The Value of Regulatory Discretion: Estimates from Environmental Inspections in India

Replication Exhibits

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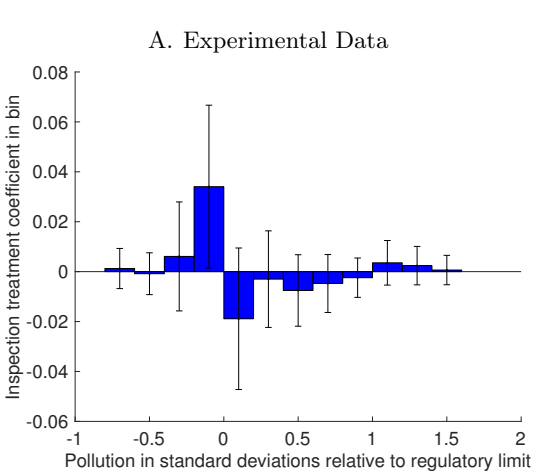
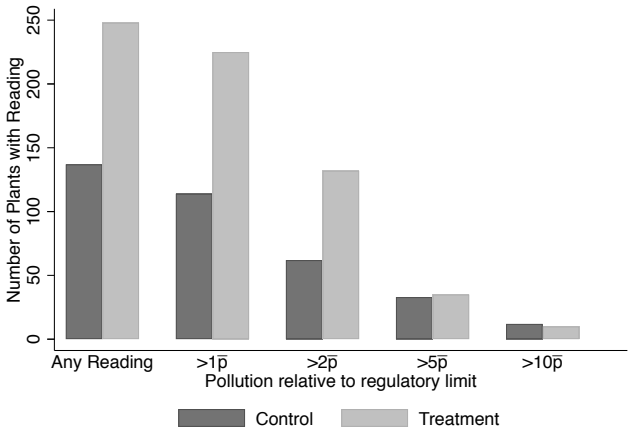
I Figures

Figure 1: Effect of Treatment on Pollution Distribution



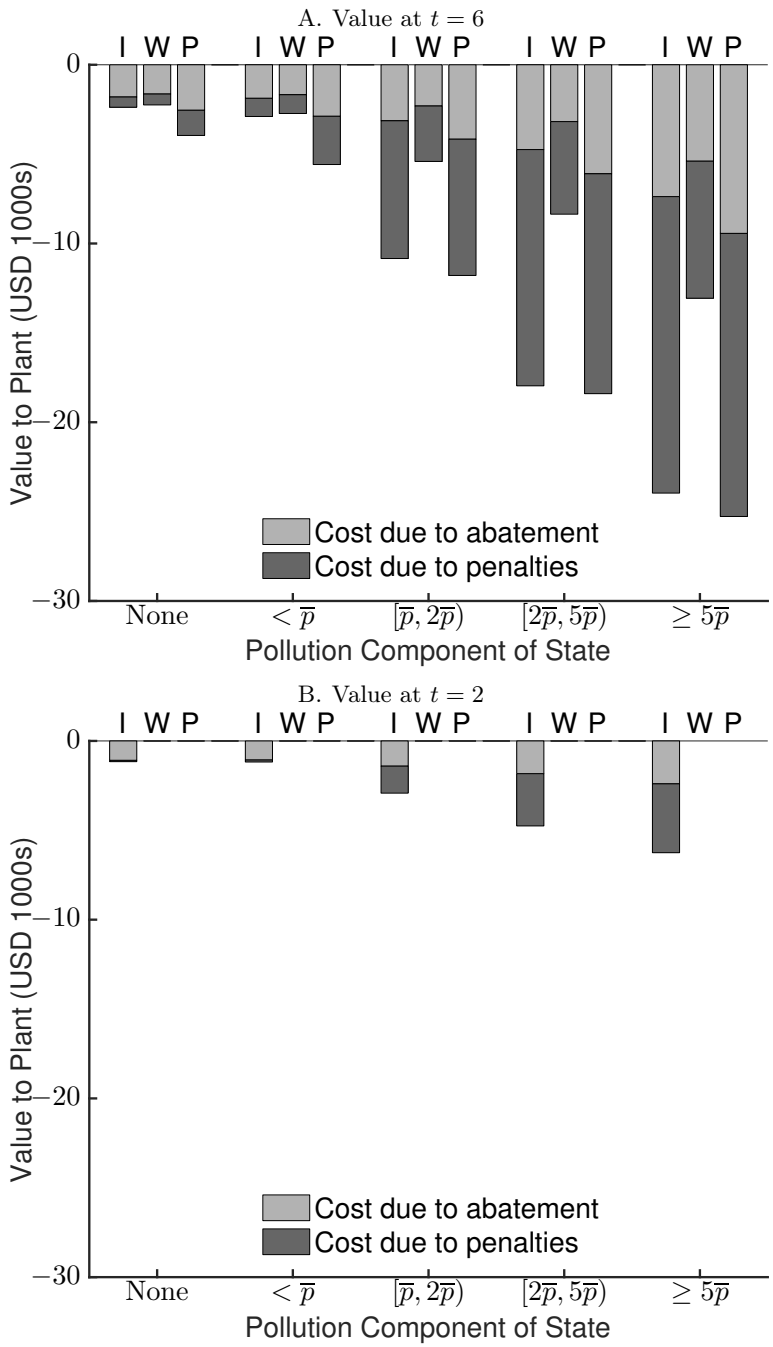
The figure panels report coefficients on the inspection treatment assignment from regressions of dummies for a pollution reading being in a given bin, relative to the regulatory standard, on inspection treatment, audit treatment, inspection × audit treatment, a dummy for being audit-eligible and region fixed effects. Panel A reports coefficients from such regressions on the experimental data and Panel B reports coefficients from the same regressions run on model-generated data using the constrained model estimates of Table **??**. Pollution readings are standardized by subtracting the regulatory standard for each pollutant and dividing by the pollutant's standard deviation; bins are 0.2 standard deviations wide and centered at the regulatory standard shown by the vertical line. Each plant has multiple pollutant observations and regressions are run pooled for all pollutants together. The whiskers show 95% confidence intervals for the inspection treatment coefficient.

