

Environmental Covenants and Lenders' Economic Incentives

Ting Dai, Daniele Macciocchi, Arthur Morris

HKUST (Ph.D. Student), University of Miami, HKUST

Objective:

Use the details of borrower's pollution and of the environmental covenants in debt contracts to clarify lenders' concerns about pollution and the role of regulation in those concerns.

Why would a lender care about the borrower's pollution?

From *The Loan Syndications and Trading Association's (LSTA) Complete Credit Agreement Guide*:

... even if liability is not direct to the lender itself, the lender could indirectly incur a loss if the values of the borrower's property decreased due to the presence of contamination. If other collateral was not available, the cost to remediate the property would effectively be paid by the lender.

The Atlas Mill (Moab, Utah): Someone eventually pays for cleanup.



Closed 1984, Cleanup done 2031 (Projected)

Three Types of Environmental Covenants

- ▶ **Compliance Covenants:**
 - ▶ Require borrower to comply with environmental laws and regulations.
 - ▶ These are in all contracts.
- ▶ **Information Covenants**
 - ▶ Require the borrower to disclose information about pollution.
- ▶ **Action Covenants**
 - ▶ Require the borrower to remediate pollution.
- ▶ *"Covenants" in debt contracts are commonly "free standing events of default". So failure to act, inform, or comply allows the lender to call the loan.*

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)**"*

All contracts in our sample have compliance covenants.

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**,"*

Other examples include reporting requirements.

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] 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."

What we Know About Environmental Covenants in Debt Contracts

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

1. Is public environmental enforcement a complement or substitute for private monitoring (i.e. Environmental Covenants)?

What we Know About Environmental Covenants in Debt Contracts

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

1. Is public environmental enforcement a complement or substitute for private monitoring (i.e. Environmental Covenants)?
- ▶ Choy et al. (2023): Positive association between enforcement activity and environmental covenants. (*ex post*: complements)

What we Know About Environmental Covenants in Debt Contracts

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

1. Is public environmental enforcement a complement or substitute for private monitoring (i.e. Environmental Covenants)?
- ▶ Choy et al. (2023): Positive association between enforcement activity and environmental covenants. (*ex post*: complements)
 - ▶ Demerjian et al. (2025): Negative association between regulatory commitments and environmental covenants. (*ex ante*: substitutes)

What we Know About Environmental Covenants in Debt Contracts

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

1. Is public environmental enforcement a complement or substitute for private monitoring (i.e. Environmental Covenants)?
 - ▶ Choy et al. (2023): Positive association between enforcement activity and environmental covenants. (*ex post*: complements)
 - ▶ Demerjian et al. (2025): Negative association between regulatory commitments and environmental covenants. (*ex ante*: substitutes)
2. Are lender's environmental commitments (e.g. the Equator Principles) associated with environmental covenant use (e.g. Amiram et al., 2021).

What we Know About Environmental Covenants in Debt Contracts

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

1. Is public environmental enforcement a complement or substitute for private monitoring (i.e. Environmental Covenants)?
 - ▶ Choy et al. (2023): Positive association between enforcement activity and environmental covenants. (*ex post*: complements)
 - ▶ Demerjian et al. (2025): Negative association between regulatory commitments and environmental covenants. (*ex ante*: substitutes)
2. Are lender's environmental commitments (e.g. the Equator Principles) associated with environmental covenant use (e.g. Amiram et al., 2021).
 - ▶ Yes, positive.*

Our Framework:

- ▶ Pollution is an external cost.
 - ▶ To the managers and owners of a firm, polluting reduces production costs.
- ▶ What matters to lenders is how this external cost 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. spreads, collateral).
 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.

Our Framework:

Pollution allows borrowers to reduce current costs while creating future environmental liabilities that are senior to the lender's claim.

i.e. **Claim dilution (Smith and Warner, 1979)**

Research questions

1. Does use of general monitoring mechanisms (spread, collateral, etc.) vs. explicitly environmental covenants vary with borrower pollution?
2. Does the use of environmental covenants vary with the type and location of the borrower's pollution?
3. Does the type of environmental covenant used to manage these agency problems vary with uncertainty?

Data

Sources:

- ▶ Environmental Covenants: EDGAR
 - ▶ We are the first to study Information and Action Covenants *separately*.
- ▶ Loan Contract Details: DealScan
- ▶ Borrower and Lender Fundamentals: Compustat
- ▶ Emissions: US EPA TRI data.
 - ▶ We are the first to separate type and location of emissions (in this literature).
- ▶ 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:

- ▶ The use of general mechanisms alone should decrease, and the use of environmental mechanisms should increase, as pollution increases.

