

How Firms Respond to Mandatory Information Disclosure

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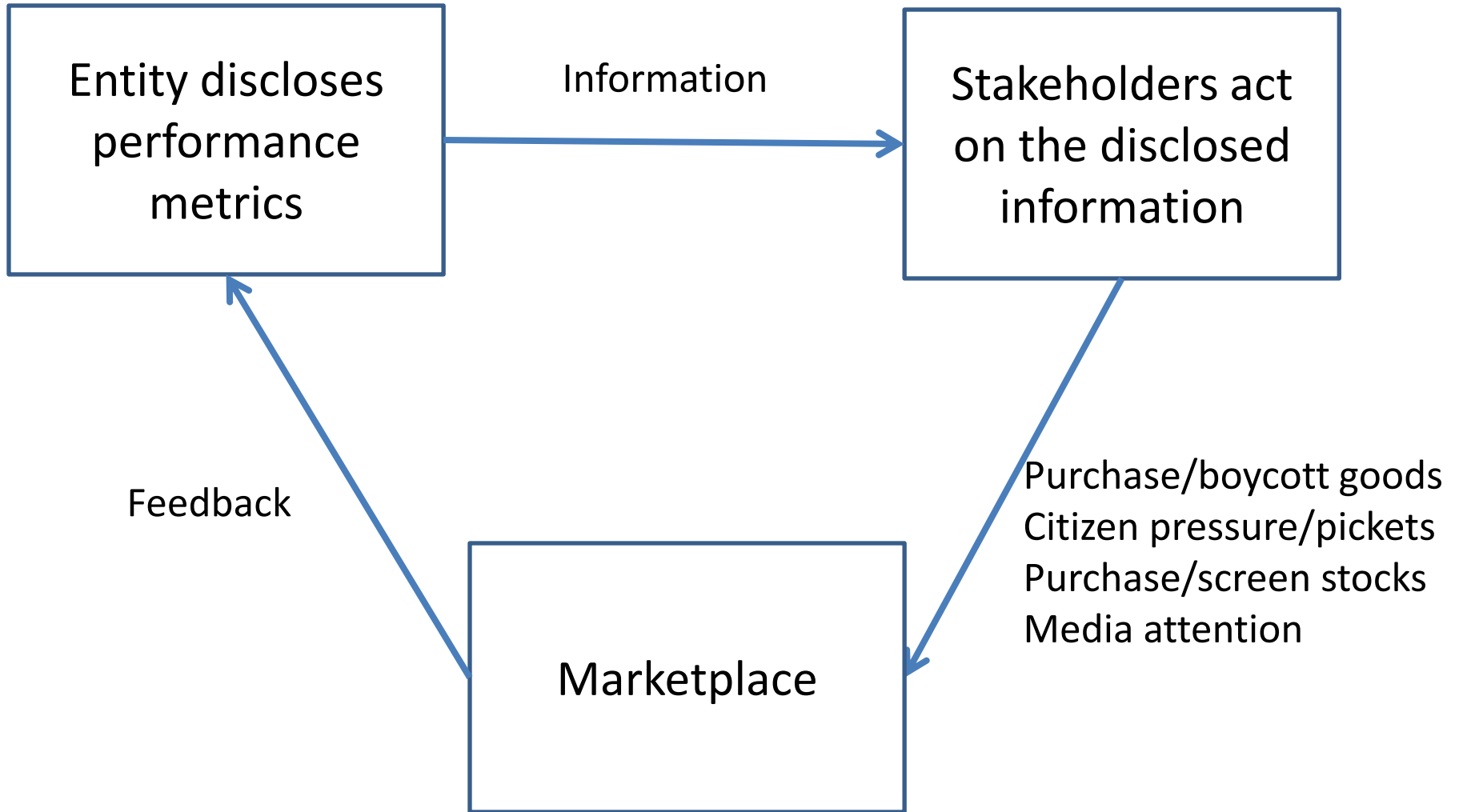
Anil Doshi, Glen Dowell, and Michael Toffel. 2011.