Figure 2: Regulatory Targeting of Extreme Polluters



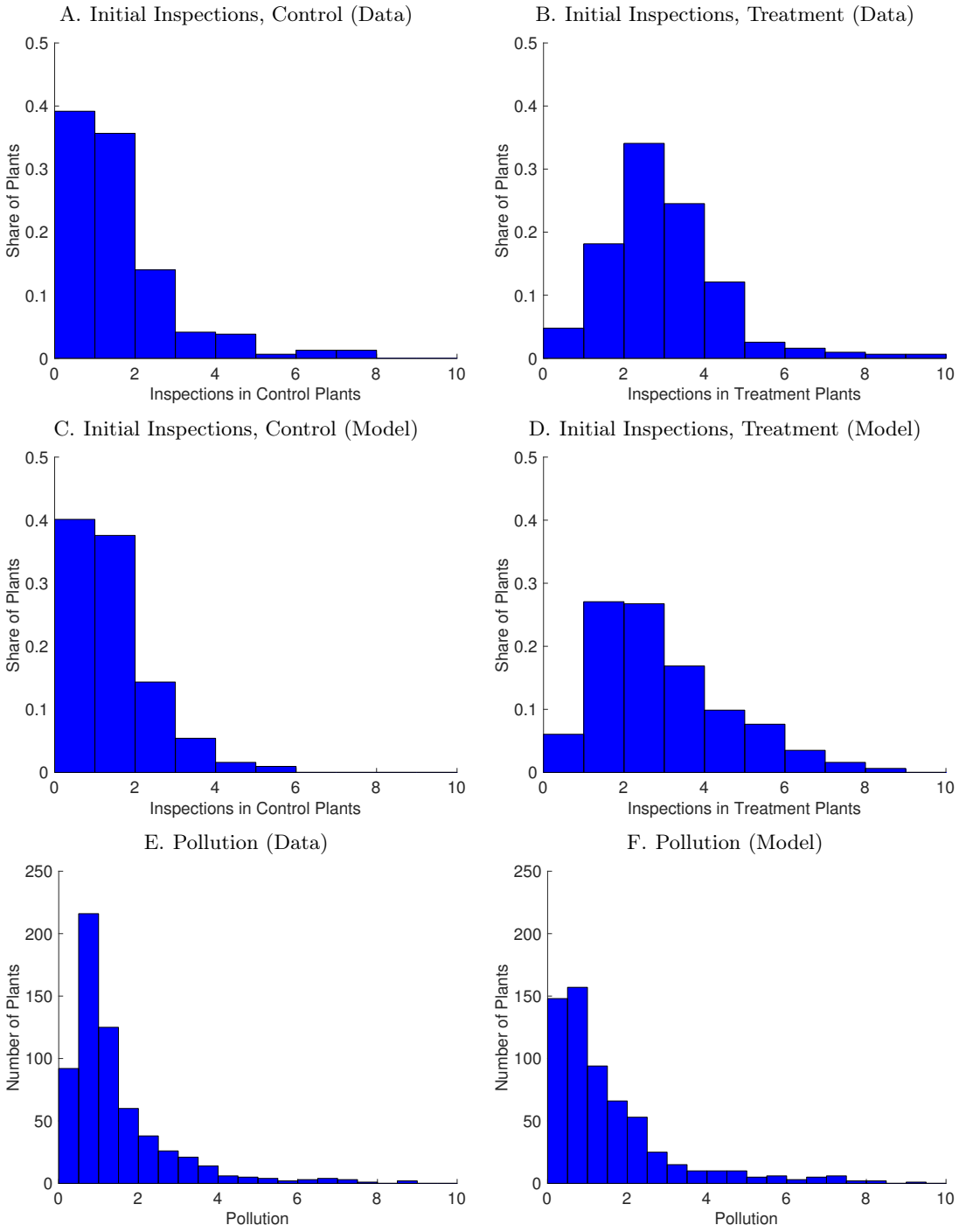
The figure shows the number of plants with pollution readings either taken or that fall in various bins, relative to the regulatory standard, during the first year of the intervention for the control and treatment groups, respectively. The first pair of bars shows the number of plants that had at least one pollution reading taken. The remaining four pairs show the number of plants with at least one reading above the standard ($>1\overline{p}$), more than 2 times the standard ($>2\overline{p}$), more than 5 times the standard ($>5\overline{p}$) and more than 10 times the standard ($>10\overline{p}$).