Empirical Approach:

- ▶ 3 Contract Term “Levers”: High Spread, Collateral, Environmental Covenants.
- ▶ Model how the combination of levers varies with pollution.
- ▶ Multinomial logit:
 - ▶ levers can be used in combination, and
 - ▶ the alternatives are not independent (IIA does not hold).

Figure 1. Panel B. $\text{Pr}(\text{Contract Term Bundle})$ across Total Emissions

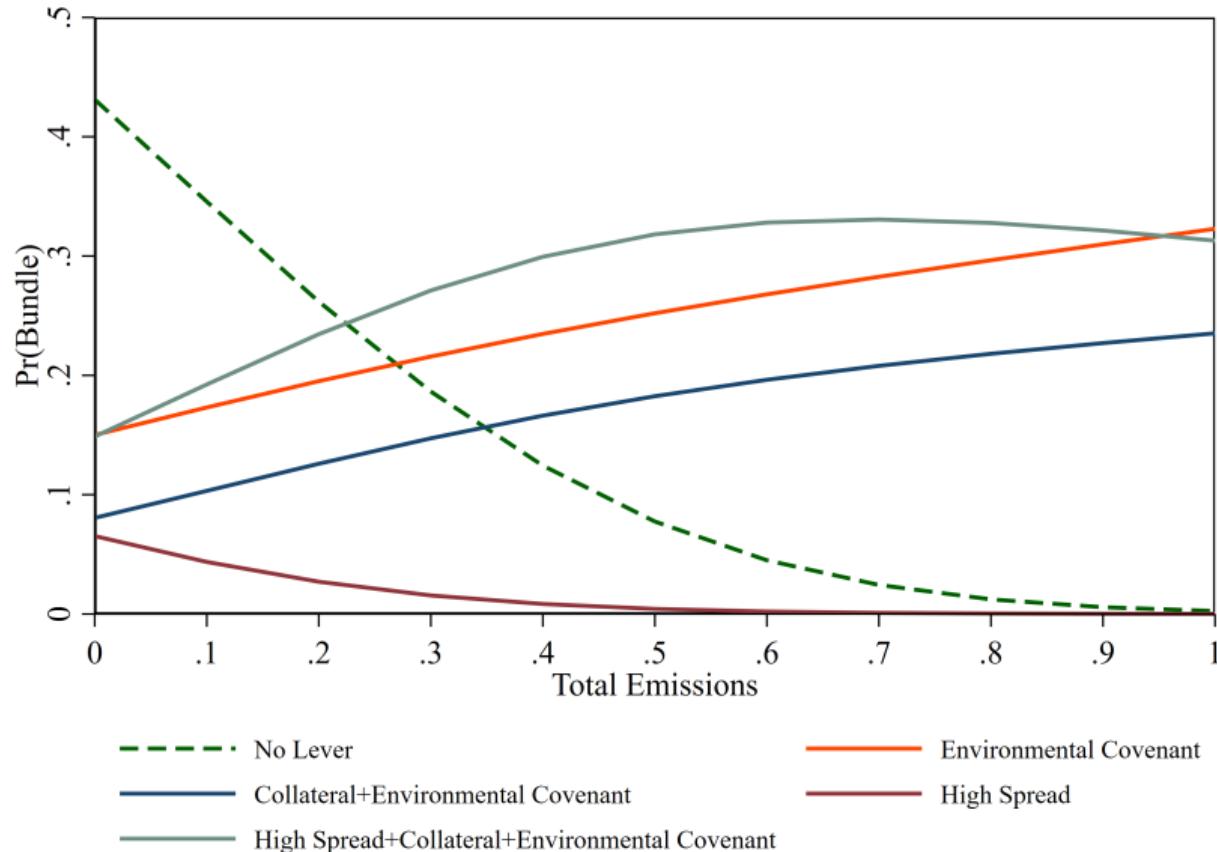


Table 3. Panel A. (For Q&A)

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. (For Q&A)

Dep. Var.= Bundle ID	1	2	3	4	5	999
Total Emissions	-0.852*** (-3.04)	0.432** (2.06)	0.237** (2.05)	0.223*** (2.65)	-0.234** (-2.12)	0.193** (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
<i>N</i>	1,230	1,230	1,230	1,230	1,230	1,230
Adj. <i>R</i> ²	0.24	0.24	0.24	0.22	0.25	0.23

Environmental Covenants and Borrower Emissions.

This is consistent with lawyers' concerns:

From *The Loan Syndications and Trading Association's (LSTA) Complete Credit Agreement Guide*:

... even if liability is not direct to the lender itself, the lender could indirectly incur a loss if the values of the borrower's property decreased due to the presence of contamination. If other collateral was not available, the cost to remediate the property would effectively be paid by the lender.

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.