"How Firms Respond to Mandatory Information Disclosure."

Harvard Business School Working Paper. <http://ssrn.com/abstract=1879248>

TRI National Training Conference | April 2012 | Washington DC

How is TRI supposed to work?



Has TRI affected the behavior of reporting entities' stakeholders?

Some rigorous studies:

High polluters...

↑ media coverage (Hamilton 1995)

↓ market value (Konar and Cohen 1997; Hamilton, 1995)

↓ neighboring home values (Oberholzer-Gee and Mitsunari, 2006)

Sources: Hamilton. 1995. Pollution as news: media and stock market reactions to the Toxics Release Inventory data. *Journal of Environmental Economics and Management* **28**(1): 98-113. Konar & Cohen. 2001. Does the market value environmental performance? *Review of Economics and Statistics* **83**(2): 281-289. Oberholzer-Gee & Mitsunari. 2006. Information regulation: do the victims of externalities pay attention? *Journal of Regulatory Economics* **30**(2): 141-158.

Has TRI affected behavior of reporting entities' themselves?

Some think so:

- Cost-effective approach to reduce emissions (Center for Progressive Regulation; Hart 2010)
- Billions of tons of toxic emissions reduced (EPA, GAO)

But:

- Little systematic analysis of entities' improvement.
- No control group.
- Some reductions due to decreased production and changed estimation techniques

We ask: What might accelerate emissions reduction?

- Compare among disclosures. Control for production levels.
- Leverage “policy shock” that nearly doubled TRI-reportable chemical list (in 1995: 363 → 606)

What might accelerate emissions reduction?

We suggest that facilities improve faster when they are under greater pressure to do so, and when they have better capabilities.

Factor	How it Works...	Most Likely When...
Internal Pressure	Rest of firm concerned with reputation, pressures reporting facility	<ul style="list-style-type: none">• Facility is near HQ• Facility has siblings nearby
External Pressure	Stakeholders place more pressures on some facilities than others	<ul style="list-style-type: none">• Facility is large relative to others nearby• Facility is part of a public firm
Capabilities	Reporting facility can learn how to improve from other parts of its firm	<ul style="list-style-type: none">• Facility's nearby siblings are in the same industry

Our empirical analysis

We analyze emissions trends of the newly-added chemicals from 1995-2000, the first 5 years they are reported.

Sample: ~ 38,000 facilities. 200,000+ facility-years

Key facility measures:

- “near HQ” or “siblings nearby” \equiv same city
- “large relative to others” \equiv above median employment
- owned by public firm (vs. privately-held)
- “same industry” as siblings \equiv same 2-digic SIC

Controls include: facility’s employment, production rate, historical emissions trend of TRI core chemicals, industry, community environmental preferences (LCV score).

Our empirical results

- ✓ Facilities with proximate HQ improve faster than those with more distant HQ.
- ✓ Facilities with proximate sibling improve faster than those with more distant siblings.
 - Particularly if proximate sibling is in the same industry
- ✓ Large establishments improve more slowly than small establishments in sparse regions.
 - Both groups improve similarly in dense regions.
- ✓ Facilities owned by public companies improve faster than those owned by private companies.

Beyond TRI: Information disclosure programs is an old idea, now widely deployed. It's vital to understand when and how they work.

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Fuel Economy Midsize cars range from 10 to 99 MPGe. The best vehicle rates 99 MPGe.

Electricity Charge Time: 4 hours (240V)

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Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 22 MPG and costs \$12,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.70 per gallon and \$0.12 per kWh-hr. This is a dual fueled automobile. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

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A

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Cost Range of Similar Models: \$57 to \$74

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Estimated Yearly Electricity Use

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TRI

The Toxics Release Search allows you to retrieve data from the Toxics Release Inventory (TRI) database in Envirofacts. Your search returns facility information and chemical reports, which tabulate air emissions, surface water discharges, releases to land, underground injections, and transfers to off-site locations. This search will provide data on all facilities that have submitted a Form R or A to EPA at any time since the program began in 1987, even though the facility may or may not have submitted TRI data in the most recent reporting year. This report also provides information from the Risk Screening Environmental Indicator (RSEI) tool, which provides a quantitative, relative estimate of risk posed by the facility based on the chemical released and potential exposure pathways. Narrow your search by selecting from options including facility name, geographic location, standard industrial classification, and chemical names.