Figure 3: Value of Environmental Regulation for Plants



The figure shows the cost of regulation to plants in thousands of US dollars as measured by the expected discounted value of different states in the penalty stage. Values are divided between expected discounted future abatement costs (light grey) and expected discounted future regulatory penalties (dark grey), both of which, as costs to the plant, have negative value. The figure shows three different dimensions of the state along which plant value varies. First, the panels show the time dimension, with panel A evaluated when it is the plant's turn to move at t=6, and panel B at t=2. Second, the five clusters of bars on the horizontal axis show different maximum lagged pollutant readings observed during the prior inspection. Third, within each group, the letters I, W and P show how the value to the plant changes if the regulatory machine's lagged action was *Inspect*, *Warn* or *Punish*, respectively.

Figure 4: Model Fit to Inspections and Pollution



The figure compares the distributions of inspections and pollution in the model to those in the experimental data. Panels A through D show the distributions of the annual inspection rate (i.e., inspections per year). Inspections include only initial inspections and not follow-ups. Panels A and B give the distributions in the data in the control and treatment groups, respectively, using administrative records of inspection reports. Panels C and D give the same distributions in the model. Panels E and F give the distribution of pollution in the data and in the model, respectively. The units of pollution are units of the regulatory standard $\overline{p}$, such that a value of 2 represents pollution at twice the standard, etc.

II Tables

Table 1: Inspections by Treatment Status

	Treatment	Control	Difference
Number inspections assigned in treatment, annual	0	2.12	2.12***
	[0]	[0.57]	(0.026)
Total inspections, scaled and annual over treatment	1.40	3.11	1.71***
	[1.59]	[1.77]	(0.11)
Number of chains, scaled and annual over treatment	1.28	2.79	1.50***
	[1.38]	[1.52]	(0.094)
Inspections below prescribed (=1)	0.50	0.13	-0.37***
	[0.50]	[0.34]	(0.028)
Observations	480	480	

* p lt 0.10, ** p lt 0.05, *** p lt 0.01

Treatment ran August 2009-May 2011, inclusive.

Inspections for 2009 and 2011 are pro-rated to reflect this.

Table 2: Perceived Regulatory Actions by Treatment Status

	Treatment	Control	Difference
Perceived Inspections by GPCB officials, 2008	2.53	2.66	0.13
	[1.42]	[1.40]	(0.10)
Perceived Inspections by GPCB officials, 2009	2.78	3.16	0.38***
	[1.44]	[1.37]	(0.100)
Perceived Inspections by GPCB officials, 2010	2.92	3.62	0.71***
	[1.58]	[1.46]	(0.11)
Total perceived notices and closures received, 2010	0.27	0.30	0.025
	[0.64]	[0.70]	(0.048)
Observations	388	403	

* p lt 0.10, ** p lt 0.05, *** p lt 0.01

Treatment ran August 2009-May 2011, inclusive.

Inspections for 2009 and 2011 are pro-rated to reflect this.

