Diminishing Regulatory Capacity and Corporate Political Disengagement: Evidence from State-Level Workforce Shocks

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Abstract

Although there are public concerns about the declining capacity of regulatory agencies and its impact on regulatory outcomes, such decline could also lead regulated firms to disengage themselves from politics. We examine whether and how firms reduce their campaign contributions in response to decreases in state-level regulatory capacity. To do so, we collect original datasets on the workforce size of U.S. state environmental agencies and leverage variations in workforce shocks that arise from the gap between actual and appropriated workforce sizes. Our analysis reveals that state environmental agencies' workforce shocks decrease firms' donations to state legislators, particularly to those in the majority party and the Democratic party, but do not affect firms' contributions to their ideological allies. We also find that existing state-level restrictions on corporate donations do not moderate firms' political responsiveness. Overall, this article provides a nuanced picture of how diminishing regulatory capacity could shape corporate political activities.

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1 Introduction

Maintaining a high level of regulatory capacity, defined as an agency's ability to accomplish regulatory objectives, is often considered critical for achieving good regulatory outcomes (e.g., Keohane, Mansur, and Voynov 2009; Hanna and Oliva 2010; Keiser and Shapiro 2019). Nonetheless, the regulatory capacity in the United States has been constantly declining. The size of nearly every federal workforce was slashed during the Trump administration (Katz 2021), and the staffing of the Internal Revenue Service (IRS) and Environmental Protection Agency (EPA) has fallen to lows in the past decade (Dennis 2017; CBPP 2022). Although such decline could worsen regulatory outcomes, it could also affect political spending by firms regulated by these agencies. For one, diminishing regulatory capacity might lower firms' incentives to engage in politics due to their diminishing concerns about enforcement. However, it is uncertain whether such effects exist since the existing studies on the relevant topic focus largely on how firms' use of their political expenditures affects regulatory enforcement (e.g., Gordon and Hafer 2005; Heitz, Wang, and Wang 2023; Egerod 2024; Harding et al. 2023; González and You 2024),

In this paper, we examine whether and how firms reduce their campaign contributions in response to a decrease in regulatory agency capacity. We focus particularly on campaign contributions because of ongoing debates about whether firms use donations in a sophisticated manner to achieve their goals. While one stream of research claims that firms strategically allocate their donations to politicians who are useful to them (e.g., Barber 2016a; Powell and Grimmer 2016; Fouirnaises and Hall 2022), others argue that corporate political donations are driven largely by ideological affinity (e.g., Ansolabehere, De Figueiredo, and Snyder 2003; Bonica 2014; La Raja and Schaffner 2015; Skocpol and Hertel-Fernandez 2016). Although these explanations might not be mutually exclusive,[1] disentangling the mechanisms could reveal firms' underlying motivation to use campaign contributions to respond to regulatory capacity.

1. For example, firms might donate to ideologically aligned legislators to express their ideological affinity, but they might also do so if these legislators view them more favorably and grant more access to them.

For our empirical analyses, we examine state environmental agencies in the United States. This approach has three primary advantages. First, state environmental agencies conduct similar tasks of inspections and enforcement, making them suitable for comparing one to another; this similarity exists because the Environmental Protection Agency (EPA) has transferred its substantial regulatory authority to state governments. Second, states have various institutional settings, enabling us to assess how these settings moderate firms' political responses to regulatory capacity. Last, while environmental enforcement is essential for the protection of health and well-being, scholars have documented a strong link between firms' political connections and lenient environmental enforcement outcomes (e.g., Heitz, Wang, and Wang 2023; González and You 2024).

We collect original datasets on the workforce of U.S. state environmental agencies from 2000-2019 to measure state environmental agencies' regulatory capacity. For our causal identification, we exploit annual workforce shocks that arise from the gap between the actual and appropriated workforce size of state environmental agencies, where the latter is determined jointly by both governors' and legislatures' preferences. We provide evidence that these annual shocks on regulatory capacity are unanticipated and exogenous to state-level political environments.

Previously, Kroeger and Silfa (2023) find that firms primarily use lobbying over campaign contributions to respond to changes in bureaucratic rules at the federal level. Our findings show that corporate political responses could be more sophisticated than just choosing between lobbying and campaign contributions. Firms decrease campaign contributions to state legislators residing in their states, particularly to those of the majority party and the Democratic party. We provide suggestive evidence that the latter finding might be due to more Democratic state legislators being assigned to committees related to ways and means, budget and appropriations. Overall, our findings suggest that diminishing regulatory capacity led firms to reduce their campaign contributions to state legislators who had power to influence environmental agencies; however, firms did not reduce contributions to their ideological allies. Last, we find that existing state-level restrictions on corporate donations do not significantly curb firms' political responsiveness to workforce shocks. We discuss the implications of our findings in detail in the last section of this paper.

2 Data

For our analyses, we construct a firm×state×year dataset spanning years 2000-2019.

2.1 State Environmental Agencies' Regulatory Capacity

To measure state environmental agencies' capacity, we use the appropriated and the actual number of Full-Time Equivalent (FTE) employees who worked in state environmental agencies for fiscal years 2000 to 2019. The appropriated workforce size is the outcome that reflect both governors' and legislatures' preferences in a given fiscal year. The workforce size is a valid measure of regulatory capacity because agency personnel conduct inspections, engage with stakeholders, and follow up on enforcement actions (Lisinski 2019). Studies on bureaucratic politics also acknowledge that agencies with a larger staff are more capable of handling high volumes of work. Specifically, the workforce size critically affects federal agency performance (Lee and Whitford 2013), the ability of the Office of Information and Regulatory Affairs (OIRA) to review rules (Bolton, Potter, and Thrower 2016) and the time it takes for the Food and Drugs Administration (FDA) to complete its administrative responsibilities (Carpenter 2002, 2004). In Appendix A, we describe how we collected the data on state environmental agencies' appropriated and actual workforce size.

Figures in Appendix B show the actual and appropriated workforce size of environmental agencies in forty-seven states during fiscal years 2000-2019. Nineteen states have information on both the actual and appropriated workforce size. We use these nineteen states for our main analyses since our causal identification strategy requires both the actual and appropriated workforce size. Figures show that there is often a huge gap between the appropriated and actual workforce size of state environmental agencies. Although providing a systemic explanation for this gap across all states is beyond the scope of this paper, the most compelling explanation is that the gap is due to unanticipated local personnel shocks at the state level. For example, in North Carolina, a substantial number of employees left the state environmental agencies in 2022, and a third of them say

salary was a factor in their decision (Talton 2022). In Wyoming, while Republican Governor Mark Gordon did not cut full-time positions for the state environmental agency as he did for most other agencies in 2021, a large number of employees at the state environmental agency left nonetheless due to poor compensation (Bleizeffer 2021).[2]

One concern for using the number of FTE positions to estimate regulatory capacity is that we do not know what tasks these FTE employees are engaged in. Employees may have different job responsibilities ranging from administrative to engineering tasks. If changes in state environmental agencies' workforce size is driven by employees who are not responsible for regulatory enforcement, our estimates on the effect of workforce size would underestimate the true effect of state environmental agencies' capacity.[3]

2.2 Regulated Firms and Their Campaign Contributions

State environmental agencies implement various programs that regulate firms and facilities. We focus on firms with facilities regulated under the Toxics Release Inventory (TRI). Congress passed the law to establish the TRI in 1986 in response to several events in the 1980s that raised public concern about the preparedness for chemical emergencies. To date, TRI tracks the management of approximately 770 hazardous chemicals, providing comprehensive data on firms regulated by environmental agencies. Facilities are mandated to annually report to the TRI program if they meet the following three criteria: (1) they belong to a TRI reporting industry sector, typically manufacturing, mining, and electric power generation; (2) they employ ten or more full-time equivalent employees; and (3) they manufacture, process, or use a TRI reportable chemical above the specified threshold. Compared with other environmental programs, TRI covers larger facilities and

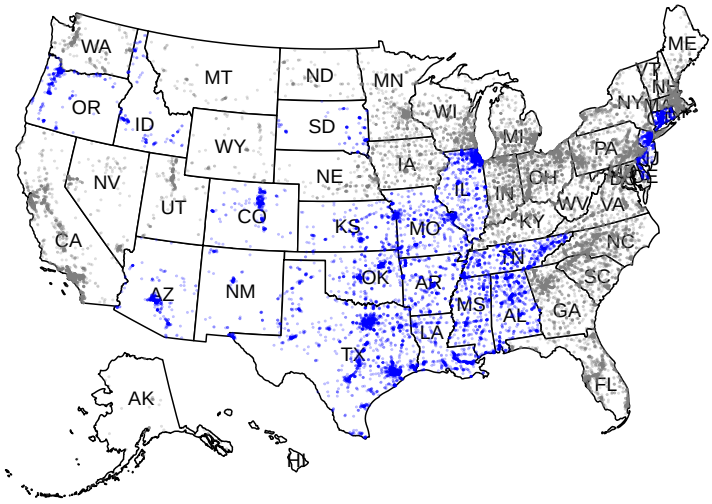
2. Note that there are few instances in which the actual FTE positions in a given fiscal year are higher than the appropriated FTEs. This is due to an abrupt change in state environmental agencies' programs. In most cases, the number of actual FTE positions is lower than the appropriated positions.

3. While this issue is not a threat to our estimates, we still attempted to examine the annual composition of state environmental agencies with available data. To do so, we collected the state employee payroll data. The results are shown in Figures in Appendix D. Although we were able to collect this information for only eleven states, the figures still provide valuable insights on the composition of state government.

firms involved in hazardous waste treatment.[4] Therefore, we should be particularly concerned about how TRI-regulated firms respond politically to state environmental agencies' capacity.

We obtain the data on TRI facilities from the EPA website (https://www.epa.gov/toxics-release-inventory-tri-program). Figure 1 displays the location of 29,986 TRI facilities across states from 2000 to 2019. On the basis of the information of parent firms that owned TRI facilities, we identified 8,321 unique firms in 47 states for the period of our study.

Figure 1: TRI Facilities in the United States, 2000-2019. Blue dots denote facilities in states for which the actual and appropriated workforce size of state environmental agencies is available; thus, we included them in our main analyses. Gray dots denote facilities in states for which the full workforce data is not available.



We track these firms' campaign contributions using the data of Bonica (2023). Appendix J explains how we do so. We acknowledge that firms may adjust other political expenditures; thus, we conducted additional analyses using comprehensive data on federal lobbying and board membership and present the results in Appendix J. We find some significant effects of regulatory capacity on firms' federal lobbying on environmental policy issues and to the EPA.

We examine only the amount of campaign contributions by firms that have ever contributed to any state or federal elections from 1979 to 2020 *and* that have TRI facilities in the aforementioned

4. https://www.epa.gov/toxics-release-inventory-tri-program/what-toxics-release-inventory.

nineteen states, which totaled 1,429 firms among 8,321 unique firms across states. Not all firms are capable of establishing corporate Political Action Committees (PACs) and have treasurers to run their PACs. Thus, firms without any contribution records during this period were likely to have been incapable of using campaign contributions to respond to regulatory capacity.

