

Regulatory Policy Enforcement and Corporate Performance

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Motivation & Research Question

Who Is the Real Driver? Congress, President, Supreme Court or Political Parties?

- ❑ Santa-Clara and Valkanov (JF 2003), Snowberg et al (QJE 2007)
 - Higher stock returns under Democrat (Republican) presidents
- ❑ Bhagat, et al (JFE 1994), Colonnello and Herper (JLE 2020)
 - Effect of courts rulings on firm value
- ❑ Goldman, et al (RFS 2009), Tahoun (JFE 2014), Cohen et al (JFE 2013)
 - Firms and Congress connections
- ❑ “Environment-buster Reagan” (New York Times, 1982)
- ❑ “Clinton Announces Executive Order Challenging Curbs on EPA” (Washington Post, 1995)
- ❑ “2011 budget deal would slash EPA budget 16 percent” (Reuters, 2011)
- ❑ “Angry GOP Senate freezes out Obama nominees” (Politico 2015)
- ❑ “Congress Rejects Trump Proposals to Cut Health Research Funds” (New York times 2017)
- ❑ “Supreme Court curbs EPA's ability to fight climate change” (CNN 2022)

How are all of these translated for firms?

Agencies!

Motivation & Research Question

Is the Government (Agencies) Effective?

- ❑ Kalmenovitz et al (WP 2023), Correia (JAE 2014)
 - Revolving door in agencies
- ❑ Borisov et al (RFS 2015)
 - Evidence on lobbying and its value for firms
- ❑ Federal Officials Trade Stock in Companies Their Agencies Oversee” (WSJ 2022)
- ❑ The average number of lobbyists targeting the EPA, FDA, OSHA, and SEC since 2011 are 1,071, 1,842, 170, and 615, respectively (OpenSecrets)

Are government agencies effectively enforcing laws?

Research Question

- How do we measure the influence of the agencies (EPA, FDA, OSHA, and SEC) on firms?
- How do changes in policy enforcement intensity in different agencies affects corporate performance of firms regulated under these agency?

Literature & Contribution

Regulation/Enforcement Literature

- ❑ Stigler (RJE 1971)
 - Regulatory Capture
- ❑ Kalmenovitz (RFS 2023)
 - Paperwork regulation increase firm's cost and decrease investment
- ❑ Trebbi and Zhang (WP 2023)
 - Increased regulation intensity is associated with higher labor cost
- ❑ Calomiris, Charles, Harry, and Yang (WP 2023)
 - Higher (firm) regulatory exposure results in slower sales and asset growth public

Literature & Contribution

Our Contribution

❑ Methodology

- Explanatory Factor Analysis
- Building an agency-level time varying Enforcement Index (Agency EI)
- Extending the Agency EI to an exposure-weighted index that encompass industry exposure