Table 3: Regulatory Interactions During Experiment

	Control	Treatment	Difference
Pollution reading ever collected at plant (=1)	0.38	0.60	0.21***
	[0.49]	[0.49]	(0.032)
Any pollution reading above limit at plant (=1)	0.34	0.55	0.22***
	[0.47]	[0.50]	(0.031)
Pollution readings above limit	1.17	2.84	1.67***
	[2.58]	[3.67]	(0.20)
Citations	0.15	0.35	0.20***
	[0.42]	[0.69]	(0.037)
Citations, water	0.046	0.12	0.071***
	[0.22]	[0.37]	(0.020)
Citations, air	0.021	0.042	0.021*
	[0.14]	[0.20]	(0.011)
Closure warnings	0.094	0.17	0.077***
	[0.34]	[0.48]	(0.027)
Closure directions	0.16	0.20	0.042
	[0.48]	[0.54]	(0.033)
Bank guarantees	0.060	0.065	0.0042
	[0.27]	[0.25]	(0.017)
Equipment mandates	0.027	0.040	0.013
	[0.19]	[0.23]	(0.014)
Utility disconnections	0.040	0.042	0.0021
	[0.22]	[0.20]	(0.013)
Observations	480	480	

* p lt 0.10, ** p lt 0.05, *** p lt 0.01

Potentially ambiguous regulatory interactions are defined as followed:
Citations are a request for written response on high pollution levels;
air and water citations specifically name a pollutant.
Bank guarantees are the forced posting of a bond that is forfeited
for high future pollution levels,or failure to install equipment.
Four most serious infractions are not jointly significant,
with a Wald statistic of 2.57 and a p-value of .631.

	(1)	(2)	(3)	(4)
Inspection treatment assigned (=1)	0.838*	0.00974	-0.221	0.0213
	(0.499)	(0.0224)	(0.453)	(0.0344)
Constant	0.415	0.127***	1.508***	0.447***
	(0.512)	(0.0251)	(0.467)	(0.0367)
Plant characteristics	Yes	Yes	Yes	Yes
Audit experiment	Yes	Yes	Yes	Yes
R2	0.00596	0.0197	0.0490	0.0559
Mean	0.669	0.113	1.884	0.575
Control Mean				
Observations	791	791	791	791

Standard errors in parentheses

Costs in USD thousands. Robust standard errors in parentheses.

Plant characteristics include dummies for size, use of coal or lignite as fuel, high waste water generated, and region. Audit experiment includes dummies for audit treatment and audit sample.

* $p < .1$, ** $p < .05$, *** $p < .01$

Table 4: Endline pollution levels on treatment (All Obs)

	Pollution	Compliance
Inspection treatment assigned (=1)	-0.105	0.0366*
	(0.0839)	(0.0213)
Audit treatment assigned (=1)	-0.187**	0.0288
	(0.0849)	(0.0258)
Audit X inspection treatment (=1)	0.286**	-0.0365
	(0.142)	(0.0353)
Inspection and audit control mean	0.682	0.614
Observations	4168	4168

Standard errors in parentheses

Pollution standardized by backcheck standard deviation.

Includes audit treatment and treatment interaction controls, and year and region fixed effects

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Control Actions, by Round in Chain

	Inspect	Warn	Punish	Accept	Firm: Ignore	Firm: Comply	N	% left
1	100.0	0.0	0.0	0.0	.	.	7423	100.0
2	.	.	.	.	99.6	0.4	7423	.
3	1.0	9.5	2.2	87.3	.	.	7423	100.0
4	.	.	.	.	92.8	7.2	941	.
5	23.3	4.8	5.3	66.6	.	.	941	12.7
6	.	.	.	.	91.1	8.9	314	.
7	18.8	11.8	9.9	59.6	.	.	314	4.2
8	.	.	.	.	83.5	16.5	127	.
9	21.3	5.5	18.1	55.1	.	.	127	1.7
10	.	.	.	.	82.5	17.5	57	.
11	26.3	3.5	10.5	59.6	.	.	57	0.8
12	.	.	.	.	87.0	13.0	23	.
13	26.1	4.3	8.7	60.9	.	.	23	0.3
14	.	.	.	.	77.8	22.2	9	.
15	16.7	8.3	0.0	75.0	100.0	0.0	9	0.1
Total	31.0	3.2	1.1	29.4	34.6	0.6	25217	.
Total ex inspection	0.0	4.6	1.6	42.7	50.2	0.9	7824	.

Round 15+ summarizes actions from rounds 15 through 19

Table 6: Multinomial Logit Models for Action Choice

		(1)		(2)
	Inspect	Warn	Punish	Comply
Warn, lag 1	0.33	-2.05***	-2.10***	-0.23
	(0.23)	(0.32)	(0.31)	(0.30)
Punish, lag 1	1.80***	-2.22***	-0.53*	1.29***
	(0.23)	(0.56)	(0.30)	(0.26)
Firm: Comply, lag 1	-1.80***	-1.03**	-0.82**	-0.53
	(0.32)	(0.47)	(0.37)	(0.66)
0-1x	-0.38	-0.25	0.052	-0.18
	(0.23)	(0.16)	(0.24)	(0.38)
1-2x	-0.20	0.55***	0.37**	0.39*
	(0.16)	(0.098)	(0.18)	(0.23)
2-5x	-0.17	0.84***	0.70***	0.74***
	(0.17)	(0.10)	(0.17)	(0.22)
5x +	0.27	0.63***	1.15***	0.90***
	(0.21)	(0.16)	(0.21)	(0.26)
Constant	-4.41***	-2.47***	-3.91***	-5.71***
	(0.13)	(0.057)	(0.11)	(0.21)
t > 3	2.91***	1.26***	2.56***	2.59***
	(0.25)	(0.28)	(0.27)	(0.33)
t > 5	0.073	-0.35	-0.50	0.18
	(0.21)	(0.32)	(0.30)	(0.28)
t > 7	0.059	-0.55	0.55*	0.50*
	(0.24)	(0.37)	(0.29)	(0.28)
Pseudo R-squared	0.13			0.26
Observations	8897			8897