3 Results

3.1 Model Specification and Identification Strategy

The linear regression model specification using our firm×state×year data is as follows:

$$log(Y_{ist}) = \alpha_i + \gamma_s + \tau_t + \beta \text{Workforce Shock}_{sf} + X_{ist} + \varepsilon_{ist} \quad (1)$$

where i denotes firms, s denotes states, t denotes calendar years, and f denotes fiscal years. We estimate the model using the Ordinary Least Squares (OLS) method. We include firm, state, and calendar year fixed effects to account for time-invariant firm and state characteristics and annual shocks.[5] $WorkforceShock_{sf}$ is the appropriated minus the actual size of state environmental agencies in a given fiscal year. A high level of $WorkforceShock_{sf}$ means that there is a high degree of misalignment between what was expected and what as actually realized in terms of state environmental agencies' regulatory capacity. Since the fiscal year cycle precedes the calendar year cycle by about three to six months, we are examining the lagged effect of $WorkforceShock_{sf}$ and assuming that some amount of time is required for firms to determine the misalignment between what they expected and what was actually realized in a given fiscal year.[6]

As control variables, we include the total number of TRI facilities that firm i own in state s in a

5. Including state-firm fixed effects instead of separate state and firm fixed effects does not change our results since very few firms have facilities across multiple states.

6. Firms could easily observe the appropriated workforce size of a fiscal year from the legislative bill, which is published a few months before the start of the fiscal year. While the actual workforce size of the fiscal year is less visible and takes more time for firms to figure out, firms could still be able to get the information about it by contacting state environmental agencies or state-level politicians.

given year t, and number of TRI facilities of firm i in state s that violated environmental regulations in the previous year; a binary indicator of whether there is a state-level limit on corporate PAC donations in a given year; one-year lagged binary indicators of whether Democrats control the state legislature, whether the governor is a Democrat, and whether there is a state government trifecta in a given year; one-year lagged annual state-level population and unemployment rate; and the actual workforce size.

Our identification strategy assumes that the gap between the actual and appropriated workforce size is driven largely by local personnel shocks that are unanticipated by regulated firms and exogenous to state-level political environments. It also assumes that regulated firms would adjust their campaign contributions in response to the appropriated workforce size first and then to actual workforce size once they observe it later.[7] To provide empirical evidence for our first assumption, we regress the appropriated workforce, actual workforce, and $WorkforceShock_{sf}$ on our control variables and one-year lagged firms' contributions to state legislators and governors. We present the results in Table F1. Table F1 shows that $WorkforceShock_{sf}$ is unaffected by state-level political factors and unemployment rates. While there is a correlation between state-level population and $WorkforceShock_{sf}$, the effect size is very small. Moreover, one-year lagged firms' contributions to state legislators and governors do not predict $WorkforceShock_{sf}$ in subsequent fiscal years.

As Figures in Appendix B suggest, there is a decreasing trend of state environmental agencies' workforce size across many states. This trend does not correlate with $WorkforceShock_{sf}$. That is, the within-state variation in $WorkforceShock_{sf}$ does not correlate with the within-state variation in the actual or appropriated workforce size. We nonetheless include the actual workforce size as a control variable to robustly estimate the effect of workforce shocks.[8]

Our identification strategy allows us to examine only nineteen states with information on both the actual and appropriated workforce size. This limitation leaves out twenty-eight states for our

7. If regulated firms respond to only the level of the actual workforce size, there would be no expectation misalignment in the first place and we would not observe any significant effects of $WorkforceShock_{sf}$.

8. Since $WorkforceShock_{sf}$ captures the difference between the appropriated and actual workforce size, additionally including the appropriated workforce size as a control variable is equivalent to $WorkforceShock_{sf}$ and, thus, unnecessary.

analyses. We conduct the comparison of nineteen states that we use for our analyses and the other twenty-eight states using the t-test and report results in Table H1. We also compare states with larger margins of $WorkforceShock_{sf}$ and states with narrow margins between -1 and 1. The results in Table H1 suggest that states that drive the variation in $WorkforceShock_{sf}$ are likely to have more population and more Democratic state legislatures.[9] We advise readers to consider these differences when thinking about the external validity of our results.

3.2 Workforce Shocks Decrease Agency Inspections and Enforcement

We first examine whether an unexpected shock to the workforce size of state environmental agencies also leads agencies to adjust their inspections and enforcement activities. If so, this adjustment suggests that workforce shocks could have tangible impacts on firms and could explain why regulated firms have incentives to use politics to respond to workforce shocks–either because of changes in the actual occurrence of inspections of firms or their expectations of potential inspections.[10] In Appendix E, we explain the data and measurement of inspections and enforcement on firms that own TRI facilities.

Table 1 shows the effect of the state-level workforce shock on state-level and federal EPA-level on inspections and enforcement. Column (1) shows that, substantively, a one within-unit standard deviation increase in the workforce shock (38 FTE positions) leads to about 2.3% decrease in the level of state environmental agencies' inspection activities on firms that own TRI facilities in the state. Although the effect size is modest, we should consider that thirty-eight FTE positions is a small change compared to average state-level FTE positions, which is about a thousand. Column (2) shows that the workforce shock also significantly affects inspection activities by the federal agency, which suggests the possibility of coordination between state environmental agencies and the EPA.

9. Our analyses include states with smaller margins of $WorkforceShock_{sf}$, which drives our estimates closer to 0.

10. Some scholars argue that we might not observe any significant relationships between the workforce shock and agencies' regulatory activities if environmental agencies are sufficiently strategic such that they would not engage in enforcement in anticipation of firms' resistance (e.g., Gordon and Hafer 2005).

Table 1: Environmental Agencies' Workforce Shock Affects Inspections and Enforcement

	log(Inspections)		log(Enforcement)	
	State-Level	EPA-Level	State-Level	EPA-Level
	(1)	(2)	(3)	(4)
Workforce Shock	-0.0005**	-0.0002***	-0.0001	0.0000
	(0.0002)	(0.0000)	(0.0001)	(0.0000)
N	35,203	35,203	35,203	35,203
Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Mean Outcome	0.51	0.09	0.19	0.04

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01.

3.3 Workforce Shocks Decrease Firms' Campaign Contributions

Table 2 shows that state environmental agencies' workforce shocks significantly affect the amount of firms' campaign contributions to state legislators in states where their TRI facilities are located. Substantively, a one within-unit standard deviation increase in the workforce shock (thirty-eight FTE positions) leads to 2% decrease in firms' donations to state legislators. Conversely, we do not find any significant effect on the total amount of contributions to governors, House representatives and senators in their residence. These results suggest that state-level legislators might have been a target for regulated firms to inquire about state environmental agencies' activities, and workforce shocks decreased firms' incentives to actively contact state legislators. We also find that workforce shocks do not affect firms' contributions given to challengers in state legislative elections.

We further examine how workforce shocks affect firms' donations to specific types of state legislators. For one, workforce shocks might disincentivize firms to donate to legislators with more influence and power who could influence state environmental agencies, or state legislators of the Republican party who could be more influenced by fossil fuel companies and contact government agencies on their behalf (e.g., Skocpol and Hertel-Fernandez 2016; Powell, Judge-Lord, and Grimmer 2023; González and You 2024). On the basis of existing studies, we examine the effect of workforce shocks on firms' contributions to state legislators depending on whether they are mem-

Table 2: Agency Workforce Size and Firms' Campaign Contributions

	log(Amount of Campaign Contributions in States)					
	State Legislators	Governors	House Representatives	Senators	Challengers of State Legislators	Challengers of Governors
	(1)	(2)	(3)	(4)	(5)	(6)
Workforce Shock	-0.0003**	-0.0000	-0.0001	0.0002	0.0000	-0.0001*
	(0.0001)	(0.0002)	(0.0002)	(0.0004)	(0.0001)	(0.0000)
N	35,203	35,203	35,203	35,203	35,203	35,203
Fixed Effects	Y	Y	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y	Y	Y
Mean Outcome	0.48	0.15	0.94	0.35	0.20	0.04

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01.

bers of the majority party controlling state legislatures or members of Republican party.[11] Table 3 shows that workforce shocks decrease firms' contributions to state legislators of the majority party and of the Democratic party. The latter result is not driven by the Democratic party controlling state legislatures more often since our sample has more years when state legislatures were controlled by the Republican party. The result also does not fully align with the aforementioned claims on the relationship between conservative politicians and energy-related firms.

Table 3: Agency Workforce Size and Firms' Campaign Contributions to Legislators

	log(Amount of Campaign Contributions in State Legislators)					
	Majority Party	Minority Party	Republican	Democratic	Aligned	Non-Aligned
	(1)	(2)	(3)	(4)	(5)	(6)
Workforce Shock	-0.0004**	-0.0001	-0.0002	-0.0004**	-0.0002*	-0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
N	35,203	35,203	35,203	35,203	35,203	35,203
Fixed Effects	Y	Y	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y	Y	Y
Mean Outcome	0.41	0.30	0.40	0.30	0.37	0.37

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01.

We examine whether our finding on Democratic legislators is due to their ideological alignment with regulated firms or to the fact that Democratic legislators are involved in committees that have

11. While we could examine state legislators with different committee assignments, the readily available dataset by Fouirnaises and Hall (2022) is only available untill 2014.

more influence on environmental agencies. To do so, in each state in a given year we first use static ideology scores by Bonica (2023) to classify regulated firms and state legislators into three groups, liberal, moderate, and conservative.[12] Our classification shows that about 80% of our firms are moderate to conservative leaning, suggesting that they might not be ideologically aligned with Democratic legislators. Columns (5) and (6) in Table 3 show that workforce shocks lead firms to decrease their donations given to both aligned and non-aligned state legislators. As the second analysis, we examine the committee assignment data of Fouirnaises and Hall (2022) from 2000 to 2014 and show in Appendix K that Democratic state legislators in our sample were more likely to be in committees on budget, ways and means, and appropriations. Overall, these results suggest that access-seeking, rather than ideological affinity, may be the primary motivation for firms' political response to regulatory capacity.

