	2018	$80M
Freeport-McMoran, Inc.	2017	$600M
Occidental Chemical	2016	$165M
Mosaic Fertilizer	2015	$2B
Tronox (Bankruptcy)	2014	$5.15B
Transocean	2013	$1B
Moex Offshore	2012	$90M
BP America	2011	$324M
General Motors (Bankruptcy)	2010	$773M
ASARCO (Bankruptcy)	2009	$1.79B
Lexington-Fayette	2008	$290M

Claim dilution (Smith and Warner, 1979)

Pollution allows borrowers to reduce current costs while creating future environmental liabilities that are senior to the loans in our sample.

This framework motivates our research questions and predictions.

Research questions

1. Does use of general monitoring mechanisms (spread, collateral, etc.) vs. explicitly environmental covenants vary with borrower pollution?

- i.e. Is pollution priced or monitored with collateral?

2. Does the use of environmental covenants vary with the type and location of the borrower's pollution?

- On on-site emissions of land and water pollution impact the assets the lender can claim in bankruptcy, air and off-site pollution does not.

3. Does the type of environmental covenant used to manage these agency problems vary with uncertainty?

- Are the actions to be taken specified ex-ante (complete contract), or is the contract focused on signals about the state of the world (incomplete contracting).

Data

Sources:

- Environmental Covenants: EDGAR
- Loan Contract Details: DealScan
- Borrower and Lender Fundamentals: Compustat
- Emissions: US EPA TRI data.
- Enforcement and Reputation Shocks: RepRisk

Main sample: 2002-2022

Environmental Events (RepRisk): 2008-2022

RQ 1:

Does use of general monitoring mechanisms (spread, collateral, etc.) vs. explicitly environmental covenants vary with borrower pollution?

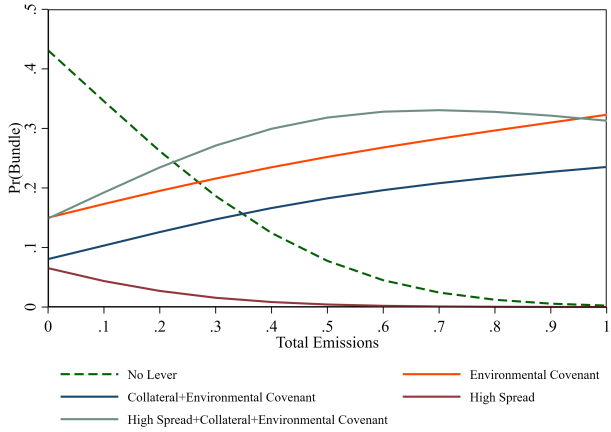
Prediction:

- If pollution can create liabilities that are not straightforward to price or to monitor with general mechanisms, then the use of general mechanisms alone should decrease, and the use of environmental mechanisms should increase, as pollution increases.

Empirical Approach:

- We use multinomial logit to model the choice of bundles of contract terms, because these terms can be used in combination, and the alternatives are not independent (IIA does not hold).

Figure 1. Panel B.



Combined Plot, Predicted Probability by Contract Term Bundle across Total Emissions

Table 3. Panel A.

Bundle ID	Bundle Name		N	%
1	No Lever		512	41.63%
2	High Spread + Collateral + Environmental Covenant		194	15.77%
3	Environmental Covenant		191	15.53%
4	Collateral + Environmental Covenant		104	8.46%
5	High Spread		73	5.93%
999	Other:	High Spread + Collateral	60	
		Collateral	54	
		High Spread + Environmental Covenant	42	
			156	12.68%
	Total		1,230	100%

Distribution of Bundles.

Table 3. Panel B.

Dep. Var.= Bundle ID	1	2	3	4	5	999
Total Emissions	-0.852***	0.432**	0.237**	0.223***	-0.234**	0.193**
	(-3.04)	(2.06)	(2.05)	(2.65)	(-2.12)	(1.92)
Loan, Borrower, Lender Controls	Yes	Yes	Yes	Yes	Yes	Yes
Lender, Year, Ind FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,230	1,230	1,230	1,230	1,230	1,230

Average Marginal Effects of Total Emissions.

RQ 2:

Does the use of environmental covenants vary with the type and location of the borrower's pollution?

Prediction:

- If the use of environmental covenants is motivated by the claim dilution problem we describe, then only on-site emissions of land and water pollution should be associated with their use.

Empirical Approach:

- Separate emission types into air, land, water, on-site, and off-site.
- Model covenant use as a function of each type and location.

Table 4.