RQ 3: Uncertainty

*The word “uncertainty” seemed best for distinguishing the **defects of managerial knowledge** from the ordinary “risks” of business activity which can be feasibly reduced if not eliminated by applying the insurance principle. . .*

- ▶ Frank H. Knight, 1933, *Risk, Uncertainty and Profit*.
 - ▶ From the author's forward to the 1933 edition published by the London School of Economics.

RQ 3:

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). Specialists have less defective knowledge.
 - ▶ Industry Environmental Enforcement/Reputation Events. Reveal defects in knowledge.
- ▶ We both OLS (indicator) and multinomial logit (continuous) 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 (-0.70)	0.006 (0.26)	0.068** (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
<i>N</i>	3,770	3,770	3,770
Adj. <i>r</i> 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. $\text{pr}(\text{Covenant Bundle})$ across Brown Specialization Level

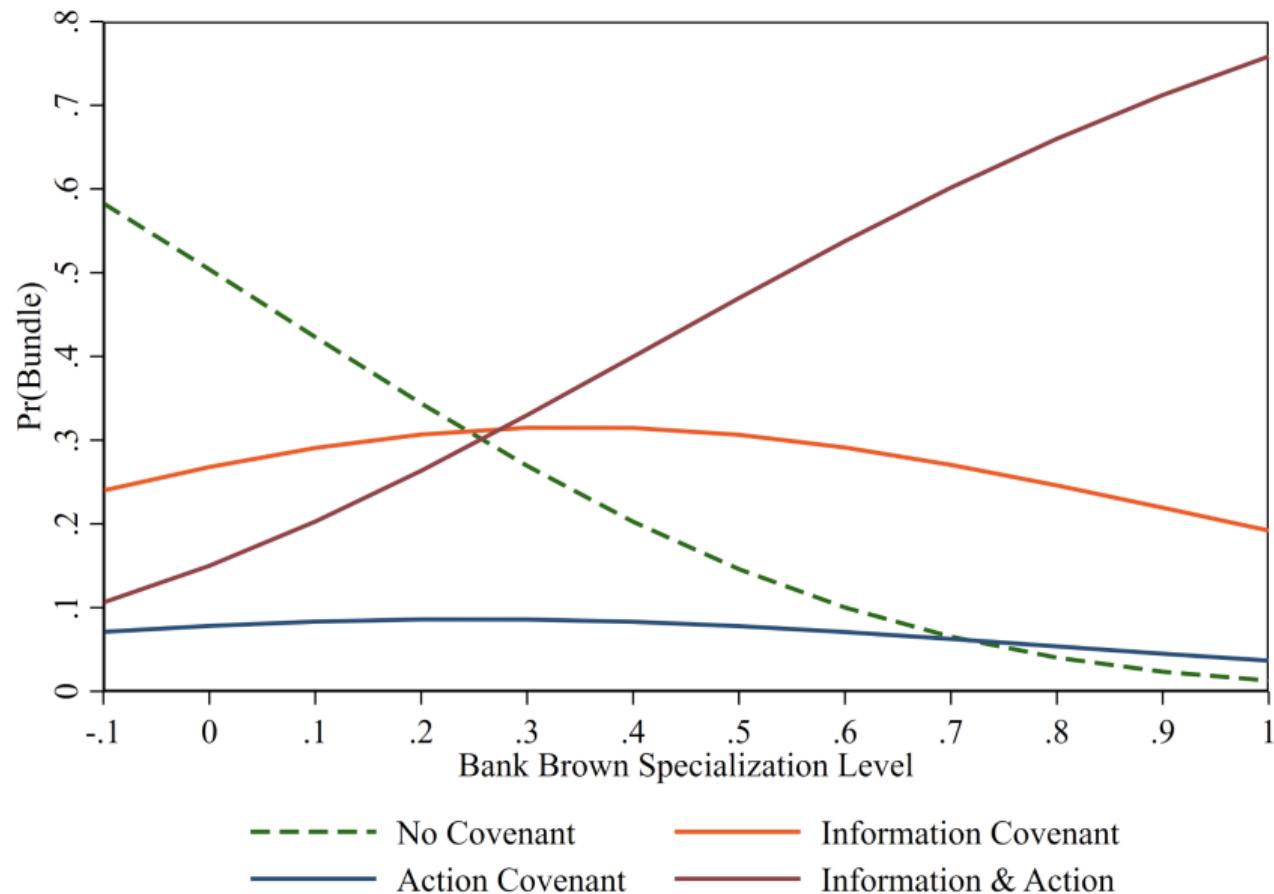


Table 6

Dep. Var. =	Info. Covenant		Action Covenant		Info. & Action	
	(1)	(2)	(3)	(4)	(5)	(6)
Violation $\in [-360, 0]$	0.001** (2.29)		-0.001** (-2.25)		0.001* (1.77)	
Violation $\in [-180, 0]$		0.003** (2.38)		-0.001** (-1.98)		0.002** (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
<i>N</i>	3,770	3,770	3,770	3,770	3,770	3,770
Adj. <i>r</i> 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
<i>N</i>	2,219	2,219	2,219	2,219	2,219	2,219
Adj. <i>r</i> ²	0.10	0.10	0.03	0.03	0.12	0.12

Environmental Covenant Type and Industry Environmental Events.