As additional analyses, we examine whether state environmental agency workforce shock affects the extent to which politicians receiving donations contact environmental agencies to inquire specifically about enforcement and penalties against facilities. Numerous recent studies suggest that legislators would contact government agencies on behalf of their constituents (e.g., Lowande 2018; Ritchie 2018; Ritchie and You 2019). Ideally, we need data on politicians' contact with all state environmental agencies and the EPA. For now, we have data for only the Texas Commission on Environmental Quality (TCEQ).[13] In Appendix G, we show analyses using the TCEQ contact data. While the effect size is small, the results nonetheless suggest that the positive workforce shock increases the extent to which state legislators, who receive donations from firms with TRI facilities in Texas, contact the TCEQ about inspections, enforcement, and penalties against facilities. Conversely, it decreases the extent to which House representatives contact the TCEQ. We additionally replicate Tables 1 and 2 using only observations in Texas from our main dataset and

12. Note that we use Bonica (2023)'s measure due to wide data coverage for both firms and state legislators. State legislators are labeled as liberal if their ideology scores are below the 33rd percentile of the ideological distribution of all state legislators in a given state and year, labeled as moderate if their ideology scores are between the 33rd and 67th percentile, and labeled as conservative if their ideology scores are above the 67th percentile. For firms, we classify them based on the thresholds of state legislators.

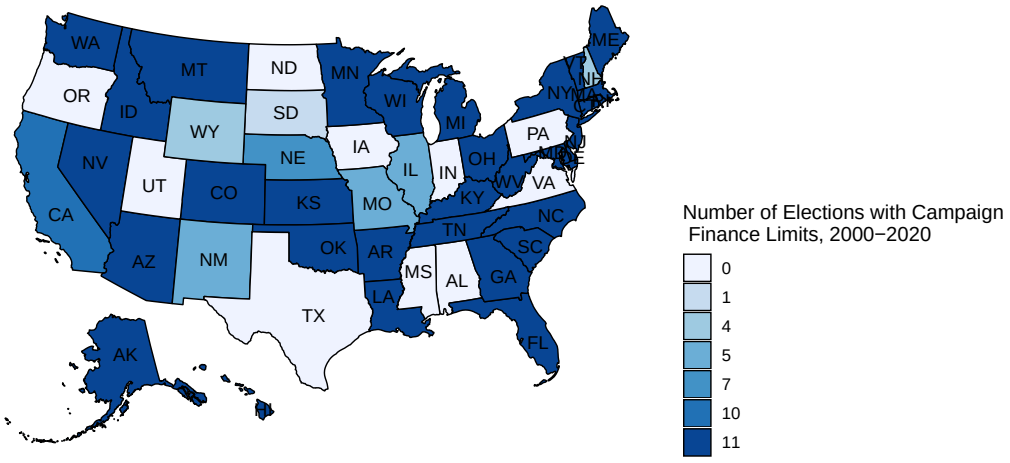
13. We submitted the Freedom of Information Act requests to other state environmental agencies, but many of these agencies either did not have the contact record or did not have the record as detailed as the TCEQ data.

report results in Appendix G.

3.4 Heterogeneity in Firms' Political Response to Regulatory Capacity

In this section, we examine whether firms' political responses to regulatory agency capacity are moderated by varying degrees of state-level political environments or firms' characteristics. We first examine whether there are heterogeneous effects of the workforce shock across states with and without state-level limits on firms' campaign contributions. The dataset on state-level limits comes from Barber (2016b) and the National Council of State Legislatures (NCSL), and we construct $PACLimits_{st}$ which is 1 if the state had restrictions of corporate PAC spending in a given year; otherwise 0.[14] Figure 2 illustrates the scope of state-level corporate campaign finance limits from 2000 to 2020,.

Figure 2: States with State-Level Campaign Finance Limits, 2000-2020



We interact $PACLimits_{st}$ with agency workforce size in equation (1). Table 4 shows the results

14. Creating a continuous measure based on the dollar amount of limits is challenging, given that many states have different units on which limits on the donation amount are imposed (e.g., candidates, offices, or election cycle), making a cross-state comparison difficult. Moreover, the dollar amount for elections in one state might not be the same for others since states differ in the size of their economies or the number of seats in state legislatures. Despite these limitations, we suggest that results from the binary indicator still enhance our understanding of the effectiveness of state-level campaign finance campaign limits. Appendix I shows the monetary threshold of corporate PAC contributions in state elections in each state.

based on the interaction model. The interaction terms are not significant, which suggests that the presence of state-level limits on corporate PAC contributions might not moderate firms' donation strategies in response to workforce shocks. While this could be due to the small magnitude of workforce shocks, the sign of the interaction term being negative suggests that the effect size of the workforce gap is actually larger and significant in states with campaign finance limits.

Table 4: Heterogeneous Effects by State-Level Campaign Finance Limits

	log(Campaign Contributions to State Legislators)			
	All	Majority Party	Democratic Party	Aligned
	(1)	(2)	(3)	(4)
Workforce Shock	-0.0001	-0.0003	-0.0003*	-0.0001
	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Workforce Shock ×	-0.0004	-0.0001	-0.0000	-0.0002
State-Level Limits	(0.0002)	(0.0003)	(0.0002)	(0.0003)
State-Level Limits	-0.008	-0.05	-0.03	-0.04
	(0.05)	(0.05)	(0.04)	(0.05)
Linear Combination of Coefficients:				
Effect in States with	-0.0006***	-0.0005*	-0.0003*	-0.0003*
Campaign Finance Limits	(0.0002)	(0.0002)	(0.0001)	(0.0002)
N	35,203	35,203	35,203	35,203
Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Mean Outcome	0.48	0.41	0.30	0.37

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01.

We additionally examine whether Citizens United v. Federal Election Commission in 2010 moderate firms' political response to workforce shocks. Citizens United prohibited the government from restricting independent expenditures for corporate political campaigns, and the latter significantly affects the EPA's decision to target specific firms for enforcement, which could in turn affect firms' political calculus to deal with regulatory capacity. Table F2 shows that Citizens United does not moderate firms' political response.

As robustness checks, we examine whether the effect of the workforce size on regulatory activities differs across states with and without state-level campaign finance limits, and before and

after Citizens United. We report the results in Tables F3 and F4. The results show that there is no significant heterogeneity regarding inspections and enforcement.

4 Discussion

Our findings provide a nuanced picture of how a decline in regulatory capacity could lead regulated firms to become disengaged from politics. On the one hand, firms might become more disengaged from legislators who have power to influence government agencies because of reduced incentives to reach out to those legislators as regulatory capacity declines. Thus, diminishing regulatory capacity can have unintended consequences of reduced corporate influence on politics. On the other hand, these firms might not particularly decrease their donations to their ideological allies.

Our findings suggest that firms might have been targeting specific groups of politicians in response to changes in state environmental agencies' regulatory capacity, and current state-level corporate PAC contribution restrictions might do little to curb firms' political activities. Our latter finding relates to the literature on the effect of campaign finance limits on firms' political influence. Notably, Gulzar, Rueda, and Ruiz (2022) show that looser contribution limits in Colombian mayoral elections worsen the quality of public contracts given to winning politicians' donors. On the other hand, Hogan (2005) argues that state-level contribution limits in the United States do not curb interest group influence since interest groups willl find alternative ways to affect election, such as direct contact with voters or endorsements of political parties. We additionally suggest that current state-level restrictions on corporate political influence might be ineffective in curbing firms' political response to regulatory capacity.

Last but not least, we hope that our extensive collection of state-level datasets can be used by scholars who would like to examine the interplay of regulatory agencies and regulated firms, and we expect that our collection will contribute to recent scholarly efforts to compile and disseminate data relevant to state politics (e.g., Sorens, Muedini, and Ruger 2008; Boehmke et al. 2018; Grossmann and McCrain 2021).

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Supporting Information for
How do Firms Politically Respond to Regulatory Capacity? Using State-Level Workforce Shock

Contents

A Collection of State Environmental Agencies' Workforce Data

For the actual workforce size during 2007-2018, we use the dataset compiled by the Environmental Integrity Project that tracks the actual FTE positions of state environmental agencies in 47 states, except for Alaska, Hawaii, and Wisconsin (https://environmentalintegrity.org/reports/the-thin-green-line/). For the actual workforce size for the pre-2007 period and post-2018 period, we manually collected the data from budget books by following the data collection methodology proposed by the EIP.[1] From state budget books, we also collected appropriated FTE positions of state environmental agencies during 2000-2019.[2]

While many states have independent agencies dedicated to carrying out inspections and enforcement on environmental regulatory programs, some states put environmental agencies as a division within a bigger agency. For comparability, EIP attempts to calculate the number of FTE positions only for environmental programs and divisions, and we follow their methodology. We list these subagencies and programs in Table B1.

1. Table in Appendix B provides names and specific programs of state environmental agencies in each state based on which we calculated FTE positions.

2. If the appropriation data is not available, we collected the FTE positions recommended by governors.

B State Environmental Agencies' Workforce Size, Fiscal Years 2000-2019

Figure B1: State Environmental Agencies' Workforce Size, Fiscal Years 2000-2019. Black lines represent the actual workforce size, and red dashed lines represent the appropriated workforce size.