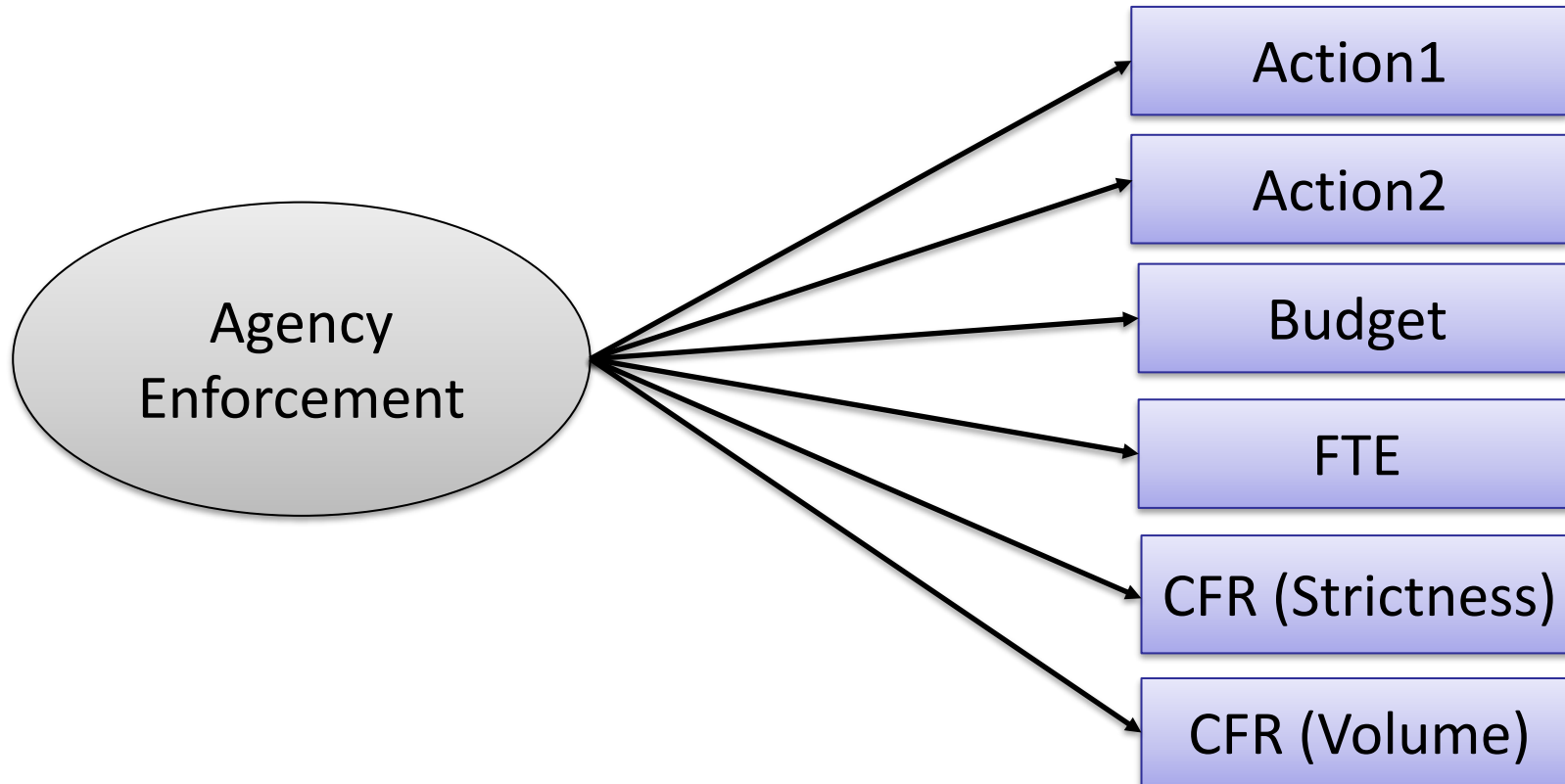
❑ Perspective

- Top-down (Supply-side) approach
- Looking at agency outputs

Data Description

Agency-level Enforcement Variables

- Enforcement happens in different forms and through different channels



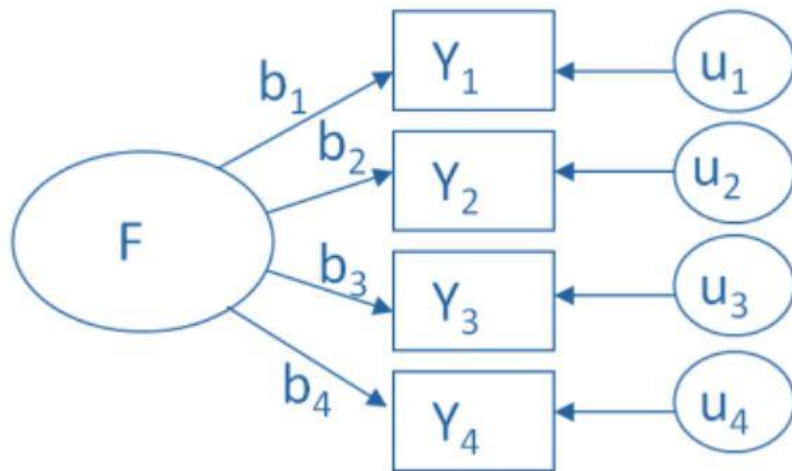
Data Description

Agency-level Data (EPA, FDA, OSHA, and SEC) (1980-2019)

- Annual budget spending (constant 2012 dollar) and full-time equivalent (FTE) employees
 - Weidenbaum Center on the Economy, Government, and Public Policy (Washington University in S.t Louise)
- Volume and Strictness of CFR Verbiage
 - RegData
- Agency Actions
 - Annual enforcement reports from each of the agencies

Methodology

Explanatory Factor Analysis



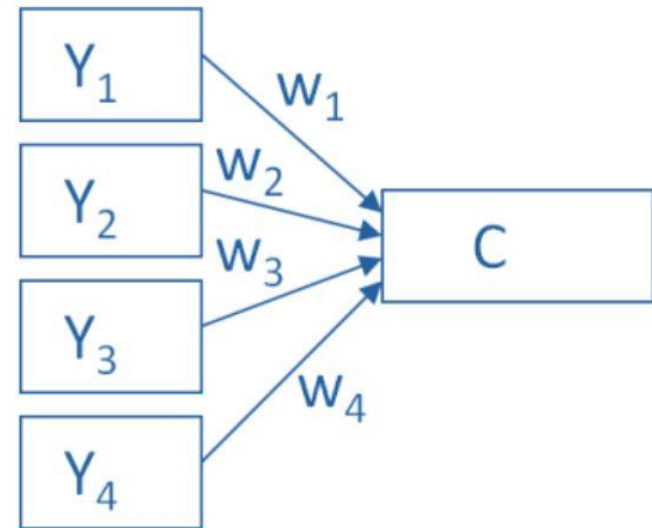
$$Y_1 = b_1 * F + u_1$$

$$Y_2 = b_2 * F + u_2$$

$$Y_3 = b_3 * F + u_3$$

$$Y_4 = b_4 * F + u_4$$

Principal Component Analysis



$$C = w_1(Y_1) + w_2(Y_2) + w_3(Y_3) + w_4(Y_4)$$

Methodology

Explanatory Factor Analysis for Each Agency

Panel A. Extracted Factors				
	EPA	FDA	OSHA	SEC
Factor	Eigenvalue	Eigenvalue	Eigenvalue	Eigenvalue
Factor1	3.205	3.988	3.218	5.117
Factor2	1.894	1.155	0.793	0.333
Factor3	0.212	0.392	0.434	0.022
Factor4	-0.002	0.002	0.029	-0.003

Methodology

Exposure-weighted Agency EI

- RegData (quantgov.org) provides a probability (Using textual analysis) of an industry being related to each CFR part each year. (CFR titles 40, 21, 29, and 17 belong to EPA, FDA, OSHA, and SEC respectively)
- Industry relatedness to each agency is computed as:

- $$RS_i = \frac{\sum_t \sum_p Pr_{i,t,p}}{N \times M}$$

- Agency enforcement intensity for each specific (6-digit NAICS) industry is computed as:
 - *Exposure – weighted Agency EI_{i,t} = Agency EI_t × RS_i*

Results

Agency-level Policy Enforcement and Operating Performance of Highly Exposed Firms

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
	<i>Operating performance</i>			
<i>EPA EI</i>	-0.043*** (0.014)			
<i>FDA EI</i>		-0.044** (0.018)		
<i>OSHA EI</i>			-0.024** (0.009)	
<i>SEC EI</i>				-0.041*** (0.010)
<i>Size</i>	0.085*** (0.010)	0.090*** (0.014)	0.018** (0.008)	0.032*** (0.009)
<i>CAPEX + R&D</i>	-0.317*** (0.051)	-0.348*** (0.059)	-0.123 (0.111)	-0.205 (0.177)
<i>Leverage</i>	-0.128*** (0.029)	-0.183*** (0.046)	-0.088 (0.073)	-0.169*** (0.047)
<i>Sales growth</i>	0.001 (0.003)	-0.001 (0.006)	0.018 (0.015)	0.003 (0.009)
<i>Industry performance</i>	0.563*** (0.101)	0.610*** (0.148)	1.060*** (0.125)	0.892*** (0.161)
<i>GDP growth</i>	-0.004 (0.003)	0.000 (0.003)	-0.000 (0.001)	0.001 (0.001)
<i>Inflation</i>	0.002 (0.003)	-0.000 (0.003)	0.003* (0.001)	0.002 (0.002)
<i>Unemployment</i>	-0.009* (0.005)	-0.009* (0.005)	-0.000 (0.002)	-0.000 (0.002)
<i>President party</i>	0.009 (0.017)	-0.007 (0.016)	0.017** (0.008)	-0.007 (0.007)
Constant	-0.412*** (0.059)	-0.386*** (0.075)	-0.114** (0.056)	-0.178*** (0.062)
Observations	18,745	8,335	6,400	24,130
R-squared	0.665	0.656	0.570	0.576
Firm FE	YES	YES	YES	YES