Dep. Var. =	Environmental Covenant					
	(1)	(2)	(3)	(4)	(5)	(6)
Total Emissions	1.078***					
	(3.76)					
Land Emissions		1.423***				
		(4.03)				
Water Emissions			0.943***			
			(7.65)			
Air Emissions				-0.026		
				(-0.10)		
Onsite Emissions					1.398***	
					(3.96)	
Offsite Emissions						0.671
						(1.29)
Loan Controls	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Ind FEs	Yes	Yes	Yes	Yes	Yes	Yes
Lender FEs	Yes	Yes	Yes	Yes	Yes	Yes
N	1,230	1,230	1,230	1,230	1,230	1,230
Adj. R^2	0.24	0.24	0.24	0.22	0.25	0.23

Environmental Covenants and Borrower Emissions.

RQ 3:

Does the type of environmental covenant used to manage these agency problems vary with uncertainty?

Prediction:

- If Information Covenants are 'incomplete contract' mechanisms, and Action Covenants are 'complete contract' mechanisms. Then use of Action Covenants should vary with uncertainty about the borrower's pollution.

Empirical Approach:

- We model the use of Information Covenants and Action Covenants both alone and together as a function of:
  - Brown Industry Specialization (i.e. portfolio concentration in a brown industry is an outlier).
  - Environmental Enforcement Events.
  - Environmental Reputation Events.
- We also use multinomial logit to model how the choice of bundles of contract terms changes with lender specialization.

Table 5.

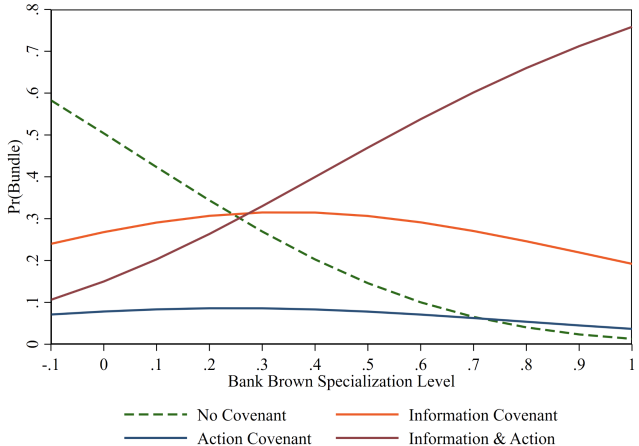
Dep. Var. =	Info. Covenant (1)	Action Covenant (2)	Info. & Action (3)
Brown Specialization	-0.026	0.006	0.068**
	(-0.70)	(0.26)	(2.05)
Loan, Lender, Borrower Controls	Yes	Yes	Yes
Loan Purpose Indicators	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes
Lender FEs	Yes	Yes	Yes
N	3,770	3,770	3,770
Adj. r^2	0.09	0.02	0.11

Test of Difference in β_1***,***

(2)−(1)	*p=0.42*
(3)−(1)	***p=0.05***
(3)−(2)	***p=0.08***

Environmental Covenant Type and Brown Bank Specialization.

Figure 3.



Combined Plot, Predicted Probability by Covenant Bundle across Brown Specialization Level.

Table 6

Dep. Var. =	Info. Covenant		Action Covenant		Info. & Action	
	(1)	(2)	(3)	(4)	(5)	(6)
Violation $\in [-360, 0]$	0.001**		-0.001**		0.001*	
	(2.29)		(-2.25)		(1.77)	
Violation $\in [-180, 0]$		0.003**		-0.001**		0.002**
		(2.38)		(-1.98)		(1.96)
Loan, Lender, Borrower Controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Lender FEs	Yes	Yes	Yes	Yes	Yes	Yes
N	3,770	3,770	3,770	3,770	3,770	3,770
Adj. r^2	0.09	0.09	0.02	0.02	0.11	0.11

Environmental Covenant Type and Industry Violations.

Table 7

Dep. Var. =	Info. Covenant		Action Covenant		Info. & Action	
	(1)	(2)	(3)	(4)	(5)	(6)
RepRisk Events $\in [-360, 0]$	0.002*		-0.001***		0.001*	
	(1.88)		(-3.08)		(1.77)	
RepRisk Events $\in [-180, 0]$		0.004**		-0.002***		0.003*
		(2.08)		(-2.66)		(1.95)
Loan, Lender, Borrower Controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Lender FEs	Yes	Yes	Yes	Yes	Yes	Yes
N	2,219	2,219	2,219	2,219	2,219	2,219
Adj. r^2	0.10	0.10	0.03	0.03	0.12	0.12

Environmental Covenant Type and Industry Environmental Events.

Takeaway for the 3rd HEC-HKUST Sustainable Finance Workshop:

- Pollution is an externality.
- Private monitoring of pollution is a response to the internalization of pollution related costs by regulators.