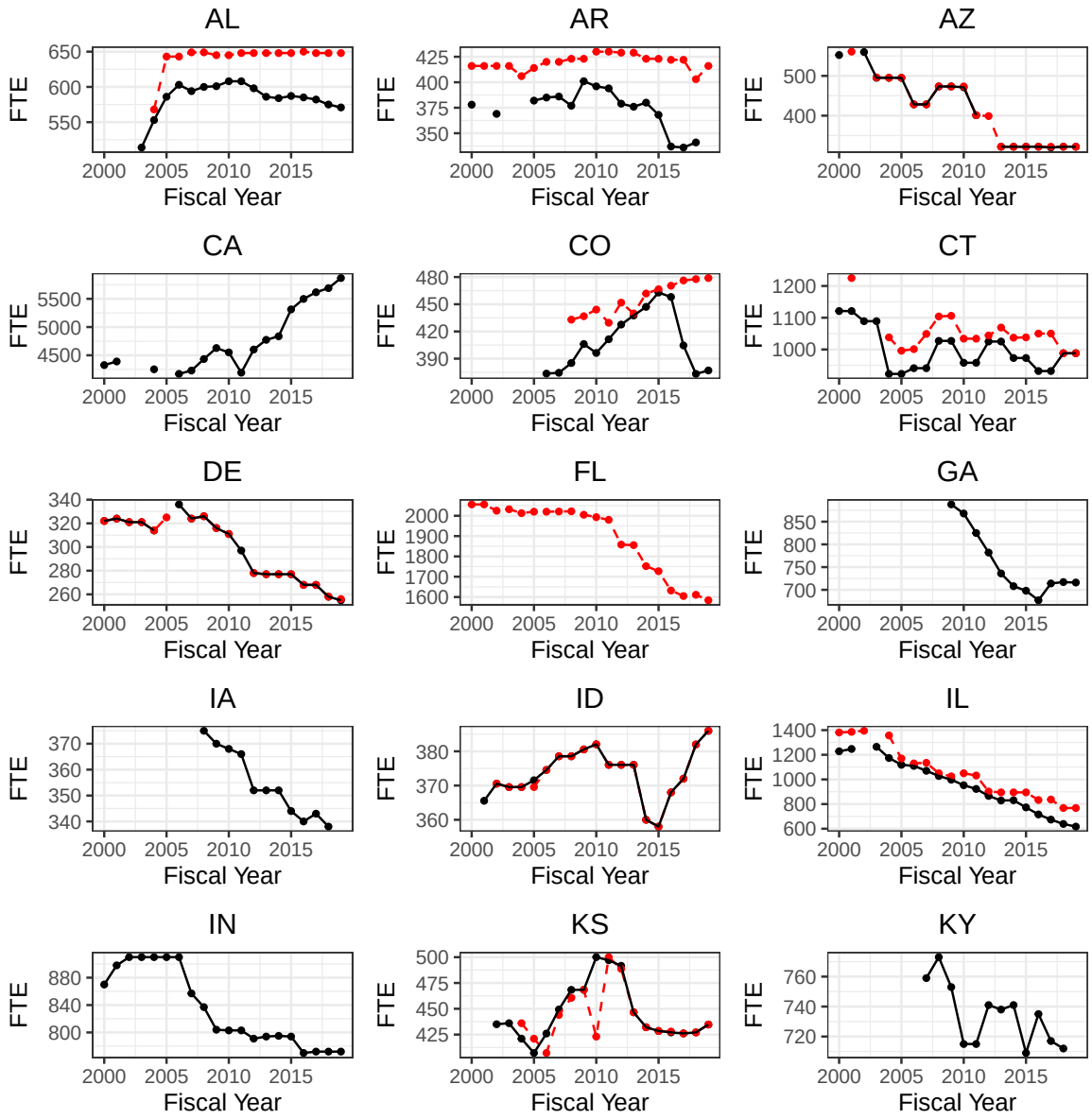

Figure B2: State Environmental Agencies' Workforce Size, Fiscal Years 2000-2019. Black lines represent the actual workforce size, and red dashed lines represent appropriated workforce size.

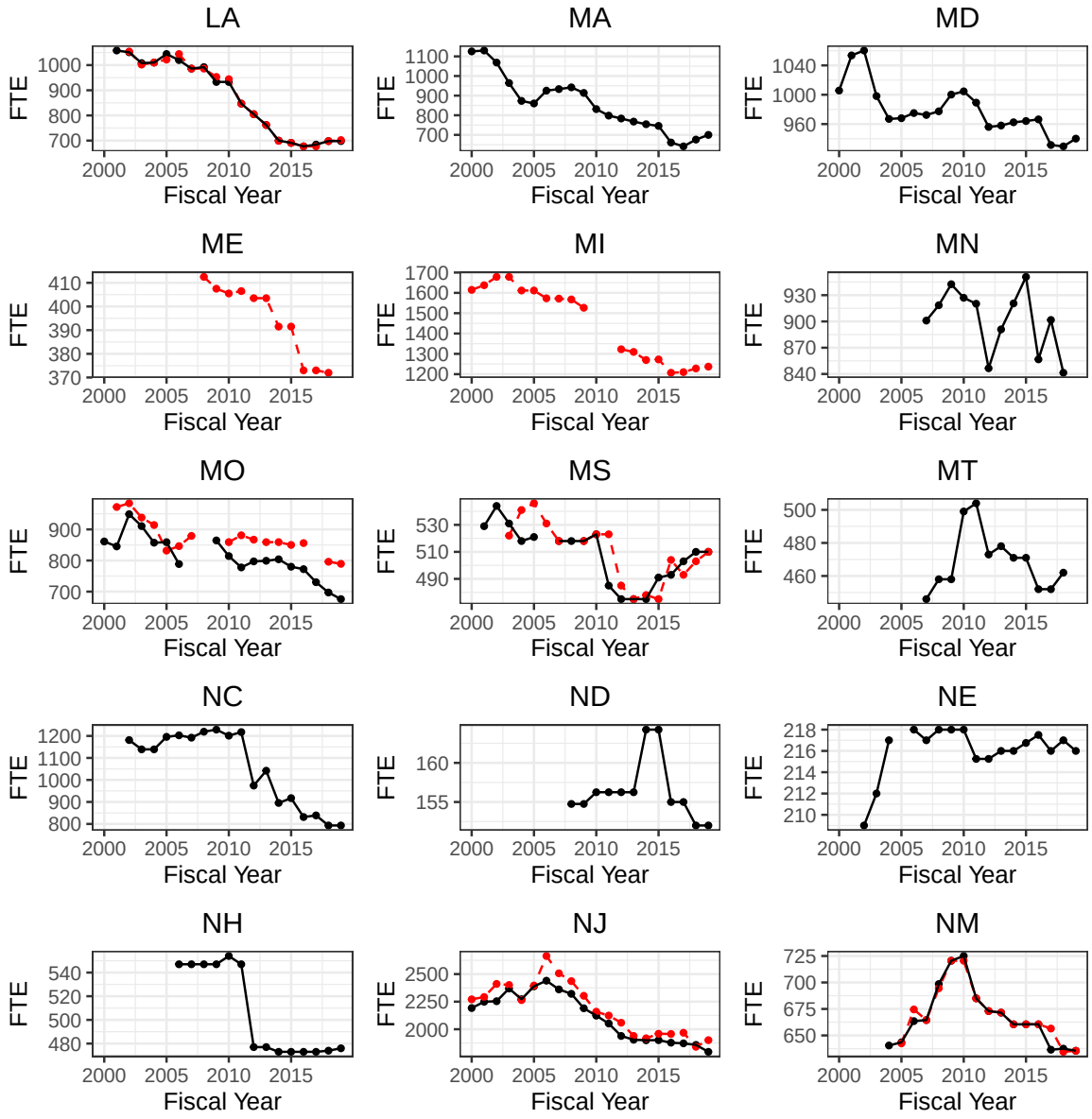

Figure B3: State Environmental Agencies' Workforce Size, Fiscal Years 2000-2019. Black lines represent the actual workforce size, and red dashed lines represent appropriated workforce size.

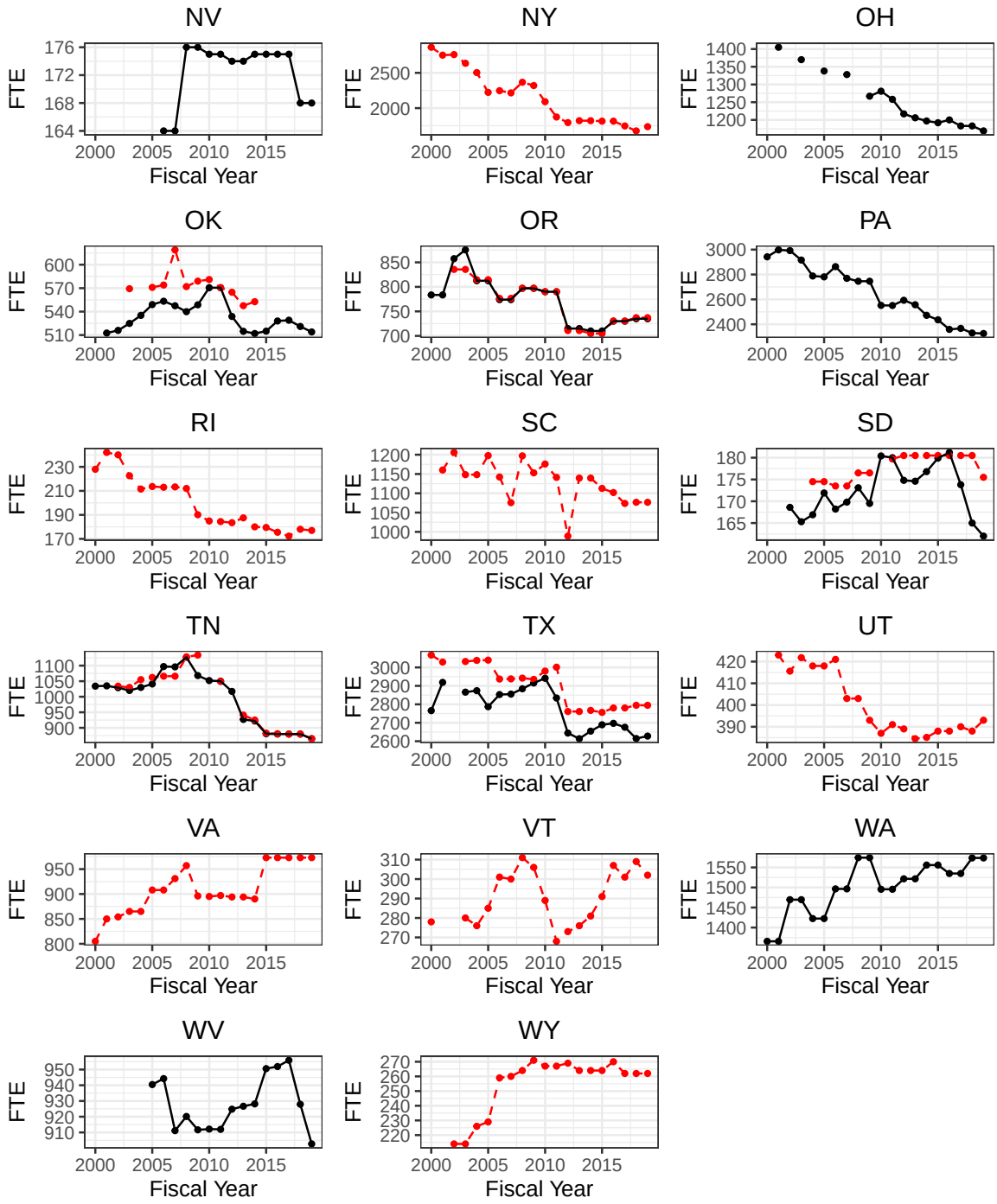

Table B1: List of State Environmental Agencies in Our Dataset

	State	Agency and Division	Programs
1	AL	Department of Environmental Management	Administration, Water Quality, Air Pollution, Solliz Hazardous Waste, Field Operations
2	AR	Department of Environmental Quality	Administration, Air Quallity, Wast Program, Water Quality
3	AZ	Department of Environmental Quality	
4	CA	Environmental Protection Agency	Air Resources Board, Waste Management, Pesticide Regulation, Water Resources, Toxic Substances Control, Resrouce Recyclling Recovery, Environmental Health Hazard
5	CO	Department of Public Health and Environment	
6	CT	Department of Energy and Environmental Protection	
7	DE	Department of Natural Resources and Environmental Control, Office of Environmental Protection	Air Quality, Community Services, Waste and Hazarddous Substance, Water
8	FL	Department of Environmental Protection	Total Air, Total Waste, Admin Services, District Offices, IT Services, Lab Services, Water Science Lab Services, Envrionmental Investigation, Emergency Response
9	GA	Department of Natural Resources, Environmental Protection Division	
10	IA	Department of Natural Resources	
11	ID	Department of Environmental Quality	
12	IL	Environmental Protection Agency	
13	IN	Department of Environmental Management	
14	KS	Department of Health and Environment, Division of Environment	