Results

Exposure-weighted Agency-level Policy Enforcement and Corporate Performance

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
		<i>Operating performance</i>		
<i>Exposure-weighted EPA EI</i>	-0.007* (0.004)			
<i>Exposure-weighted FDA EI</i>		-0.012*** (0.005)		
<i>Exposure-weighted OSHA EI</i>			-0.015*** (0.004)	
<i>Exposure-weighted SEC EI</i>				-0.018** (0.008)
<i>Size</i>	0.061*** (0.005)	0.061*** (0.005)	0.061*** (0.005)	0.062*** (0.005)
<i>CAPEX + R&D</i>	-0.792*** (0.062)	-0.792*** (0.063)	-0.792*** (0.062)	-0.793*** (0.062)
<i>Leverage</i>	-0.320*** (0.026)	-0.320*** (0.026)	-0.320*** (0.026)	-0.321*** (0.026)
<i>Sales growth</i>	-0.037*** (0.008)	-0.037*** (0.008)	-0.037*** (0.008)	-0.037*** (0.008)
Constant	-0.140*** (0.027)	-0.140*** (0.027)	-0.133*** (0.027)	-0.132*** (0.028)
Observations	157,913	157,913	157,913	157,913
R-squared	0.343	0.344	0.344	0.344
Year × Industry FE	YES	YES	YES	YES

Results

Violator-firm Enforcement by Agencies and Corporate Performance

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
		<i>Operating performance</i>		
<i>Violation dummy</i>	-0.106*** (0.007)	-0.007*** (0.003)		
<i>Penalty</i>			-0.009*** (0.001)	-0.001*** (0.000)
<i>Size</i>	0.078*** (0.002)	0.060*** (0.005)	0.078*** (0.002)	0.060*** (0.005)
<i>CAPEX + R&D</i>	-0.788*** (0.035)	-0.361*** (0.036)	-0.788*** (0.035)	-0.361*** (0.036)
<i>Leverage</i>	-0.382*** (0.015)	-0.132*** (0.015)	-0.382*** (0.015)	-0.132*** (0.015)
<i>Sales growth</i>	-0.045*** (0.003)	-0.012*** (0.003)	-0.045*** (0.003)	-0.012*** (0.003)
Constant	-0.306*** (0.013)	-0.325*** (0.027)	-0.308*** (0.013)	-0.325*** (0.027)
Observations	88,074	86,736	88,074	86,736
R-squared	0.414	0.723	0.414	0.723
Year FE	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES

Results

Mechanism (Asset Turnover Vs Profit Margin)

<i>Dependent variable</i>	(1) <i>Asset turnover</i>	(2) <i>Asset turnover</i>	(3) <i>Asset turnover</i>	(4) <i>Asset turnover</i>	(5) <i>Profit margin</i>	(6) <i>Profit margin</i>	(7) <i>Profit margin</i>	(8) <i>Profit margin</i>
<i>EPA EI</i>	0.016 (0.021)				-0.783*** (0.181)			
<i>FDA EI</i>		-0.026 (0.022)				-0.827*** (0.190)		
<i>OSHA EI</i>			0.031 (0.025)				-0.131* (0.071)	
<i>SEC EI</i>				0.038** (0.016)				-0.142*** (0.038)
<i>Industry asset turnover</i>	0.825*** (0.065)	0.688*** (0.076)	0.675*** (0.085)	0.654*** (0.058)				
<i>Industry profit margin</i>					2.487*** (0.300)	5.022*** (1.026)	1.340*** (0.414)	1.488*** (0.202)
Constant	0.574*** (0.070)	0.910*** (0.127)	1.177*** (0.197)	0.713*** (0.080)	-2.888** (1.105)	-2.646*** (0.595)	-0.540** (0.231)	-0.709*** (0.155)
Observations	18,493	8,248	6,416	24,288	18,493	8,248	6,416	24,288
R-squared	0.324	0.440	0.623	0.634	0.229	0.216	0.062	0.084
Firm Controls	YES	YES	YES	YES	YES	YES	YES	YES
Macro Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

To Conclude

- Supply-side measure of agency regulatory enforcement created using EFA encompassing different agency-level variables
- Firms' (that are regulated by EPA, FDA, OSHA, and SEC) performances are adversely affected by higher enforcement intensity by each of the agencies. This presents in the sub-sample of highly exposed firms and in the more general sample with an exposure weight.
- The negative effect of agency enforcement on firms recognizes that the agencies are doing their job, and the government is effective
- The channel of effect appears to be through the profit margin

Appendix A

The Dodd-Frank Act of 2010

<i>Dependent Variable</i>	<i>Operating performance</i>
<i>Post × Treatment</i>	-0.025*** (0.010)
<i>Size</i>	0.033** (0.013)
<i>Leverage</i>	-0.125*** (0.036)
<i>Sales growth</i>	0.033*** (0.007)
<i>Expenditure + R&D</i>	-0.292** (0.142)
Constant	-0.142 (0.092)
Observations	8,916
R-squared	0.683
Firm FE	YES
Year FE	YES

Appendix B

Firm-exposure-weighted Agency-level Policy Enforcement and Corporate Performance

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
		<i>Operating performance</i>		
<i>Firm-exposure-weighted EPA EI</i>	0.004 (0.004)			
<i>Firm-exposure-weighted FDA EI</i>		-0.014*** (0.005)		
<i>Firm-exposure-weighted OSHA EI</i>			-0.007* (0.003)	
<i>Firm-exposure-weighted SEC EI</i>				-0.020*** (0.006)
<i>Size</i>	0.048*** (0.003)	0.048*** (0.003)	0.048*** (0.003)	0.048*** (0.003)
<i>Expenditure + R&D</i>	-0.358*** (0.026)	-0.358*** (0.026)	-0.358*** (0.026)	-0.358*** (0.026)
<i>Leverage</i>	-0.145*** (0.012)	-0.145*** (0.012)	-0.145*** (0.012)	-0.145*** (0.012)
<i>Sales growth</i>	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)
Constant	-0.171*** (0.014)	-0.172*** (0.014)	-0.172*** (0.014)	-0.172*** (0.014)
Observations	156,532	156,532	156,532	156,532
R-squared	0.663	0.663	0.663	0.663
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Appendix C (Robustness)