Omitted action for firm is Ignore

Omitted action for regulator is Inspect

Omitted pollution reading is null (no reading taken)

Table 7: Estimates of Plant Utility Parameters

	(1)	(2)	(3)	(4)
tau0	53.54	0.00	28.12	36.71
	24.68	0.00	20.88	22.92
tau1	0.00	39.57	0.00	0.00
	0.00	28.17	0.00	0.00
tau2	0.00	54.11	0.00	0.00
	0.00	27.43	0.00	0.00
tau3	0.00	41.51	0.00	0.00
	0.00	19.15	0.00	0.00
nu0	0.00	0.00	9.67	0.00
	0.00	0.00	3.07	0.00
nu1	0.00	0.00	0.00	10.93
	0.00	0.00	0.00	3.48
nu2	0.00	0.00	0.00	9.72
	0.00	0.00	0.00	3.99
nu3	0.00	0.00	0.00	5.83
	0.00	0.00	0.00	4.96
sigma	5.02	5.88	5.11	4.83
	0.46	0.30	0.39	0.43

Table 8: Estimates of Targeting Stage: Constrained (S = 200)

	(1)	(2)
Insp. treatment	0.09	0.00
	0.01	0.00
lambda1	-0.39	0.00
	0.00	0.00
lambda2	32.60	0.00
	1.85	0.00
sig1	0.07	0.00
	0.00	0.00
sig2	1.03	0.00
	0.05	0.00
muc	2.38	0.00
	0.06	0.00
Run	0.00	-1.88
	0.00	0.16
constant	0.00	0.21
	0.00	0.11

Table 9: Targeting Coefficients: Unconstrained (S = 200)

	(1)	(2)
Insp. treatment	0.16	0.00
	0.02	0.00
lambda1	-0.22	0.00
	0.07	0.00
lambda2	10.04	0.00
	3.12	0.00
sig1	0.11	0.00
	0.02	0.00
sig2	0.87	0.00
	0.04	0.00
muc	1.86	0.00
	0.32	0.00
Run	0.00	-0.74
	0.00	0.31
constant	0.00	-0.00
	0.00	0.10

III Appendix Exhibits

Table C1: Sample Chain

Round (1)	Player (2)	Action (3)	Document (4)	Date (5)
1	GPCB	Inspect	Inspection report	2008-09-05
2	Plant	Ignore		2008-09-05
3	GPCB	Punish	Closure Direction	2009-01-12
4	Plant	Comply	Equipment installed	2009-01-28
5	GPCB	Inspect	Inspection report	2009-01-31
6	Plant	Ignore		2009-01-31
7	GPCB	Inspect	Inspection report	2009-02-04
8	Plant	Ignore		2009-02-04
9	GPCB	Punish	Closure Direction	2009-05-22
10	Plant	Comply	Process installed	2009-05-30
11	GPCB	Inspect	Inspection report	2009-06-16
12	Plant	Comply	Process installed	2009-06-16
13	GPCB	Accept	Revocation of Closure Direction	2009-06-24

The table displays a 13-round chain of interactions between GPCB and one plant during the experiment. Column (3) indicates the category of action, while Column (4) reports the underlying document to which the action corresponds. *Ignore* actions by the plant in Rounds 2, 6 and 8 have been imputed based on adjacent actions in the chain and hence Column (4) is left blank in these rounds. All chains begin with a regulatory inspection, *Inspect*. The players then alternate moves in until the regulator decides to *Accept* the plant's compliance for the time being, which terminates the chain. Table 1 in the paper describes the way in which the actions are mapped to the underlying documents, and the Data Appendix provides a full explanation of the rules used to construct the chains.

Table C2: Experimental Design: Treatment Assignments

	Inspection control b	Inspection treatment b	Total b
Audit control	120	120	240
Audit treatment	116	117	233
Not audit eligible	244	243	487
Total	480	480	960

The table reports the number of plants assigned to each combination of the inspection treatment and the audit treatment of Duflo et al. (2013). Inspection treatment status is either control or treatment. With respect to audit, only some plants are audit-eligible (see text). Conditional on being eligible for audit plants are assigned to treatment or control.