15	KY	Department of Environmental Protection	Commissioner, Water, Air Qualilty, Waste Management, Enforcement, Compliance Assistance, Environmental Program Support
16	LA	Department of Environmental Quality	
17	MA	Department of Environmental Protection	
18	MD	Department of Environment	
19	ME	Department of Environmental Protection	Administrative, Air Quality, Environmental Protection, Land Water Quality, Land Resources, Envrionmental Protection, Performance Partnership Grant, Remediation Waste Mgt, Water Quality
20	MI	Department of Environment, Great Lakes, and Energy	Admin Support IT, Environmental Science Services, Environmental Assistance, Waste Hazardous, Water Resource, Law Enforcement, Air Quality, Resource management, Remediation, Underground Storage Tank, Geological Survey, Land Water Mgt
21	MN	Pollution Control Agency	
22	MO	Department of Natural Resources, Environmental Programs	
23	MS	Department of Environmental Quality	
24	MT	Department of Environmental Quality	

25	NC	Department of Environment and Natural Resources/Department of Environmental Quality	Environmental Health Water Supply Protection, On Site Waste Water, Environmental Assistance And Customer Service, Radiation Protection, Ground Water Storage Leaks, Underground Storage Tanks, Solid Waste Management, Environmental Mgt Wq, Land Resources Admin, Water Quality Lab, Ground Water Management, Ground Water Protection, Water Quality Control, Water Quality Permit Fee, Epa Grant, Non Point Source Water Quality, Wetlands, Geological Survey, Land Quality, Pollution Prevention, Water Resources, Air Quality Control, Mercury Pollution Prevention, Air Permits, Air Quality - CAA, Solid Waste Permit, I&M Air
26	ND	Department of Environmental Health/Department of Environmental Quality	
27	NE	Department of Environmental Quality	
28	NH	Department of Environmental Services	
29	NJ	Department of Environmental Protection	Science and Tech, Site Remediation and Waste Management, Environmental Regulation, Env Planning and Admin, Compliance and Enforcement
30	NM	Department of Environment	
31	NV	Department of Conservation & Natural Resources, Division of Environmental Protection	
32	NY	Department of Environmental Conservation	Administration, Air and Water, Env Enforcement, Operations, Soild and Hazardous Waste

33	OH	Environmental Protection Agency	
34	OK	Department of Environmental Quality	
35	OR	Department of Environmental Quality	
36	PA	Department of Environmental Protection	
37	RI	Department of Environmental Management, Bureau of Environmental Protection	
38	SC	Department of Health and Environmental Control	Water Quality Improvement, Air Quality Improvement, Land and Waste Management
39	SD	Department of Environment and Natural Resources	Financial And Technical Services, Environmental Services, Petroleum Release Comp
40	TN	Department of Environment and Conservation	Environment Administration, Air Pollution Control, Radiological Health, Division Of Water Resources, Water Pollution Control, Solid Waste Management, Hazardous Waste Remedial Action Fund, Water Supply, Groundwater Protection, Underground Storage Tanks, Solid Waste Assistance, Office Of Environmental Assistance, Office Of Sustainable Practices
41	TX	Commission on Environmental Quality	
42	UT	Department of Environmental Quality	
43	VA	Department of Environmental Quality	
44	VT	Department of Environmental Conservation	
45	WA	Depart of Health & Department of Ecology	
46	WI	Department of Natural Resources	
47	WV	Department of Environmental Protection	
48	WY	Department of Environmental Quality	

C Summary Statistics

Table C1: Firm×State×Year-Level Data

Statistic	N	Mean	St. Dev.	Min	Max
State-Level Variables:					
Actual Workforce Size	810	959.35	862.42	152.00	5,868.10
Appropriated Workforce Size	318	860.76	693.73	173.50	3,067.00
Workforce Shock	308	−33.70	50.86	−301.00	77.00
Democratic State Legislatures	960	0.367	0.482	0	1
Democratic Governors	960	0.42	0.49	0	1
State Unemployement Rate	980	5.52	2.01	2.10	14.00
State Government Trifectas	960	0.58	0.49	0	1
PAC Limited	980	0.70	0.45	0	1
Firm-Level Regulatory Activities:					
Number of facilities	35,287	1.75	1.97	1	35
Lagged Number of Facilities with Violations	35,287	0.20	0.56	0	11
State Inspections	35,287	1.81	9.89	0	485
EPA Inspections	35,287	0.20	1.07	0	43
State Enforcement	35,287	0.56	2.59	0	92
EPA Enforcement	35,287	0.08	0.47	0	16
Firm-Level Contributions:					
Contributions to State Legislators	35,287	687.19	6,578.97	0	393,900.00
Contributions to Majority Party State Legislators	35,287	438.65	4,191.57	0.00	224,500.00
Contributions to Minority Party Sate Legislators	35,287	227.11	2,658.68	0.00	172,000.00
Contributions to Democratic State Legislators	35,287	233.13	2,369.30	0.00	123,400.00
Contributions to Republican State Legislators	35,287	432.63	4,361.96	0.00	224,500.00
Contributions to Ideologically Aligned State Legislators	33,950	330.44	3,471.42	0.00	207,000.00
Contributions to Ideologically Non-Aligned State Legislators	33,950	383.81	3,751.68	0.00	257,500.00
Contributions to Challengers to State Legislative Elections	35,287	88.38	1,188.71	0.00	115,000.00

Contributions to Governors	35,287	114.19	1,755.89	0	181,155.60
Contributions to Challengers to Gubernational Elections	35,287	44.12	2,832.25	0.00	510,000.00
Contributions to House Representatives in State	35,287	1,377.00	8,296.82	0	296,000.00
Contributions to Senators in State	35,287	159.1	993.6	0	35,000
Firms-Level Lobbying Amount:					
Total Lobbying	29,001	1,269,736.00	4,020,523.00	0.00	68,885,050.00
Environmental Lobbying	29,001	670,877.60	2,424,273.00	0.00	40,050,000.00
Energy Lobbying	29,001	710,942.60	2,465,748.00	0.00	39,320,000.00
Placebo Lobbying	29,001	807,076.00	3,014,615.00	0.00	55,616,000.00
EPA Lobbying	29,001	524,398.50	2,129,409.00	0.00	39,910,000.00
Firm-Level Board Members:					
Total Board Members	16,933	9.54	3.37	1	29
Former Members of Congress	16,933	0.04	0.20	0	2
Former EPA	16,933	0.04	0.19	0	2
Former Environmental Agencies	16,933	0.04	0.21	0	2
Former State & Federal Legislators	16,933	0.13	0.46	0	4
TCEQ Data:					
Num. of Governor Contacts	5,521	0.04	0.44	0	9
Num. of State Legislators Contacts	5,521	0.02	0.20	0	4
Num. of Members of Congress Contacts	5,521	0.01	0.10	0	2
Num. of State Legislators Making Contacts	5,521	0.02	0.22	0	5
Num. of Members of Congress Making Contacts	5,521	0.01	0.15	0	2

D Composition of State Environmental Agencies' Workforce Size

Figure D1: Solid black lines represent the level of the actual FTE positions from state budget books. Bar plots denote the composition of state environmental agencies from state payroll data. Note that since state budget books and payroll data are two different sources, the annual number of employees calculated from the payroll data does not exactly match the annual number of FTE employees calculated from budget books.

E State Environmental Agencies' Workforce Shock and Regulatory Activities

To measure state environmental agencies' annual inspection and enforcement activities on TRI facilities, I use the Enforcement and Compliance History Online (ECHO) data. ECHO encompasses regulatory activities of various programs, including the Clean Air Act (CAA), the National Pollutant Elimination Discharge System (NPDES), NPDES Biosolids, and the Integrated Compliance Information System for Federal Civil Enforcement Case Data (ICIS FE&C). I combine these datasets to track inspection and enforcement activities on TRI facilities since TRI facilities are regulated under these various programs. Note that enforcement is either informal or formal. Informal enforcement includes warning letters and notices of violation, while formal enforcement may result in administrative compliance orders or state referrals to State Attorneys General or the Department of Justice.

F Additional Analyses

Table F1: State-Level Analyses on Determinants of State Environmental Agencies' Workforce Size. Subscript f denotes the fiscal year and subscript t denotes the calendar year.

	Appropriated Workforce$_f$	Actual Workforce$_f$	Workforce Shock$_f$
	(1)	(2)	(3)
Population$_{t-1}$	-0.016**	-0.008	-0.008***
	(0.007)	(0.007)	(0.002)
log(Num of Facitilies)$_{t-1}$	1.65	1.32	0.33
	(2.05)	(1.72)	(0.46)
log(Past Violations)$_{t-1}$	-3.52	-4.53	1.00
	(4.59)	(3.93)	(1.47)
Trifecta$_{t-1}$	51.67***	54.15***	-2.48
	(12.10)	(13.27)	(6.61)
Democratic State	-60.55**	-69.46**	8.91
Legislatures$_{t-1}$	(27.77)	(28.11)	(9.97)
Democratic Governors$_{t-1}$	34.81	40.97**	-6.15
	(21.39)	(18.47)	(7.46)
PAC Limits$_t$	-94.00***	-90.70***	-3.29
	(23.27)	(29.28)	(15.75)
Unemployment Rate$_{t-1}$	-24.05**	-22.30**	-1.75
	(11.23)	(8.18)	(5.50)
log(Contributions to	0.62	0.63	-0.01
State Legislators$_{t-1}$)	(0.45)	(0.39)	(0.13)
log(Contributions to	0.19	0.23	-0.03
Governors$_{t-1}$)	(0.71)	(0.65)	(0.26)
N	35,203	35,203	35,203
Fixed Effects	Y	Y	Y
Control Variables	Y	Y	Y
Mean Outcome	1182.97	1128.17	53.80

Notes: Unit of analysis is state×year. Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01.

Table F2: Heterogeneous Effects by Citizens United

	log(Campaign Contributions to State Legislators)		
	All	Majority Party	Democratic Party
	(1)	(2)	(3)
Workforce Shock	-0.0004	-0.0005*	-0.0003
	(0.0002)	(0.0002)	(0.0002)
Workforce Shock ×	-0.0001	0.0001	-0.0000
After Citizens United	(0.0006)	(0.0005)	(0.0005)
Linear Combination of Coefficients:			
Effect after	-0.0005	-0.0003	-0.0005
Citizens United	(0.0004)	(0.0004)	(0.0004)
N	35,203	35,203	35,203
Fixed Effects	Y	Y	Y
Control Variables	Y	Y	Y
Mean Outcome	0.48	0.41	0.31

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01. After Citizens United is 1 for years after 2010, otherwise 0.