Alternative Explanations (Paperwork Regulation Burden) and Robustness Tests

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
		<i>Operating performance</i>		
<i>EPA EI</i>	-0.077* (0.039)			
<i>FDA EI</i>		-0.058** (0.021)		
<i>OSHA EI</i>			-0.008 (0.012)	
<i>SEC EI</i>				-0.036** (0.013)
<i>Size</i>	0.085*** (0.015)	0.101*** (0.021)	0.022* (0.011)	0.031** (0.014)
<i>CAPEX + R&D</i>	-0.315*** (0.108)	-0.318** (0.115)	0.011 (0.212)	-0.104 (0.168)
<i>Leverage</i>	-0.149*** (0.047)	-0.215*** (0.056)	-0.051 (0.042)	-0.229* (0.116)
<i>Sales growth</i>	-0.006 (0.006)	0.002 (0.011)	0.007 (0.025)	-0.003 (0.026)
<i>Industry performance</i>	0.593*** (0.149)	0.537** (0.219)	0.717*** (0.139)	0.569*** (0.155)
<i>GDP growth</i>	0.005 (0.007)	-0.001 (0.006)	-0.000 (0.003)	-0.000 (0.003)
<i>Inflation</i>	-0.002 (0.011)	-0.004 (0.009)	-0.006 (0.004)	-0.004 (0.003)
<i>Unemployment</i>	0.007 (0.011)	-0.007 (0.010)	-0.008* (0.004)	-0.011*** (0.003)
<i>President party</i>	-0.011 (0.036)	-0.004 (0.033)	0.041*** (0.012)	0.029** (0.012)
Constant	-0.399*** (0.101)	-0.378** (0.136)	-0.061 (0.077)	-0.028 (0.076)
Observations	3,934	1,898	1,152	2,194
R-squared	0.647	0.669	0.653	0.596
Firm FE	YES	YES	YES	YES

Appendix C (Robustness)

Alternative Explanations (Paperwork Regulation Burden) and Robustness Tests

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
		<i>Operating performance</i>		
<i>EPA EI</i>	-0.052 (0.039)			
<i>FDA EI</i>		-0.038** (0.018)		
<i>OSHA EI</i>			-0.004 (0.012)	
<i>SEC EI</i>				-0.037*** (0.011)
<i>RegIn</i>	-0.021 (0.013)	-0.026* (0.015)	-0.004 (0.006)	0.002 (0.006)
<i>Size</i>	0.090*** (0.014)	0.101*** (0.017)	0.028 (0.017)	0.040*** (0.012)
<i>CAPEX + R&D</i>	-0.446*** (0.076)	-0.496*** (0.095)	-0.191 (0.256)	-0.250 (0.300)
<i>Leverage</i>	-0.155*** (0.040)	-0.286*** (0.059)	-0.116 (0.089)	-0.221*** (0.068)
<i>Sales growth</i>	-0.004 (0.005)	0.006 (0.008)	0.008 (0.022)	-0.011 (0.015)
<i>Industry performance</i>	0.563*** (0.129)	0.724*** (0.165)	1.177*** (0.200)	0.954*** (0.309)
<i>GDP growth</i>	0.003 (0.005)	0.005 (0.004)	-0.004 (0.002)	-0.001 (0.003)
<i>Inflation</i>	-0.005 (0.009)	-0.009 (0.007)	0.007 (0.005)	-0.004 (0.005)
<i>Unemployment</i>	0.003 (0.008)	-0.005 (0.006)	-0.006** (0.003)	-0.007* (0.003)
<i>President party</i>	-0.022 (0.027)	-0.048** (0.018)	0.052*** (0.016)	0.011 (0.019)
<i>Constant</i>	-0.248*** (0.082)	-0.168 (0.114)	-0.141 (0.100)	-0.146 (0.090)
Observations	8,053	3,816	2,633	4,509
R-squared	0.605	0.646	0.489	0.508
Firm FE	YES	YES	YES	YES

Appendix C (Robustness)

Alternative Explanations (Paperwork Regulation Burden) and Robustness Tests

<i>Dependent variable</i>	(1)	(2)	(3)	(4)
	<i>Operating performance</i>			
<i>Exposure-weighted EPA EI</i>	-0.006 (0.006)			
<i>Exposure-weighted FDA EI</i>		-0.015*** (0.004)		
<i>Exposure-weighted OSHA EI</i>			-0.022*** (0.007)	
<i>Exposure-weighted SEC EI</i>				-0.016*** (0.005)
<i>RegIn</i>	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)
<i>Size</i>	0.052*** (0.004)	0.052*** (0.004)	0.052*** (0.004)	0.053*** (0.004)
<i>CAPEX + R&D</i>	-0.778*** (0.086)	-0.778*** (0.087)	-0.780*** (0.085)	-0.782*** (0.087)
<i>Leverage</i>	-0.209*** (0.023)	-0.209*** (0.023)	-0.209*** (0.023)	-0.209*** (0.023)
<i>Sales growth</i>	-0.042*** (0.010)	-0.042*** (0.010)	-0.042*** (0.010)	-0.042*** (0.010)
Constant	-0.076** (0.037)	-0.077** (0.037)	-0.055 (0.038)	-0.072* (0.037)
Observations	63,722	63,722	63,722	63,722
R-squared	0.303	0.303	0.304	0.303
Year × Industry FE	YES	YES	YES	YES

Appendix D (Identification and Empirical Model)

Identification

- Agency EI is Measured at the source
 - Mitigate concerns of endogeneity due to lobbying and reverse causality

Empirical Setting

□ Agency-Specific Samples (1980-2019)

Industries (6-digit NAICS) with a relevance score of more than 95th percentile relevance score (of all firms with an $RS > 0$) for each agency

Agency_EI Regression

$$Performance_{i,j,t} = \alpha + \beta \cdot Agency EI_t + \gamma_1 \cdot X_{it} + \gamma_2 \cdot Z_t + \gamma_3 \cdot Industry performance_{j,t} + \mu_i + \epsilon_{it}$$

Appendix D (Identification and Empirical Model)

Empirical Setting

❑ Full-Sample (1980-2019)

Compustat firms with at least 5 firms in each 6-digit NAICS industry-year and $RS > 0$