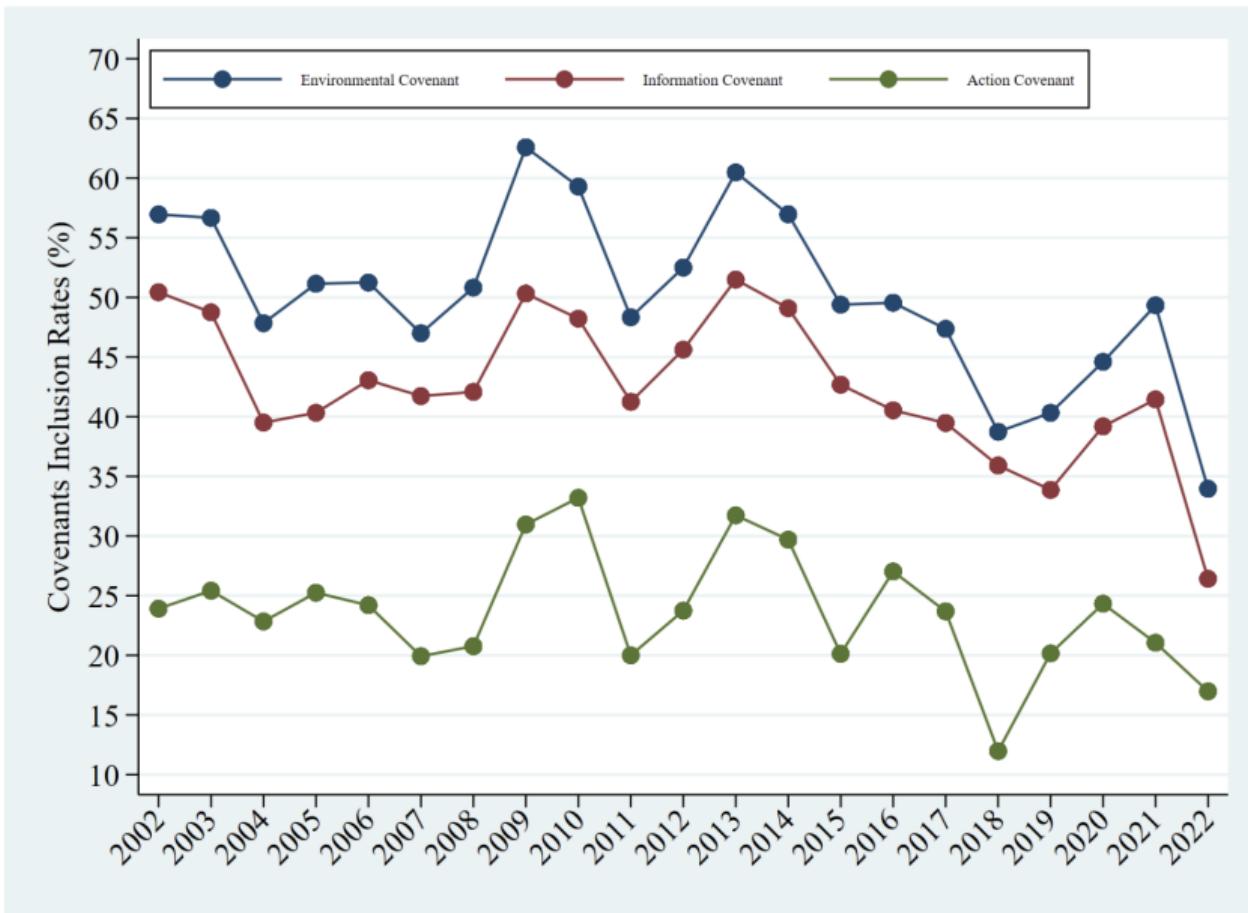
Takeaway:

- ▶ Pollution is an externality.
- ▶ Private monitoring of pollution is a response to the internalization of pollution related costs by regulators.
- ▶ Suggests a central role for environmental regulation, and a perhaps peripheral role for environmental disclosure.

Thank You!

Additional Material

Covenant Use Over Time



Examples of the Liabilities That Lenders are Trying to Manage:

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