Table F3: Heterogeneous Effects by State-Level Campaign Finance Limits

	log(Inspections)		log(Enforcement)	
	State-Level	EPA-Level	State-Level	EPA-Level
	(1)	(2)	(3)	(4)
Workforce Shock	-0.0005*	-0.0001	-0.0002	0.0000
	(0.0003)	(0.0000)	(0.0001)	(0.0000)
Workforce Shock×	0.0000	-0.0002	0.0001	-0.0000
State-Level Limits	(0.0000)	(0.0002)	(0.0001)	(0.0000)
State-Level Limits	-0.05	0.00	0.03	0.00
	(0.05)	(0.02)	(0.02)	(0.00)
Linear Combination of Coefficients:				
Effect in States with	-0.0005***	-0.0003**	0.0000	0.0000
Campaign Finance Limits	(0.0002)	(0.0001)	(0.0002)	(0.0000)
N	35,203	35,203	35,203	35,203
Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Mean Outcome	0.51	0.09	0.19	0.04

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01.

Table F4: Heterogeneous Effects by Citizen United

	log(Inspections)		log(Enforcement)	
	State-Level	EPA-Level	State-Level	EPA-Level
	(1)	(2)	(3)	(4)
Workforce Shock	-0.0004	-0.0002**	-0.0001	0.0000
	(0.0003)	(0.0000)	(0.0002)	(0.0000)
Workforce Shock×	-0.0003	-0.0000	-0.0000	-0.0001**
After Citizens United	(0.0004)	(0.0001)	(0.0003)	(0.0000)
Linear Combination of Coefficients:				
Effect after	-0.0008***	-0.0002*	-0.0002	-0.0000
Citizens United	(0.0002)	(0.0001)	(0.0002)	(0.0000)
N	35,203	35,203	35,203	35,203
Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Mean Outcome	0.51	0.09	0.19	0.04

Notes: Standard errors clustered by state. * p<0.10, ** p<0.05, *** p<0.01. After Citizens United is 1 for years after 2010, otherwise 0.

G Analyses on TCEQ's Contact Data

Figure G1 shows the format of the contact data sent by the TCEQ. The data includes detailed information on the date of the contact, the names of politicians who made the contact, and the summary of the contact. From 2000 to 2019, 5,073 contacts were initiated by politicians in Texas with the TCEQ. Politicians outside Texas rarely contact the TCEQ. About 58% of the total contacts were made by state legislators, 28% by Governors, 9% by Senators, and 3% by House representatives.

Figure G1: An Example of TCEQ's Contact Data

MALTA Search Results

Search Parameters		
Area: **COMM**	Legislative: **YES**	Document From Date: **01/01/2000**
Document To Date: **12/31/2020**		

Page 1 2 3 4 5 6 7 8 9 10 > >> 1 - 200 of 4924 Records

Document Number	Date Received	From	To/CC	Subject	Date Mailed/Closed
COMM-47364	01/08/2021	Representative Jared Paterson	TO:Jon Niermann	Representative Patterson wrote comments regarding Platas Concrete, Inc.	01/11/2021
COMM-47341	12/21/2020	Representative Alma A. Allen	TO:OCC	Representative Allen wrote requesting a public meeting regarding Concrete Pros Ready Mix Inc. / Application No. 131789.	12/29/2020
COMM-47329	12/11/2020	Representative Tan Parker	TO:Laurie Gharis	Representative Parker wrote requesting a public meeting regarding Denton MUD 11 WWTP / Astra Investments I, LLC / Application No. WQ001590100.	12/18/2020
COMM-47328	12/04/2020	Representative Brooks Landgraf	TO:OCC	Representative Landgraff wrote comments regarding Application No. 2404.	12/11/2020
COMM-47312	12/01/2020	Representative	TO:OCC	Representative Patterson wrote requesting a contested case hearing regarding the petition for the Prairie Oaks Municipal	12/10/2020

We focus only on contacts asking the TCEQ to reassess or lessen enforcement actions or penalties against facilities or inquiring about litigation or inspections against facilities. For example, politicians would ask for "rescission for $30,000 of the penalty fees assessed on Forester Estateson" or mention that their constituent "writes to Senator's office regarding enforcement case against his company."[1] These contacts constitute about 3% of total contacts with the TCEQ for 2000-2019. We do not consider contacts asking the TCEQ to hold public

1. From the summary of contacts provided by the TCEQ, we often cannot distinguish which of these contacts were made on behalf of specific firms or facilities. For example, the summaries would often mention that politicians are making inquiries on behalf of their constituent business.

meetings for permits, making comments on rules, asking the TCEQ to inspect facilities due to their constituents' concerns about pollution, or supporting litigations against firms. We also don't consider contacts that generally inquire about inspections or enforcement actions of the TCEQ.

For each firm with TRI facilities in Texas in a given year, we calculate the number of contacts made by politicians who received campaign contributions from the firm during that year. We also calculate the number of politicians who made contacts on behalf of their donor. We then run reduced-form regressions by regressing these variables on TCEQ's actual workforce size, including control variables in equation (1) and firm fixed effects. Governor and state legislatures partisanships, and year fixed effects are excluded due to multicollinearity.

Table G1: Agencies' Workforce Size and Politicians' Contacts to TCEQ Inquiring on Inspections, Enforcement, and Penalties Against Facilities

	log(Number of Contacts Made by Politicians)			log(Number of Politicians Making Contacts)	
	State Legislators	Governors	Members of Congress	State Legislators	Members of Congress
	(1)	(2)	(3)	(4)	(5)
Workforce Shock	-0.0000***	-0.0000	0.0000**	0.0000	-0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
log(Number of Politicians Making Contacts)	1.04***		1.23***		
	(0.01)		(0.04)		
N	5,482	5,482	5,482	5,482	5,482
Fixed Effects	Y	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y	Y
Mean Outcome	0.01	0.01	0.008	0.01	0.006

Notes: Robust standard errors. All dependent variables are log-transformed. Only firm fixed effects are used. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table G2: Environmental Agencies' Workforce Shock Affects Inspections and Enforcement

	log(Inspections)		log(Enforcement)	
	State-Level	EPA-Level	State-Level	EPA-Level
	(1)	(2)	(3)	(4)
Workforce Shock	-0.001***	-0.0001***	-0.0002***	0.0000
	(0.0001)	(0.0000)	(0.0000)	(0.0000)
N	5,482	5,482	5,482	5,482
Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Mean Outcome	0.51	0.09	0.28	0.06

Notes: Standard errors clustered by state. All dependent variables are log-transformed. Only firm fixed effects are used. * p<0.10, ** p<0.05, *** p<0.01.

Table G3: TCEQ's Workforce Size and Political Expenditures

	log(Amount of Campaign Contributions in States)			
	State Legislators	Governors	House Representatives	Senators
	(1)	(2)	(3)	(4)
Workforce Shock	-0.0010***	-0.0008***	0.0006	0.0012***
	(0.0003)	(0.0002)	(0.0004)	(0.0002)
N	5,482	5,482	5,482	5,482
Fixed Effects	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y
Mean Outcome	0.61	0.20	1.27	0.33

Notes: Robust standard errors. All dependent variables are log-transformed. Only firm fixed effects are used. * p<0.10, ** p<0.05, *** p<0.01.

H Equivalence Tests

Table H1: Equivalence Testing Using T-Test

	Welch Two Sample t-test ($p-value$)	
	(1)	(2)
Unemployment Rates$_{t-1}$	0.272	0.177
	[5.61, 5.47]	[5.89 , 5.58]
Population$_{t-1}$	0.004	0.000
	[5481.64 , 6691.17]	[7060.29, 3147.12]
Trifecta$_{t-1}$	0.508	0.009
	[0.59, 0.57]	[0.55, 0.70]
Democratic State Legislatures$_{t-1}$	0.000	0.0193
	[0.43, 0.32]	[0.47, 0.33]
Democratic Governors$_{t-1}$	0.548	0.343
	[0.41, 0.43]	[0.47, 0.41]

Notes: Column (1) reports the p-value of t-test comparing two samples: 19 states that we use for our analyses versus 28 states that we don't. Column (2) restricts the sample to 19 states and reports the comparison between states with larger margins of actual and appropriate staffing sizes and states with narrow margins between -1 and 1. Numbers inside the brackets represent the mean of each group.

I State-Level Limits on Corporate PAC Contributions

	State	Unit	Year	PAC_guber	PAC_senate	PAC_house
1	Alabama	2011-2012		Unlimited	Unlimited	Unlimited
2	Alabama	2013-2014		Unlimited	Unlimited	Unlimited
3	Alabama	2015-2016		Unlimited	Unlimited	Unlimited
4	Alabama	2017-2018		Unlimited	Unlimited	Unlimited
5	Alabama	2019-2020		Unlimited	Unlimited	Unlimited
6	Alaska	2011-2012	candidate/year	1000	1000	1000
7	Alaska	2013-2014	candidate/year	1000	1000	1000
8	Alaska	2015-2016	candidate/year	1000	1000	1000
9	Alaska	2017-2018	candidate/year	1000	1000	1000
10	Alaska	2019-2020	candidate/year	1000	1000	1000
11	Arizona	2011-2012	candidate/election	4352	1736	1736
12	Arizona	2013-2014	candidate/year	5010	2000	2000
13	Arizona	2015-2016	candidate/election	5000	5000	5000
14	Arizona	2017-2018	candidate/year	6350	5100	5100
15	Arizona	2019-2020	candidate/year	5200	5200	5200
16	Arkansas	2011-2012	candidate/election	2000	2000	2000
17	Arkansas	2013-2014	candidate/election	2000	2000	2000
18	Arkansas	2015-2016	candidate/election	2700	2700	2700
19	Arkansas	2017-2018	candidate/election	2700	2700	2700
20	Arkansas	2019-2020	candidate/election	2700	2700	2700
21	California	2011-2012	candidate/election	26000	3900	3900
22	California	2013-2014	candidate/election	27200	4100	4100
23	California	2015-2016	candidate/election	28200	4200	4200
24	California	2017-2018	candidate/election	29200	4400	4400
25	Californiae	2019-2020	candidate/election	31000	4700	4700
26	Colorado	2011-2012	candidate/election	5675	2250	2250
27	Colorado	2013-2014	candidate/election	5675	2250	2250
28	Colorado	2015-2016	candidate/election	6125	2425	2425
29	Colorado	2017-2018	candidate/election	5675	2250	2250
30	Colorado	2019-2020	candidate/election	6750	2675	2675
31	Connecticut	2011-2012	candidate/election	5000	1500	750
32	Connecticut	2013-2014	candidate/election	5000	1500	750
33	Connecticut	2015-2016	candidate/election	5000	1500	750
34	Connecticut	2017-2018	candidate/election	5000	1500	750