Facility Selection

Facility Identification:
Facility Name (Enter a partial or complete Facility Name) [input field]

Facility Identification Option Value:

TRI Links

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- Search
- Search User Guide
- Customized Search
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- Form R
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Conclusions

- We find that the effectiveness of the TRI program depends on characteristics of the reporting facilities
- Faster improvement observed among facilities facing greater pressure (internal or external), and with better access to capabilities,
- Beyond the TRI, these findings have implications for other environmental disclosure programs – GHG, for example

Some information disclosure evaluations worth reading

TRI

- Doshi, Anil, Glen Dowell, and Michael Toffel. "How Firms Respond to Mandatory Information Disclosure." Harvard Business School Working Paper, No. 12-001, July 2011. <http://ssrn.com/abstract=1879248>
- Scorse J. 2010. Does being a “top 10” worst polluter affect facility environmental releases? Evidence from the U.S. Toxic Release Inventory. Working paper, Monterey Institute of International Studies, Monterey, CA.

Hygiene

- Jin GZ, Leslie P. 2003. The effect of information on product quality: evidence from restaurant hygiene grade cards. *Quarterly Journal of Economics* **118**(2): 409-451.
- Jin GZ, Leslie P. 2009. Reputational incentives for restaurant hygiene. *American Economic Journal: Microeconomics* **1**(1): 237-267.

General Overviews of Transparency

- Fung A, Graham M, Weil D. 2007. *Full Disclosure: The Perils and Promise of Transparency*. Cambridge University Press: Cambridge, MA.
- Weil D, Fung A, Graham M, Fagotto E. 2006. The effectiveness of regulatory disclosure. *Journal of Policy Analysis and Management* **26**(1): 155-181.

Thank you!

Questions?

Technical details

Descriptive statistics

	Mean	Min	Max
Toxic releases to all media of 1995 added chemicals (log pounds)	0.88	0	17.11
Proximate to HQ	0.38	0/1 dummy	
Proximate Sibling	0.11	0/1 dummy	
Proximate Same-industry Sibling	0.09	0/1 dummy	
Proximate different-industry sibling _{93/94}	0.04	0/1 dummy	
Large Establishment	0.51	0/1 dummy	
Public ownership _{93/94}	0.28	0/1 dummy	
CONTROLS			
Historical Releases Trend	-0.01	-2	2
Relative Production Level	0.09	-1.89	3.46
Employment (logged)	3.59	0.00	10.09
League of Conservation Voters score (Congressional district)	0.42	0%	100%

Regression Results

	Sample:	Full sample	Have siblings	Have siblings	In sparse cities	In dense cities	Full sample
Proximate headquarters _{93/94} × Annual counter		-0.051**					
Proximate sibling _{93/94} × Annual counter			-0.020*				
Proximate same-industry sibling _{93/94} × Annual counter				-0.036**			
Proximate different-industry sibling _{93/94} × Annual counter				0.023			
Large establishment _{93/94} × Annual counter					0.037**	-0.007	
Public ownership _{93/94} × Annual counter							0.073**
Annual counter		0.087**	0.091**	0.091**	0.043**	0.065**	0.041**
Observations		218,440	138,888	138,888	86,925	80,667	162,412
Number of establishments		37,952	23,918	23,918	15,148	14,210	28,477
Wald test: Coefficients on interaction terms equal? (χ^2)				9.12**	15.20**		

Additional controls include Historical releases trend, Historical releases trend × Annual counter, Log number of siblings (in 1994), Relative production level, Log employment, Congressional district LCV score, Industry (2-digit SIC) dummies