Table C3: Inspection Treatment Covariate Balance

	Control	Treatment	Difference
Plant Characteristics			
Capital investment Rs. 50m to Rs. 100m (=1)	0.087	0.071	-0.017
	[0.28]	[0.26]	(0.017)
Located in industrial estate (=1)	0.33	0.37	0.032
	[0.47]	[0.48]	(0.027)
Textiles (=1)	0.45	0.45	-0.0092
	[0.50]	[0.50]	(0.020)
Dyes and Intermediates (=1)	0.13	0.16	0.027
	[0.34]	[0.36]	(0.022)
Effluent to common treatment (=1)	0.37	0.35	-0.021
	[0.48]	[0.48]	(0.031)
Waste water generated (kl / day)	192.1	196.8	4.30
	[310.9]	[316.4]	(16.2)
Air emissions from boiler (=1)	0.50	0.52	0.019
	[0.50]	[0.50]	(0.020)
Regulatory Interactions			
Number of inspections	1.22	1.25	0.026
	[1.32]	[1.32]	(0.079)
Inspections below prescribed (=1)	0.42	0.39	-0.031
	[0.49]	[0.49]	(0.029)
Number of pollution readings	3.64	3.92	0.28
	[5.65]	[5.58]	(0.31)
Pollution reading ever collected (=1)	0.40	0.44	0.048*
	[0.49]	[0.50]	(0.027)
Any pollution reading above limit (=1)	0.34	0.38	0.031
	[0.48]	[0.48]	(0.026)
Citations	0.22	0.20	-0.023
	[0.51]	[0.55]	(0.034)
Closure warnings	0.056	0.052	-0.0044
	[0.31]	[0.32]	(0.020)
Closure directions	0.075	0.077	0.0019
	[0.31]	[0.34]	(0.021)
Bank guarantees posted	0.019	0.029	0.010
	[0.15]	[0.21]	(0.012)
Equipment mandates	0.24	0.25	0.0082
	[0.54]	[0.53]	(0.029)
Any utility disconnection (=1)	0.010	0.0021	-0.0083
	[0.10]	[0.046]	(0.0051)
Observations	480	480	

The table tests for the balance of covariates across inspection treatment using administrative data from the regulator covering the year prior to the experiment. Columns (1) and (2) show means with standard deviations in brackets. Column (3) shows the coefficient on treatment from regressions of each characteristic on treatment, region fixed effects, and an audit sample control. * p lt 0.10, ** p lt 0.05, *** p lt 0.01

Table C4: Attrition in the Endline Survey

	N	%
Survey completed	791	82.4
Plant closed	124	12.9
Plant refused survey	5	0.5
Other	40	4.2
Total	960	100.0

Plant closed includes plants that were permanently closed (111), plants that were temporarily closed, and plants where production was temporarily suspended.
Refused survey includes plants that were operating at the time of the visit, but that refused to respond to the questions in the survey.
Other includes plants that moved to an unknown address, and plants for which an incorrect address had been recorded

Table C5: Endline Attrition by Inspection Treatment Status

	Treatment	Control	Difference
Survey completed	0.808	0.840	0.031
	[0.394]	[0.367]	(0.024)
Plant closed	0.135	0.123	-0.013
	[0.343]	[0.329]	(0.022)
Plant refused survey	0.002	0.008	0.006
	[0.046]	[0.091]	(0.005)
Other	0.054	0.029	-0.025*
	[0.227]	[0.168]	(0.013)
Observations	480	480	

Columns (1) and (2) show means with standard deviations in brackets. Column (3) shows the coefficient on treatment from regressions of each characteristic on inspection treatment, region fixed effects, and audit sample control. * p lt 0.10, ** p lt 0.05, *** p lt 0.01
Reported are treatment effects, with region controls.
Plant closed includes plants where production. was temporarily suspended, and plants that were temporarily or permanently closed.
Refused survey includes plants that were in production at the time of the visit, but that refused to respond to the questions in the survey.
Other includes plants that moved to an unknown address, and plants for which an incorrect address had been recorded