35	Connecticut	2019-2020	candidate/election	5000	1500	750
36	Delaware	2011-2012	candidate/election	1200	600	600
37	Delaware	2013-2014	candidate/election	1200	600	600
38	Delaware	2015-2016	candidate/election	1200	600	600
39	Delaware	2017-2018	candidate/election	1200	600	600
40	Delaware	2019-2020	candidate/election	1200	600	600
41	Florida	2011-2012	candidate/election	500	500	500
42	Florida	2013-2014	candidate/election	3000	1000	1000
43	Florida	2015-2016	candidate/election	3000	1000	1000
44	Florida	2017-2018	candidate/election	3000	1000	1000
45	Florida	2019-2020	candidate/election	3000	1000	1000
46	Georgia	2011-2012	candidate/election	6300	2500	2500
47	Georgia	2013-2014	candidate/election	6300	2500	2500
48	Georgia	2015-2016	candidate/election	6300	2500	2500
49	Georgia	2017-2018	candidate/election	6600	2600	2600
50	Georgia	2019-2020	candidate/election	7000	2800	2800
51	Hawaii	2011-2012	candidate/election	6000	4000	2000
52	Hawaii	2013-2014	candidate/election	6000	4000	2000
53	Hawaii	2015-2016	candidate/election	6000	4000	2000
54	Hawaii	2017-2018	candidate/election	6000	4000	2000
55	Hawaii	2019-2020	candidate/election	6000	4000	2000
56	Idaho	2011-2012	candidate/election	5000	1000	1000
57	Idaho	2013-2014	candidate/election	5000	1000	1000
58	Idaho	2015-2016	candidate/election	5000	1000	1000
59	Idaho	2017-2018	candidate/election	5000	1000	1000
60	Idaho	2019-2020	candidate/election	5000	1000	1000
61	Illinois	2011-2012	election	50000	50000	50000
62	Illinois	2013-2014	candidate/election	52600	52600	52600
63	Illinois	2015-2016	election	53900	53900	53900
64	Illinois	2017-2018	election	55400	55400	55400
65	Illinoi	2019-2020	electioncycle	57800	57800	57800
66	Indiana	2011-2012	aggregate	Unlimited	Unlimited	Unlimited
67	Indiana	2013-2014	aggregate	Unlimited	Unlimited	Unlimited
68	Indiana	2015-2016	aggregate	Unlimited	Unlimited	Unlimited
69	Indiana	2017-2018	aggregate/year	Unlimited	Unlimited	Unlimited
70	Indiana	2019-2020	aggregate/year	Unlimited	Unlimited	Unlimited
71	Iowa	2011-2012		Unlimited	Unlimited	Unlimited
72	Iowa	2013-2014		Unlimited	Unlimited	Unlimited

73	Iowa	2015-2016		Unlimited	Unlimited	Unlimited
74	Iowa	2017-2018		Unlimited	Unlimited	Unlimited
75	Iowa	2019-2020		Unlimited	Unlimited	Unlimited
76	Kansas	2011-2012	candidate/election	2000	1000	500
77	Kansas	2013-2014	candidate/election	2000	1000	500
78	Kansas	2015-2016	candidate/election	2000	1000	500
79	Kansas	2017-2018	candidate/election	2000	1000	500
80	Kansas	2019-2020	candidate/election	2000	1000	500
81	Kentucky	2011-2012	candidate/election	1000	1000	1000
82	Kentucky	2013-2014	candidate/election	1000	1000	1000
83	Kentucky	2015-2016	candidate/election	1000	1000	1000
84	Kentucky	2017-2018	candidate/election	3000	3000	3000
85	Kentucky	2019-2020	candidate/election	2000	2000	2000
86	Louisiana	2011-2012	candidate/election	5000	2500	2500
87	Louisiana	2013-2014	candidate/election	5000	2500	2500
88	Louisiana	2015-2016	candidate/election	5000	2500	2500
89	Louisiana	2017-2018	candidate/election	5000	2500	2500
90	Louisiana	2019-2020	candidate/election	5000	5000	5000
91	Maine	2011-2012	candidate/election	1500	350	350
92	Maine	2013-2014	candidate/election	1500	375	375
93	Maine	2015-2016	candidate/election	1575	375	375
94	Maine	2017-2018	candidate/election	1600	400	400
95	Maine	2019-2020	candidate/election	1675	400	400
96	Maryland	2011-2012	candidate/4year	6000	6000	6000
97	Maryland	2013-2014	candidate/election	6000	6000	6000
98	Maryland	2015-2016	candidate/4years	6000	6000	6000
99	Maryland	2017-2018	candidate/4years	6000	6000	6000
100	Maryland	2019-2020	candidate/4years	6000	6000	6000
101	Massachusetts	2011-2012	candidate/year	500	500	500
102	Massachusetts	2013-2014	candidate/year	500	500	500
103	Massachusetts	2015-2016	candidate/year	500	500	500
104	Massachusetts	2017-2018	candidate/year	500	500	500
105	Massachusetts	2019-2020	candidate/year	500	500	500
106	Michigan	2013-2014	candidate/election	3400	1000	500
107	Michigan	2017-2018	candidate/election	6800	2000	1000
108	Michigan	2011-2012	candidate/election	3400	1000	500
109	Michigan	2015-2016	candidate/election	6800	2000	1000
110	Michigan	2019-2020	candidate/election	7150	2100	1050

111	Minnesota	2011-2012	candidate/year	2000	500	500
112	Minnesota	2013-2014	candidate/2years	4000	1000	1000
113	Minnesota	2015-2016	candidate/2years	4000	1000	1000
114	Minnesota	2017-2018	candidate/2years	4000	1000	1000
115	Minnesota	2019-2020	candidate/2years	4000	1000	1000
116	Mississippi	2011-2012	candidate/year	Unlimited	Unlimited	Unlimited
117	Mississippi	2013-2014	candidate/year	Unlimited	Unlimited	Unlimited
118	Mississippi	2015-2016	candidate/year	Unlimited	Unlimited	Unlimited
119	Mississippi	2017-2018	candidate/year	Unlimited	Unlimited	Unlimited
120	Mississippi	2019-2020	candidate/year	Unlimited	Unlimited	Unlimited
121	Missouri	2011-2012		Unlimited	Unlimited	Unlimited
122	Missouri	2013-2014		Unlimited	Unlimited	Unlimited
123	Missouri	2015-2016		Unlimited	Unlimited	Unlimited
124	Missouri	2017-2018	candidate/election	2600	2600	2600
125	Missouri	2019-2020	candidate/election	2650	2500	2000
126	Montana	2011-2012	candidate/election	630	160	160
127	Montana	2013-2014	candidate/election	650	170	170
128	Montana	2015-2016	candidate/election	10610	800	400
129	Montana	2017-2018	candidate/election	10610	800	400
130	Montana	2019-2020	candidate/election	680	180	180
131	Nebraska	2011-2012	limit for candidate	Unlimited	103500	103500
132	Nebraska	2013-2014		Unlimited	Unlimited	Unlimited
133	Nebraska	2015-2016		Unlimited	Unlimited	Unlimited
134	Nebraska	2017-2018		Unlimited	Unlimited	Unlimited
135	Nebraska	2019-2020		Unlimited	Unlimited	Unlimited
136	Nevada	2011-2012	candidate/election	5000	5000	5000
137	Nevada	2013-2014	candidate/election	5000	5000	5000
138	Nevada	2015-2016	candidate/election	5000	5000	5000
139	Nevada	2017-2018	candidate/election	5000	5000	5000
140	Nevada	2019-2020	candidate/election	5000	5000	5000
142	New Hampshire	2011-2012	election	1000	1000	1000
143	New Hampshire	2013-2014	candidate/election	1000	1000	1000
144	New Hampshire	2015-2016	candidate/election	1000	1000	1000
141	New Hampshire	2017-2018	candidate/election	Unlimited	Unlimited	Unlimited
145	New Hampshire	2019-2020	election	1000	1000	1000
149	New Jersey	2011-2012	candidate/election	8200	8200	8200
150	New Jersey	2013-2014	candidate/election	8200	8200	8200
146	New Jersey	2015-2016	candidate/election	8200	8200	8200

147	New Jersey	2017-2018	candidate/election	9300	9300	9300
148	New Jersey	2019-2020	candidate/election	8200	8200	8200
151	New Mexico	2011-2012	candidate/election	5000	5000	5000
152	New Mexico	2013-2014	candidate/election	5200	5200	5200
153	New Mexico	2015-2016	candidate/election	5400	5400	5400
154	New Mexico	2017-2018	candidate/election	5500	5500	5500
155	New Mexico	2019-2020	candidate/election	10000	5000	5000
156	New York	2011-2012	candidate/election	41100	10300	4100
157	New York	2013-2014	candidate/year	41100	10300	4100
158	New York	2015-2016	candidate/election	41100	10300	4100
159	New York	2017-2018	candidate/election	44000	11000	4400
160	New York	2019-2020	candidate/election	47100	11800	4700
161	North Carolina	2011-2012	candidate/election	4000	4000	4000
162	North Carolina	2013-2014	candidate/election	5000	5000	5000
163	North Carolina	2015-2016	candidate/election	5000	5000	5000
164	North Carolina	2017-2018	candidate/election	5200	5200	5200
165	North Carolina	2019-2020	candidate/election	5400	5400	5400
166	North Dakota	2011-2012		Unlimited	Unlimited	Unlimited
167	North Dakota	2013-2014		Unlimited	Unlimited	Unlimited
168	North Dakota	2015-2016		Unlimited	Unlimited	Unlimited
169	North Dakota	2017-2018		Unlimited	Unlimited	Unlimited
170	North Dakota	2019-2020		Unlimited	Unlimited	Unlimited
171	Ohio	2011-2012	candidate/election	11543.7	11543.7	11543.7
172	Ohio	2013-2014	candidate/election	12155.52	12155.52	12155.52
173	Ohio	2015-2016	candidate/election	12532.52	12532.52	12532.52
174	Ohio	2017-2018	candidate/election	12707.79	12707.79	12707.79
175	Ohio	2019-2020	candidate/election	13292.35	13292.35	13292.35
176	Oklahoma	2011-2012	candidate/campaign	5000	5000	5000
177	Oklahoma	2013-2014	candidate/campaign	5000	5000	5000
178	Oklahoma	2015-2016	candidate/election	5000	5000	5000
179	Oklahoma	2017-2018	candidate/campaign	5000	5000	5000
180	Oklahoma	2019-2020	candidate/campaign	5000	5000	5000
181	Oregon	2011-2012		Unlimited	Unlimited	Unlimited
182	Oregon	2013-2014		Unlimited	Unlimited	Unlimited
183	Oregon	2015-2016		Unlimited	Unlimited	Unlimited
184	Oregon	2017-2018		Unlimited	Unlimited	Unlimited
185	Oregon	2019-2020		Unlimited	Unlimited	Unlimited
186	Pennsylvania	2011-2012		Unlimited	Unlimited	Unlimited