Exposure-weighted Agency_EI Regression

$$Performance_{i,j,t} = \alpha + \beta \cdot Exposure - weighted Agency EI_{j,t} + \gamma \cdot X_{it} + \mu_{k,t} + \epsilon_{it}$$

❑ ViolationTracker Sample (2000-2019)

Population of Compustat firms

ViolationTracker Regression

$$Performance_{i,t} = \alpha + \beta \cdot Enforcement_{i,t} + \gamma \cdot X_{it} + \mu_i + \mu_t + \epsilon_{it}$$

Appendix E (Data Description)

Agency-level Data Sample

Panel A. EPA and FDA												
Year	EPA						FDA					
	<i>Action1</i>	<i>Action2</i>	<i>Budget</i>	<i>FTE</i>	<i>Regulation1</i>	<i>Regulation2</i>	<i>Action1</i>	<i>Action2</i>	<i>Budget</i>	<i>FTE</i>	<i>Regulation1</i>	<i>Regulation2</i>
1980	901	210	3449	13045	37465	2894078	836	46458	878	8045	20320	1874779
1981	1107	118	3372	12720	40179	3100990	629	36883	818	7705	19409	1836639
1982	864	112	3071	11402	40811	3148071	719	30220	775	7260	20386	1939737
1983	1848	165	2972	10940	39619	3234308	820	28595	782	7261	21106	2067276
1984	3124	251	3010	11562	41283	3429925	1414	25876	799	7234	20750	2121408
1985	2609	276	3283	12590	42911	3777344	2097	24260	826	7156	21236	2196305
1986	2626	342	3450	13115	46423	4357666	3646	22189	807	6966	21238	2199373
1987	3194	304	3811	13649	51163	4608116	2412	20298	794	6918	21226	2232824
1988	3085	372	4432	14078	54623	4831628	1541	20198	842	7168	21819	2315300
1989	4136	364	4638	14539	60018	5096125	2188	18592	893	7349	21761	2324809
1990	3804	375	4991	15587	65904	5494506	2373	17849	954	7764	21655	2315985
1991	3925	353	5600	16241	69021	5982926	2871	18609	1083	8418	21832	2336530
1992	3667	321	5985	16874	70329	6176655	2937	17064	1201	8952	21868	2348633
1993	3808	338	6117	18131	77959	6745691	2375	17315	1179	8977	22119	2401927
1994	3544	350	6156	17414	87826	7433600	3250	15179	1299	9194	22183	2440831
1995	2969	145	6269	17326	89715	7495475	2999	15011	1383	9242	22366	2460786
1996	2171	225	5565	17028	85909	8163787	3012	15230	1390	9172	19889	2485193
1997	3427	370	5869	16789	104143	8220198	3625	15506	1387	9171	22677	2449088

Appendix E (Data Description)

Agency-level data Summary Statistics

<i>Variable</i>	EPA				FDA				OSHA				SEC			
	N	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD
<i>Action1</i>	40	3024.67	3159.000	1071.722	40	4625.241	3726.000	2799.027	40	1.157e+08	94588577.652	99114567	40	304.125	283.000	172.402
<i>Action2</i>	40	244.070	255.500	87.106	40	21016.700	20000.500	6125.126	40	105919.820	104867.000	19124.687	40	196.825	190.000	51.748
<i>Budget</i>	40	5060.799	5466.433	993.552	40	2044.101	1565.688	1295.472	40	489.179	488.369	55.520	40	679.923	468.167	468.103
<i>FTE</i>	40	15611.525	16634.000	2036.814	40	10258.35	9171.500	3092.57	40	2234.600	2197.500	205.213	40	3026.925	2809.000	881.358
<i>Regulation1</i>	40	118894.7	125322.000	57861.622	40	22188.775	21790.000	2383.893	40	32908.450	34349.000	6686.702	40	13588.075	13599.500	3053.980
<i>Regulation2</i>	40	9772851.1	9848461.500	4656795.7	40	2259665.9	2277926	172740.610	40	1596482.100	1695021	396392.720	40	1030458	984867.500	231867.550

Appendix E (Data Description)

Summary Statistics (Agency-Specific and Full Samples)

Panel A. Agency-Specific High *RS* firms

<i>Variable</i>	EPA				FDA				OSHA				SEC			
	N	Mean	Med	SD	N	Mean	Med	SD	N	Mean	Med	SD	N	Mean	Med	SD
<i>Operating performance</i>	18908	-0.246	-0.020	0.691	8401	-0.162	0.056	0.635	6433	0.099	0.114	0.230	24335	0.044	0.027	0.235
<i>Size</i>	18908	4.611	4.309	2.727	8401	4.594	4.302	2.536	6433	6.310	6.524	2.336	24335	6.963	6.932	2.480
<i>CAPEX + R&D</i>	18908	0.225	0.136	0.235	8401	0.192	0.116	0.214	6433	0.086	0.058	0.093	24335	0.021	0.003	0.054
<i>Leverage</i>	18908	0.270	0.144	0.433	8401	0.266	0.156	0.391	6433	0.349	0.330	0.263	24335	0.173	0.105	0.229
<i>Sales growth</i>	18908	0.468	0.091	1.564	8401	0.452	0.098	1.478	6433	0.203	0.083	0.684	24335	0.164	0.073	0.650
<i>Industry performance</i>	18908	-0.086	-0.066	0.207	8401	-0.009	-0.026	0.112	6433	0.120	0.112	0.044	24335	0.059	0.026	0.060

Panel B. Full Sample

<i>RS</i>	157913	0.010	0.001	0.022	157913	0.004	0.000	0.010	157913	0.003	0.001	0.009	157913	0.003	0.000	0.012
<i>Exposure-weighted Agency EI</i>	157913	0.452	0.455	2.141	157913	0.189	-0.061	1.955	157913	0.591	0.684	2.336	157913	0.582	0.082	2.283
<i>Operating performance</i>	157913	-0.009	0.083	0.469	157913	-0.009	0.083	0.469	157913	-0.009	0.083	0.469	157913	-0.009	0.083	0.469
<i>Size</i>	157913	5.153	5.077	2.597	157913	5.153	5.077	2.597	157913	5.153	5.077	2.597	157913	5.153	5.077	2.597
<i>CAPEX + R&D</i>	157913	0.112	0.065	0.149	157913	0.112	0.065	0.149	157913	0.112	0.065	0.149	157913	0.112	0.065	0.149
<i>Leverage</i>	157913	0.261	0.176	0.343	157913	0.261	0.176	0.343	157913	0.261	0.176	0.343	157913	0.261	0.176	0.343
<i>Sales growth</i>	157913	0.278	0.0850	1.045	157913	0.278	0.0850	1.045	157913	0.278	0.0850	1.045	157913	0.278	0.0850	1.045