Table C6: Probability of Regulator Acceptance by Treatment

	(1)	(2)	(3)	(4)	(5)	(6)
Inspection treatment assigned (=1)	0.0129	0.00779	0.0127	0.0164	0.0106	-0.0280
	(0.0112)	(0.00926)	(0.0110)	(0.0137)	(0.00835)	(0.0207)
Period						
Constant	0.827***	0.869***	0.863***	0.861***	0.891***	0.910***
	(0.00831)	(0.00701)	(0.00894)	(0.00974)	(0.00700)	(0.0134)
t > 3		-0.219***			-0.325***	-0.323***
		(0.0252)			(0.0350)	(0.0557)
t > 5		-0.0367			0.0293	0.0548
		(0.0479)			(0.0366)	(0.0610)
t > 7		-0.0571			-0.0224	-0.125*
		(0.0634)			(0.0396)	(0.0682)
Period X Treatment						
t > 3 X Inspection Treatment		0.0219				0.0322
		(0.0344)				(0.0464)
t > 5 X Inspection Treatment		-0.0610				-0.0248
		(0.0638)				(0.0790)
t > 7 X Inspection Treatment		0.0757				0.0920
		(0.0821)				(0.0961)
Lagged regulatory actions						
Warn, lag 1					0.169***	0.150***
					(0.0364)	(0.0477)
Punish, lag 1					-0.129***	-0.101*
					(0.0413)	(0.0535)
Lagged plant actions						

Firm: Protest, lag 1					0.0482*	0.0535
					(0.0272)	(0.0363)
Firm: Comply, lag 1					0.248***	0.259***
					(0.0329)	(0.0416)
Last pollution reading						
0-1x			-0.0102	0.0140	0.000305	
			(0.0158)	(0.0211)	(0.0119)	
1-2x			-0.0661***	-0.0534***	-0.0524***	-0.0661***
			(0.0134)	(0.0207)	(0.0105)	(0.0205)
2-5x			-0.109***	-0.120***	-0.0896***	-0.119***
			(0.0151)	(0.0251)	(0.0120)	(0.0216)
>5x			-0.160***	-0.178***	-0.116***	-0.144***
			(0.0260)	(0.0375)	(0.0189)	(0.0308)
Pol Reading X Treatment						
0-1x X Inspection Treatment				-0.0424		
				(0.0309)		
1-2x X Inspection Treatment				-0.0221		0.0239
				(0.0271)		(0.0280)
2-5x X Inspection Treatment				0.0186		0.0497*
				(0.0313)		(0.0291)
>5x X Inspection Treatment				0.0330		0.0452
				(0.0516)		(0.0428)
Treatment F-test p-value	0.249	0.608	0.245	0.388	0.204	0.315
Inspection control mean	0.827	0.827	0.827	0.827	0.827	0.827
Observations	8897	8897	8897	8897	8897	4089

Standard errors in parentheses

Does not include region fixed effects. Standard effects clustered at plant level.

Omitted actions are Ignore (for Regulator) and Inspect (for Firm).

Omitted pollution reading for column (6) is No Pollution Reading Taken.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C7: Endline Pollution on Inspection and CCA Treatment

	Pollution	Compliance
Inspection treatment assigned (=1)	-0.0160	0.0248
	(0.0866)	(0.0238)
CCA Treatment (=1)	-0.0482	0.0311
	(0.0928)	(0.0241)
Inspection treatment X CCA treatment (=1)	0.0326	-0.00340
	(0.130)	(0.0345)
Inspection and CCA control mean	0.652	0.595
Observations	4168	4168

Standard errors in parentheses
Pollution standardized by backcheck standard deviation.
Includes audit treatment and treatment interaction controls,
and year and region fixed effects
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C8: Placebo Check of Alternate Compliance Thresholds

	1x Limit	2x Limit	5x Limit	10x Limit
Inspection treatment assigned (=1)	0.0366*	0.0144	0.00323	-0.000368
	(0.0213)	(0.0193)	(0.0131)	(0.00824)
Audit treatment assigned (=1)	0.0288	0.0154	0.0123	0.0166*
	(0.0258)	(0.0238)	(0.0162)	(0.00917)
Audit X inspection treatment (=1)	-0.0365	-0.0245	-0.0109	-0.0106
	(0.0353)	(0.0316)	(0.0214)	(0.0116)
Inspection and audit control mean	0.614	0.813	0.928	0.975
Observations	4168	4168	4168	4168

Standard errors in parentheses
Includes audit treatment and treatment interaction controls
and year and region fixed effects.
Compliance is defined as pollution being below N times the limit,
with N being 1, 2, 3, 5 and 10 respectively.
Pollution standardized by backcheck standard deviation.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

	(1)	(2)	(3)	(4)	(5)
Endline pollution bin	0.170*	0.173*	0.182*	0.172*	
	(0.0978)	(0.103)	(0.101)	(0.103)	
(firstnm) p_1_max	-0.525*	-0.519*	-0.583*	-0.559*	-0.568**
	(0.311)	(0.314)	(0.297)	(0.312)	(0.257)
(firstnm) p_3_max					0.459
					(0.278)
(firstnm) p_4_max					0.539
					(0.349)
(firstnm) p_5_max					0.665**
					(0.331)
Constant	2.058***	1.995***	1.898***	1.893***	1.943***
	(0.302)	(0.463)	(0.461)	(0.532)	(0.486)
Plant characteristics	Yes	Yes	Yes	Yes	Yes
Audit treatment	No	Yes	Yes	Yes	Yes
Recent regulatory actions	No	No	Yes	Yes	Yes
Recent pollution readings	No	No	No	Yes	Yes
Mean	1.392	1.392	1.392	1.392	
F stat p-value					0.00859
R2	0.213	0.213	0.259	0.284	0.285
Observations	388	388	388	388	388