187	Pennsylvania	2013-2014		Unlimited	Unlimited	Unlimited
188	Pennsylvania	2015-2016		Unlimited	Unlimited	Unlimited
189	Pennsylvania	2017-2018		Unlimited	Unlimited	Unlimited
190	Pennsylvania	2019-2020		Unlimited	Unlimited	Unlimited
191	Rhode Island	2011-2012	candidate	1000	1000	1000
192	Rhode Island	2013-2014	candidate/year	1000	1000	1000
193	Rhode Island	2015-2016	candidate/year	1000	1000	1000
194	Rhode Island	2017-2018	candidate/year	1000	1000	1000
195	Rhode Island	2019-2020	candidate/year	1000	1000	1000
196	South Carolina	2011-2012	candidate/election	3500	1000	1000
197	South Carolina	2013-2014	candidate/election	3500	1000	1000
198	South Carolina	2015-2016	candidate/election	11500	7600	7600
199	South Carolina	2017-2018	candidate/election	3500	1000	1000
200	South Carolina	2019-2020	candidate	3500	1000	1000
201	South Dakota	2011-2012	candidate/year	Unlimited	Unlimited	Unlimited
202	South Dakota	2013-2014	candidate/year	Unlimited	Unlimited	Unlimited
203	South Dakota	2015-2016	candidate/year	Unlimited	Unlimited	Unlimited
204	South Dakota	2017-2018	candidate/year	Unlimited	Unlimited	Unlimited
205	South Dakota	2019-2020	candidate/year	Unlimited	Unlimited	Unlimited
206	Tennessee	2011-2012	candidate/election	10700	10700	7100
207	Tennessee	2013-2014	candidate/election	11200	11200	7400
208	Tennesseee	2015-2016	candidate/election	11200	11200	7400
209	Tennesseee	2017-2018	candidate/election	11800	11800	7800
210	Tennesseee	2019-2020	candidate/election	12300	12300	8100
211	Texas	2011-2012		Unlimited	Unlimited	Unlimited
212	Texas	2013-2014		Unlimited	Unlimited	Unlimited
213	Texas	2015-2016		Unlimited	Unlimited	Unlimited
214	Texas	2017-2018		Unlimited	Unlimited	Unlimited
215	Texas	2019-2020		Unlimited	Unlimited	Unlimited
216	Utah	2011-2012		Unlimited	Unlimited	Unlimited
217	Utah	2013-2014		Unlimited	Unlimited	Unlimited
218	Utah	2015-2016		Unlimited	Unlimited	Unlimited
219	Utah	2017-2018		Unlimited	Unlimited	Unlimited
220	Utah	2019-2020		Unlimited	Unlimited	Unlimited
221	Vermont	2011-2012	candidate/election	3000	3000	3000
222	Vermont	2013-2014	candidate/election	3000	3000	3000
223	Vermont	2015-2016	candidate	4000	1500	1000
224	Vermont	2017-2018	candidate/election	4080	1530	1020

225	Vermont	2019-2020	candidate/2years	4160	1560	1040
226	Virginia	2011-2012		Unlimited	Unlimited	Unlimited
227	Virginia	2013-2014		Unlimited	Unlimited	Unlimited
228	Virginia	2015-2016		Unlimited	Unlimited	Unlimited
229	Virginia	2017-2018		Unlimited	Unlimited	Unlimited
230	Virginia	2019-2020		Unlimited	Unlimited	Unlimited
231	Washington	2011-2012	candidate/election	1800	900	900
232	Washington	2013-2014	candidate/election	1800	900	900
233	Washington	2015-2016	candidate/election	1900	950	950
234	Washington	2017-2018	candidate/election	2000	1000	1000
235	Washington	2019-2020	candidate/election	2000	1000	1000
236	West Virginia	2011-2012	candidate/election	1000	1000	1000
237	West Virginia	2013-2014	candidate/election	1000	1000	1000
238	West Virginia	2015-2016	candidate/election	1000	1000	1000
239	West Virginia	2017-2018	candidate/election	1000	1000	1000
240	West Virginia	2019-2020	candidate/election	2800	2800	2000
241	Wisconsin	2011-2012	candidate/election	43128	1000	500
242	Wisconsin	2013-2014	candidate/year	43128	1000	500
243	Wisconsin	2015-2016	candidate/election	43128	1000	500
244	Wisconsin	2017-2018	candidate	86000	2000	1000
245	Wisconsin	2019-2020	candidate	86000	2000	1000
246	Wyoming	2011-2012	candidate/election	Unlimited	Unlimited	Unlimited
247	Wyoming	2013-2014	candidate/election	7500	3000	3000
248	Wyoming	2015-2016	candidate/election	7500	3000	3000
249	Wyoming	2017-2018	candidate/election	Unlimited	5000	5000
250	Wyoming	2019-2020	candidate/election	Unlimited	5000	5000

J Merging with Firms' Political Activities Data

We use the campaign contributions data by Bonica (2023) and link it to TRI data using firms' names. We follow the matching procedure suggested by Stuckatz (2022), which uses a term-document matrix and weighs the entries by term-frequency-inverse-document frequency (tf-idf) so that commonly occurring terms receive less weight than more unique terms. We calculate the pairwise cosine distance between firm names in TRI data and those in campaign contributions data and keep firm names with cosine distance greater than 0.9. If we increase the threshold of cosine distance greater than 0.9, we might decrease the number of firm names that are incorrectly linked to campaign contributions data, decreasing measurement errors. But it also increases the number of firm names that are not linked to the data even if they should be, which increases measurement errors. Results are similar if we change the threshold to 0.85 or 0.95.

Federal lobbying data comes from the LobbyView website (https://lobbyview.org) by Kim (2017), and board membership data comes from Boardex.

We link data on firms' political expenditures to TRI data using firms' names. For lobbying and campaign contributions data, we do the following steps suggested by Stuckatz (2022). First, we lowercase firm names (or firm PAC names) in both TRI data and lobbying/campaign contributions data, clean them (removing white space, certain punctuation, and phrases such as 'PAC' or 'good employees'), and canonicalize company types (e.g., "corporation" to "corp," "limited" to "ltd"). Second, from the remaining unique firm names, we create a term-document matrix and weigh the entries by term-frequency-inverse-document frequency (tf-idf) so that commonly occurring terms receive less weight than more unique terms. We then calculate the pairwise cosine distance between firm names in TRI data and those in Boardex/lobbying/campaign contributions data. For lobbying and Boardex data, we manually check firms' names with cosine distance greater than 0.7 since these data include a relatively smaller number of firms. Lobbying and Boardex data also has the information on firms' GVKEY identifiers or Bureau Van DIJK identifiers, so we check firms' names using that information.

Table J1 shows that there is no significant effect on the total amount of federal lobbying and total board members. Table J1 also shows the effect on lobbying expenditures regarding environmental or energy policy issues or contacting EPA. We also conduct a placebo test by examining the effect on lobbying expenditures regarding policy issues that are least likely to be

related to energy and environmental issues.[1] Table J1 shows that the effect is most pronounced for the amount of firms' lobbying spending on environmental policies and lobbying spending targeting the EPA. On the other hand, lobbying on other social issues seem to increae in response to the workforce shock. This might be due to firms decreasing their lobbying to environmental policy issues. On the other hand Table J2 shows that the effects of the workforce shock on firms' board memberships is weaker, while we observe some effects on the number of board members who previously worked in the EPA or state environmental agencies.

Table J1: Agency Workforce Size and Lobbying Activites

	Total Lobbying	Environmental Lobbying	Energy Lobbying	EPA Lobbying	Placebo Lobbying
	(1)	(2)	(3)	(4)	(5)
Workforce Shock	-0.0006	-0.0015**	-0.0007	-0.0011*	0.0005**
	(0.0003)	(0.0006)	(0.0005)	(0.0005)	(0.0002)
N	28,950	28,950	28,950	28,950	28,950
Fixed Effects	Y	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y	Y
Mean Outcome	7.43	3.88	4.36	2.89	3.75

Notes: Standard errors clustered by state. All variables are log-transformed. * p<0.10, ** p<0.05, *** p<0.01.

Table J2: Agency Workforce Size and Board Memberships

	Total Board Members	Former EPA	Former Environmental Agencies	Former Members of Congress	Former State & Members of Congress
	(1)	(2)	(3)	(4)	(5)
Workforce Shock	-0.0000	-0.0000	-0.0000**	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
N	16,914	16,914	16,914	16,914	16,914
Fixed Effects	Y	Y	Y	Y	Y
Control Variables	Y	Y	Y	Y	Y
Mean Outcome	2.30	0.02	0.02	0.03	0.07

Notes: Standard errors clustered by state. All variables are log-transformed. * p<0.10, ** p<0.05, *** p<0.01.

1. To select lobbying reports that include environmental policy issues, we use issue codes "CAW" (Clean Water Act), "WAS" (Waste), and "ENV" (Environmental/Superfund). To select lobbying reports that include energy policy issues, we use issue codes "CHM" (Chemicals/Chemical Industry), "ENG" (Energy/Nuclear), "FUE" (Fuel/Gas/Oil), and "NAT" (Natual Resources). To select lobbying reports including policy issues for our placebo test, we use issue codes "EDU" (Education), "FOR" (Foreign Relations), "GAM" (Gaming/Gambling/Casino), "POS" (Postal), "REL" (Religion), "RET" (Retirement), "VET" (Veterans), "TOU" (Travel/Tourism), "UNM" (Unemployment), "LBR" (Labor issues/Antitrust/Workplace), "MMM" (Medicare/Medicaid), "DEF" (Defense), "CIV" (Civil Rights/Civil Liberties), "CON" (Constitution).

K State Legislators' Partisanship and Committee Assignments

We examine state legislative committee assignments using two datasets from Fouirnaises and Hall (2022) and Hall (2016), covering the period from 2000 to 2014. We identify committees relevant to environmental agencies using the following keywords: "environment," "energy," "oil, "gas," "agriculture," "land use," and "natural resources." Additionally, we identify committees with budgetary authority using keywords such as "budget," "ways and means," and "appropriations." The first two columns of Table K1 examine the assignment of Democratic legislators to committees related to environmental protection, while the remaining columns focus on their assignment to committees related to spending and budgetary authorities. Although we do not find significant effects in the first two columns, the remaining columns show a positive and statistically significant association. Overall, this indicates that Democratic state legislators are more likely to be assigned to committees on budget, ways and means, and appropriations.

Table K1: Committee Assignment and Democratic Legislators

Committees related to:	Environmental Protection		Spending and Budgetary Authority	
	(1)	(2)	(3)	(4)
Democratic Legislators	-0.0043	-0.0096	0.0209**	0.0250***
	(0.0063)	(0.0063)	(0.0093)	(0.0097)
Year FE	Y	N	Y	N
State FE	Y	N	Y	N
Observations	26,249	26,249	26,249	26,249
R^2	0.04646	0.00025	0.10408	0.00071

Notes: Standard errors clustered by Candidate IDs. * p<0.10, ** p<0.05, *** p<0.01.

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