Appendix E (Data Description)

Summary Statistics (ViolationTracker Sample and Macro Variables)

Panel C. Macro Variables

<i>Agency EI</i>	40	0.046	0.435	0.959	40	0.039	-0.095	0.977	40	0.041	0.262	0.963	40	0.038	-0.123	0.983
<i>GDP growth</i>	40	2.635	2.750	1.823	40	2.635	2.750	1.823	40	2.635	2.750	1.823	40	2.635	2.750	1.823
<i>Inflation</i>	40	3.225	2.839	2.415	40	3.225	2.839	2.415	40	3.225	2.839	2.415	40	3.225	2.839	2.415
<i>Unemployment</i>	40	6.199	5.792	1.674	40	6.199	5.792	1.674	40	6.199	5.792	1.674	40	6.199	5.792	1.674
<i>President party</i>	40	0.420	0.000	0.500	40	0.420	0.000	0.500	40	0.420	0.000	0.500	40	0.420	0.000	0.500

Panel D. ViolationTracker

<i>Violation dummy</i>	88074	0.074	0.000	0.262	88074	0.076	0.000	0.266	88074	0.076	0.000	0.266	88074	0.076	0.000	0.266
<i>Penalty</i>	88074	0.907	0.000	3.304	88074	0.810	0.000	2.919	88074	0.810	0.000	2.919	88074	0.810	0.000	2.919
<i>Operating performance</i>	88074	-0.062	0.053	0.533	88074	-0.062	0.053	0.533	88074	-0.062	0.053	0.533	88074	-0.062	0.053	0.533
<i>Size</i>	88074	5.741	5.867	2.698	88074	5.741	5.867	2.698	88074	5.741	5.867	2.698	88074	5.741	5.867	2.698
<i>CAPEX + R&D</i>	88074	0.105	0.049	0.161	88074	0.105	0.049	0.161	88074	0.105	0.049	0.161	88074	0.105	0.049	0.161
<i>Leverage</i>	88074	0.264	0.150	0.390	88074	0.264	0.150	0.390	88074	0.264	0.150	0.390	88074	0.264	0.150	0.390
<i>Sales growth</i>	88074	0.254	0.069	1.061	88074	0.254	0.069	1.061	88074	0.254	0.069	1.061	88074	0.254	0.069	1.061

Appendix E (Data Description)

EPA's Action Data

EPA ADMINISTRATIVE ACTIONS INITIATED (BY ACT)
FY1972 TO FY1993

	FY72	FY73	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82
CAA	0	0	0	0	210	297	129	404	86	112	21
CWA/ SDWA	0	0	0	738	915	1128	730	506	569	562	329
RCRA	0	0	0	0	0	0	0	0	0	159	237
CERCLA	0	0	0	0	0	0	0	0	0	0	0
FIFRA	860	1274	1387	1614	2488	1219	762	253	176	154	176
TSCA	0	0	0	0	0	0	1	22	70	120	101
TOTALS	860	1274	1387	2352	3613	2644	1622	1185	901	1107	864
	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93
CAA	41	141	122	143	191	224	336	249	214	354	279
CWA/ SDWA	781	1644	1031	990	1214	1345	2146	1780	2177	1977	2216
RCRA	436	554	327	235	243	309	453	366	364	291	282
CERCLA	0	137	160	139	135	224	220	270	269	245	260
FIFRA	296	272	236	338	360	376	443	402	300	311	233
TSCA	294	376	733	781	1051	607	538	531	422	355	319
EPCRA								206	179	134	219
TOTALS	1848	3124	2609	2626	3194	3085	4136	3804	3925	3667	3808

FY 1993 Enforcement Accomplishments Report

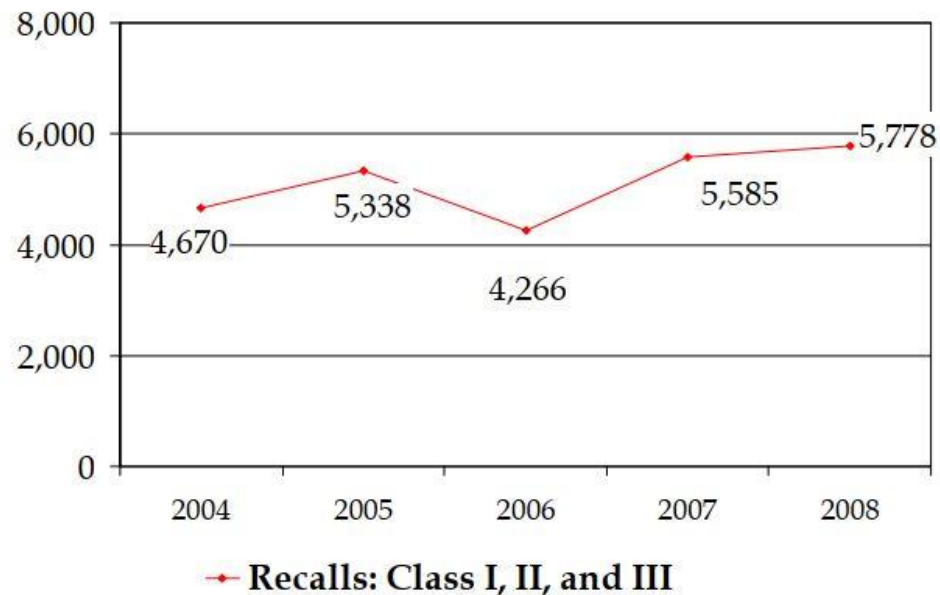
Appendix E (Data Description)