Standard errors in parentheses

Robust standard errors in parentheses. Pollution bin is a categorical variable that takes the value of 1 if pollution is in the smallest bin, 2 in the next bin, 3 in the next, and 4 in the largest bin. For firms with no pollution readings, pollution bin is 0. Each specification also includes a dummy for having no pollution reading.

Column 5 separates pollution bin into a series of dummies. The omitted dummy is having a pollution reading in the lowest bin. A dummy for having no pollution reading is also included.

The F test is for the joint significance of these endline pollution bin dummies.

Plant characteristics include dummies for size, use of coal or lignite as fuel, high waste water generated, dye sector, textile sector, and region.

Treatment includes dummies for audit, inspections, and an interaction between the two.

Recent regulatory actions include the number of punishes, complies, and warns in year before endline.

Table C9: Robustness of Targeting Parameters to Calibration

$\sigma_c =$	0.50	0.25	1.00	0.50	0.50
$\rho =$	0.25	0.25	0.25	0.15	0.35
	(1)	(2)	(3)	(4)	(5)
Audit treatment	-0.005	-0.005	-0.007	-0.006	-0.003
	(0.017)	(0.017)	(0.018)	(0.013)	(0.020)
Audit × inspection treatment	0.016	0.015	0.018	0.015	0.012
	(0.021)	(0.020)	(0.022)	(0.016)	(0.023)
Audit sample	0.095	0.095	0.098	0.070	0.110
	(0.024)	(0.024)	(0.025)	(0.018)	(0.030)
Region: Ahmedabad	-0.221	-0.222	-0.232	-0.178	-0.237
	(0.044)	(0.044)	(0.045)	(0.033)	(0.057)
Region: Surat	-0.178	-0.179	-0.186	-0.144	-0.193
	(0.040)	(0.040)	(0.041)	(0.030)	(0.050)
Inspection treatment	0.162	0.161	0.168	0.121	0.182
	(0.025)	(0.025)	(0.025)	(0.017)	(0.036)
Constant	-0.004	-0.034	0.067	0.002	-0.010
	(0.103)	(0.096)	(0.129)	(0.100)	(0.105)
Audit treatment	-0.102	-0.097	-0.111	-0.106	-0.099
	(0.085)	(0.084)	(0.089)	(0.085)	(0.086)
Audit × inspection treatment	0.066	0.059	0.082	0.069	0.069
	(0.108)	(0.107)	(0.114)	(0.107)	(0.109)
Audit sample	0.613	0.607	0.624	0.618	0.601
	(0.137)	(0.135)	(0.143)	(0.137)	(0.138)
Region: Ahmedabad	-0.201	-0.186	-0.232	-0.214	-0.183
	(0.132)	(0.130)	(0.138)	(0.131)	(0.132)
Region: Surat	-0.371	-0.345	-0.426	-0.382	-0.351
	(0.164)	(0.161)	(0.177)	(0.163)	(0.166)
Run	-0.742	-0.604	-1.073	-0.703	-0.786
	(0.307)	(0.233)	(0.550)	(0.282)	(0.333)
μ_c	1.859	1.637	2.350	1.852	1.870
	(0.316)	(0.317)	(0.337)	(0.315)	(0.315)
σ_1	0.111	0.110	0.117	0.093	0.112
	(0.022)	(0.022)	(0.023)	(0.016)	(0.028)
σ_2	0.866	0.855	0.899	0.862	0.871
	(0.042)	(0.037)	(0.073)	(0.041)	(0.045)
λ_1	-0.219	-0.220	-0.203	-0.075	-0.457
	(0.066)	(0.066)	(0.062)	(0.034)	(0.137)
λ_2	10.043	10.162	9.304	6.951	18.445
	(3.124)	(3.164)	(2.598)	(1.233)	(11.751)

The table reports estimates of the targeting stage of the model.

Table C10: Robustness of Expected Inspections to Calibration

$\sigma_c =$	0.50	0.25	1.00	0.50	0.50
$\rho =$	0.25	0.25	0.25	0.15	0.35
	(1)	(2)	(3)	(4)	(5)
$\mathbb{E}[Inspections]$	2.147	2.149	2.150	2.177	2.126
$\mathbb{E}[Inspections^2]$	7.111	7.136	7.131	7.358	6.949

The table reports estimates of the targeting stage of the model.