FDA's Action Data



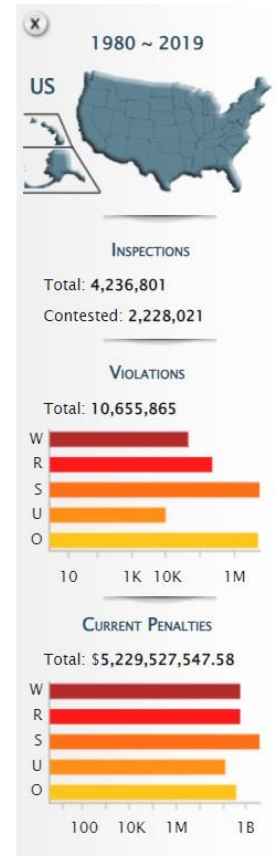
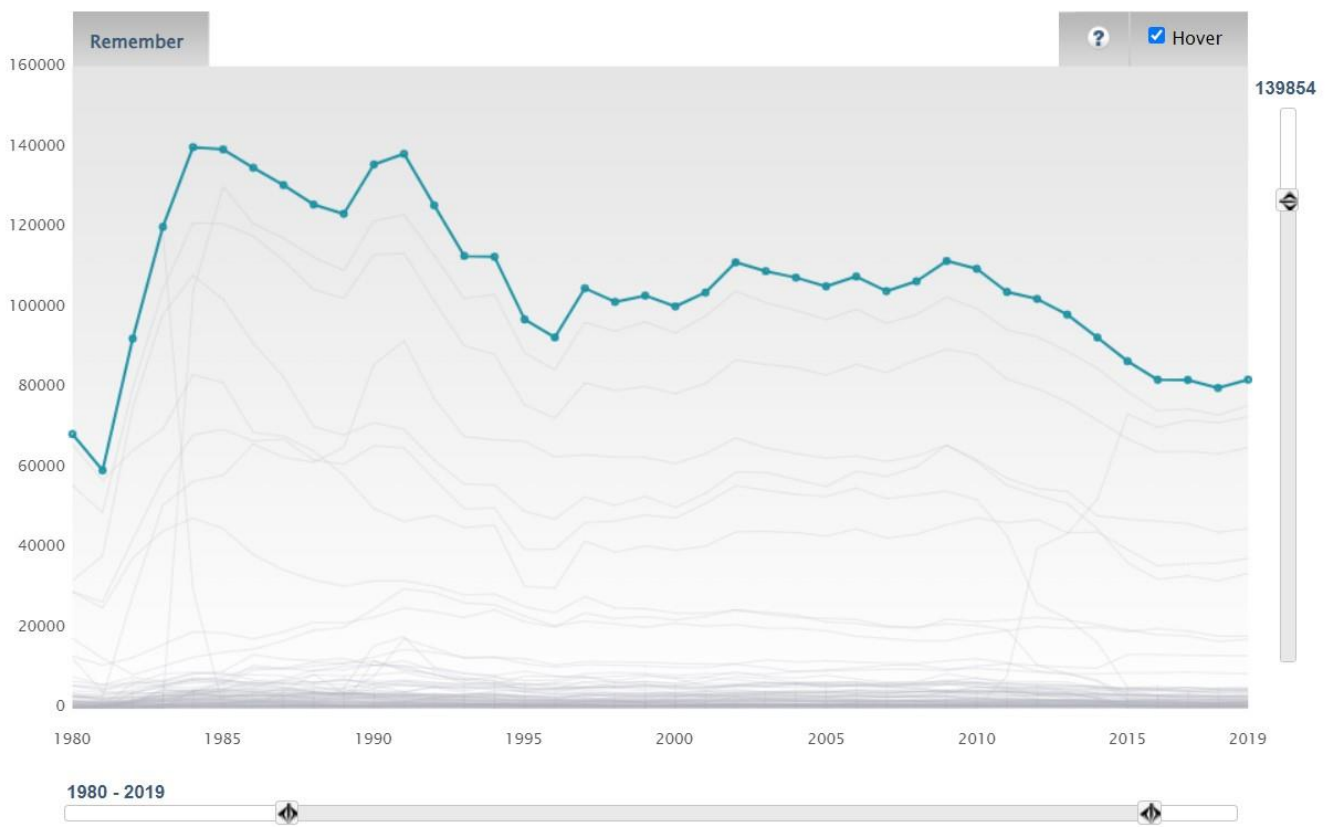
Recalled Products - All Centers
Fiscal Years 2004 - 2008

(Reported on 11/20/2008)



Appendix E (Data Description)

OSHA's Action Data



Appendix E (Data Description)

SEC's Action Data

Enforcement Summary Chart for FY 2019 by Primary Classification

Primary Classification	Civil Actions	Standalone AP	Follow-On AP	Total	% of Total Actions	% of Civil and Standalone APs (excluding Delinquent Filings)
Broker Dealer	3 (3)	35 (37)	116 (117)	154 (157)	18%	7%
Delinquent Filings	0 (0)	126 (295)	0 (0)	126 (295)	15%	0%
Foreign Corrupt Practices Act	1 (2)	17 (18)	0 (0)	18 (20)	2%	3%
Insider Trading	22 (34)	8 (10)	2 (2)	32 (46)	4%	6%
Inv. Adviser / Inv. Company	35 (105)	156 (194)	59 (59)	250 (358)	29%	36%
Issuer Reporting / Audit & Accounting	25 (54)	67 (92)	16 (16)	108 (162)	13%	17%
Market Manipulation	22 (82)	8 (11)	3 (3)	33 (96)	4%	6%
Miscellaneous	1 (13)	0 (0)	0 (0)	1 (13)	0%	0%
Public Finance Abuse	4 (5)	10 (11)	0 (0)	14 (16)	2%	3%
Securities Offering	88 (338)	20 (26)	11 (11)	119 (375)	14%	21%
SRO / Exchange	0 (0)	3 (3)	0 (0)	3 (3)	0%	1%
Transfer Agent	0 (0)	1 (2)	3 (3)	4 (5)	0%	0%
Totals	201 (636)	451 (699)	210 (211)	862 (1,546)	100%	100%

Appendix E (Data Description)

15 Industries with Highest and Lowest Relevance Scores to EPA

Panel A. EPA					
Top 15			Bottom 15		
NAICS	Title	RS	NAICS	Title	RS
562219	Other Nonhazardous Waste Treatment and Disposal	0.1785288	812930	Parking Lots and Garages	0.0002583
562211	Hazardous Waste Treatment and Disposal	0.1743958	812990	All Other Personal Services	0.0002561
324110	Petroleum Refineries	0.0888571	713940	Fitness and Recreational Sports Centers	0.0002477
325612	Polish and Other Sanitation Good Manufacturing	0.0837735	511191	Greeting Card Publishers	0.0002475
325320	Pesticide and Other Agricultural Chemical Manufacturing	0.0833795	525990	Other Financial Vehicles	0.0002457
325411	Medicinal and Botanical Manufacturing	0.0796734	512110	Motion Picture and Video Production	0.0002393
325193	Ethyl Alcohol Manufacturing	0.0767241	531190	Lessors of Other Real Estate Property	0.0002365
325510	Paint and Coating Manufacturing	0.0728942	531390	Other Activities Related to Real Estate	0.0002332
325199	All Other Basic Organic Chemical Manufacturing	0.0710925	323111	Commercial Printing (except Screen and Books)	0.0002328
325611	Soap and Other Detergent Manufacturing	0.0682874	512199	Other Motion Picture and Video Industries	0.0002306
325613	Surface Active Agent Manufacturing	0.0666926	523930	Investment Advice	0.0002305
325120	Industrial Gas Manufacturing	0.0664096	713290	Other Gambling Industries	0.0002262
325992	Photographic Film, Paper, Plate, and Chemical Manufacturing	0.0661813	523910	Miscellaneous Intermediation	0.0002179
325413	In-Vitro Diagnostic Substance Manufacturing	0.0649013	531210	Offices of Real Estate Agents and Brokers	0.0002153
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	0.0647502	515210	Cable and Other Subscription Programming	0.0002133

Appendix F (Channels)

Channels (EPA)

<i>Dependent variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Operating performance</i>						
<i>Action1</i>	-0.015** (0.007)						-0.026*** (0.007)
<i>Action2</i>		0.014 (0.008)					0.021* (0.011)
<i>Budget</i>			-0.021** (0.010)				-0.021 (0.016)
<i>FTE</i>				-0.012 (0.010)			0.014 (0.018)
<i>Regulation1</i>					-0.060*** (0.019)		-0.044* (0.022)
<i>Regulation2</i>						-0.066*** (0.019)	
<i>Industry performance</i>	0.603*** (0.108)	0.601*** (0.106)	0.597*** (0.104)	0.608*** (0.107)	0.524*** (0.099)	0.513*** (0.098)	0.488*** (0.096)
Constant	-0.482*** (0.071)	-0.371*** (0.061)	-0.300*** (0.075)	-0.326*** (0.086)	-0.334*** (0.063)	-0.326*** (0.063)	-0.353*** (0.088)
Observations	18,745	18,745	18,745	18,745	18,745	18,745	18,745
R-squared	0.664	0.664	0.664	0.664	0.665	0.665	0.666
Firm Controls	YES	YES	YES	YES	YES	YES	YES
Macro Controls	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES

Appendix F (Channels)

Channels (FDA)

<i>Dependent variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Operating performance</i>						
<i>Action1</i>	-0.055** (0.021)						-0.032 (0.021)
<i>Action2</i>		0.002 (0.016)					0.047*** (0.012)
<i>Budget</i>			-0.045** (0.020)				0.049 (0.031)
<i>FTE</i>				-0.046** (0.018)			-0.130*** (0.026)
<i>Regulation1</i>					-0.009 (0.011)		0.042*** (0.011)
<i>Regulation2</i>						-0.010 (0.008)	
<i>Industry performance</i>	0.530*** (0.137)	0.528*** (0.149)	0.587*** (0.145)	0.592*** (0.143)	0.574*** (0.155)	0.558*** (0.144)	0.368*** (0.130)
Constant	-0.366*** (0.072)	-0.377*** (0.076)	-0.343*** (0.071)	-0.269*** (0.072)	-0.283** (0.117)	-0.235* (0.132)	-0.554*** (0.126)
Observations	8,335	8,335	8,335	8,335	8,335	8,335	8,335
R-squared	0.657	0.655	0.657	0.657	0.656	0.656	0.658
Firm Controls	YES	YES	YES	YES	YES	YES	YES
Macro Controls	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES

Appendix F (Channels)

Channels (OSHA)

<i>Dependent variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Operating performance</i>						
<i>Action1</i>	-0.016** (0.006)						-0.007 (0.006)
<i>Action2</i>		0.012** (0.005)					0.001 (0.004)
<i>Budget</i>			-0.024*** (0.007)				-0.022*** (0.008)
<i>FTE</i>				-0.004 (0.004)			0.001 (0.005)
<i>Regulation1</i>					-0.011* (0.006)		-0.009* (0.005)
<i>Regulation2</i>						-0.013* (0.007)	
<i>Industry performance</i>	1.081*** (0.128)	1.055*** (0.126)	0.960*** (0.100)	1.062*** (0.125)	1.077*** (0.128)	1.076*** (0.128)	0.965*** (0.106)
Constant	-0.194** (0.078)	-0.121** (0.058)	0.045 (0.056)	-0.079 (0.068)	-0.051 (0.057)	-0.055 (0.055)	0.078 (0.062)
Observations	6,400	6,400	6,400	6,400	6,400	6,400	6,400
R-squared	0.569	0.570	0.572	0.568	0.569	0.569	0.573
Firm Controls	YES	YES	YES	YES	YES	YES	YES
Macro Controls	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES

Appendix F (Channels)

Channels (SEC)

<i>Dependent variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Operating performance</i>						
<i>Action1</i>	-0.017*** (0.006)						0.002 (0.004)
<i>Action2</i>		-0.007 (0.004)					-0.004 (0.003)
<i>Budget</i>			-0.029*** (0.007)				0.022 (0.018)
<i>FTE</i>				-0.037*** (0.009)			-0.039* (0.019)
<i>Regulation1</i>					-0.043*** (0.011)		-0.030** (0.015)
<i>Regulation2</i>						-0.040*** (0.010)	
<i>Industry performance</i>	0.919*** (0.160)	0.917*** (0.162)	0.909*** (0.162)	0.895*** (0.162)	0.883*** (0.160)	0.891*** (0.161)	0.867*** (0.162)
Constant	-0.126** (0.055)	-0.126** (0.057)	-0.143** (0.057)	-0.059 (0.049)	0.010 (0.044)	0.001 (0.045)	0.063 (0.063)
Observations	24,130	24,130	24,130	24,130	24,130	24,130	24,130
R-squared	0.573	0.573	0.575	0.576	0.577	0.576	0.577
Firm Controls	YES	YES	YES	YES	YES	YES	YES
Macro Controls	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES