Mining for Favors: The Impact of Political Influence on Regulatory Enforcement

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Abstract

Regulatory capture can generate significant social and economic costs, particularly in dangerous occupations. In this article I evaluate whether political influence has allowed firms to systematically evade safety and health regulations using data from one of the country's most dangerous occupations—mining. Using an instrument to capture exogenous variation in political influence decisions, I show that when mining firms use influence, they reduce their expected non-compliance costs by 30 percent, but report a 40 percent increase in death rates. Importantly, the largest benefit comes during the adjudicative stage meant to be isolated from political influence.

Key words: political influence; regulatory capture; self-selection; safety and health; mining
JEL Codes: D72, K32, L51

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1 Introduction

On the afternoon of April 2010, a coal dust cloud ignited in an underground coal mine in West Virginia, causing an explosion that killed 29 of 31 miners who were working at the mine at that time. The high death toll at the Upper Big Branch mine (UBB) led the government to launch an investigation, which concluded that the incident was prompted by political clout that the mine operator, Massey Energy, had amassed over the years through lobbying activities and political campaign contributions.[1] [2] The investigation concluded that regulatory capture was one cause of the Mine Safety and Health Administration's (MSHA) oversight failure.[3] Regulatory capture has been blamed for other industrial accidents, as well as general inadequacies in regulatory enforcement across industries.[4]

Regulatory capture and other types of regulatory failure often arise when firms gain political influence, individually or as part of an organized interest group. One common way of obtaining such influence is through financial means like bribery, lobbying, and contributing to political action committees (PACs), campaigns, and politicians' charitable foundations (Bertrand et al. 2020; Kwak 2013; Engstrom 2012).[5] Regulatory capture can generate significant social costs, particularly in dangerous occupations, where this cost is often measured in human lives. Reducing the scope for capture is therefore important to maintaining social efficiency.

In this article I use a highly disaggregated dataset from an occupationally hazardous industry—U.S. mining—to ask whether political influence allows firms to systematically evade safety and health regulations. To answer this question, I use lobbying as a proxy for political influence and examine whether firms' lobbying choices have a significant impact on their regulatory and safety outcomes, including how often firms are inspected and cited for violations, how much they are fined for noncompliance, and how many accidents and deaths

1. "Through [political] control, the company challenged federal and state oversight agencies, including [Mine Safety and Health Administration] MSHA, the Environmental Protection Agency, and the West Virginia Office of Miners' Health, Safety and Training" (McAteer et al. 2011).

2. In the years before this incident, the pattern of violations revealed by MSHA inspection records placed UBB in the "flagrant" violator category, but MSHA officials never cited the mine as such (McAteer et al. 2011).

3. The theory of regulatory capture is widely regarded to have been launched by Stigler (1971) with the observation that "as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit".

4. Regulatory capture was ascribed to the 2010 BP Deepwater Horizon oil spill (Broder 2010), the 2011 Fukushima Daiichi nuclear disaster (Kurokawa 2012), the 2014 Duke Energy coal ash spill (Laplaca 2016), pollution enforcement efforts in Texas (Clark-Leach and Metzger 2017), safety in North Dakota's shale oil industry (Oliver 2015), and approval of chemicals in the U.S. (Van Strum 2017).

5. Other capture mechanisms include *quid pro quo* tactics like revolving door, strategies designed to overwhelm a regulator with complex information, and social and cultural factors like the composition of a regulator's social network and prevailing cultural norms (Kwak 2013; Kurokawa 2012).

they report.[6] I do not address the impact of political influence on changes in rules and regulations. Rather, I take existing regulations as given, and look at the impact of political influence on enforcement of these regulations.

I use an instrumental variable framework (Heckman and Vytlacil 2007; Maddala 1983) to account for the fact that the choice to lobby is likely not independent of the regulatory pressures firms face. I model my instrument on recent studies that have demonstrated a causal link between firms' political contributions and congressional committee assignments (Powell and Grimmer 2016; Fouirnaies and Hall 2018; Bertrand et al. 2020). I show that the same link extends to lobbying. A firm in my sample is significantly more likely to lobby for safety and health issues when its congressional representative sits on a committee that deals with such issues. To rule out spurious correlation, I carry out placebo tests using committees that have no jurisdiction over safety and health and show that being represented on these other committees does not impact a firm's propensity to lobby for safety and health issues.

My instrument satisfies the necessary exogeneity assumption. First, committee representation must not have a direct effect on firms' observed safety and health outcomes. While it is true that congressmen often contact regulatory heads on behalf of their constituents, they do so at the constituents' request (that is, because constituents lobby for such interventions). In absence of such requests for congressional involvement there would be no reason for politicians to place demands on regulatory administrators. Second, if members on my committee of interest systematically self-selected onto the committee, then committee membership would potentially be correlated with unobservables, like the interests of the member's voting constituents. I address this concern in two supplemental analyses. In the first, I exploit the timing of a congressman's joining and leaving my committee of interest to show that these types of events are statistically associated with the level of lobbying expenditures directed at the committee by in-state constituents of the joining and leaving congressmen. I also use congressional committee request lists to show that, over the course of 50 years, fewer than ten percent of all members of my committee of interest successfully self-selected onto it. These two pieces of evidence help to alleviate concerns of potential endogeneity in committee membership.

I show that once I isolate exogenous variation in lobbying decisions using the committee assignment link, lobbying efforts become statistically associated with regulatory benefits and, more worryingly, social costs. I find that when firms lobby, they have lower citation rates, larger fine reductions, pay a lower share of their outstanding fines, and record higher

6. I focus on lobbying as a proxy for political influence because lobbying has been found to be both more prevalent and more effective than other legal forms of financial influence in politics (e.g., Hansen and Mitchell 2000; Brasher and Lowery 2006; Kim 2008; Hill et al. 2013).

death rates. Aggregating these benefits, I find that when firms lobby, they reduce their financial obligations to the regulator by about 30 percent, or $26,700 per quarter, but report a 40 increase in their death rates. Interestingly, the largest benefit is associated with the administrative contest process in which violators dispute infractions before an independent adjudicative commission. The judges employed by the commission are meant to be isolated from political influence, but my results suggest that isolating judges from political influence may not isolate them from the influence of politicking.

These results have important implications not just for miners, but also for the broader economy. Workplace injuries carry a high financial toll (Leigh 2011). If firms can use political clout to effectively sidestep some safety and health regulations, they can transfer the cost of workplace safety to society. And since political influence does not come cheaply, the regulatory system's responsiveness to such influence may bias enforcement outcomes and distort the distribution of resources and opportunities within industries.

In the next section, I present my motivation for analyzing the effects of lobbying on occupational safety and health and describe existing literature related to this topic. In section 3, I detail my instrument and present results of the selection model. In section 4, I describe the details of the mine safety and health regulatory process and discuss potential mechanisms through which lobbying (and other political influence activities) may lead to a change in enforcement outcomes. Section 5 presents second-stage outcome models and discusses empirical results, and section 6 concludes.

2 Lobbying and occupational safety and health

The cost of workplace injuries and illnesses in 2007 was estimated at $250 billion dollars (Leigh 2011)—almost half as much as the U.S. spent on national defense or social security that year.[7] By this measure, workplace injuries present a tremendous cost to society. Yet, the link between occupational safety and health regulation and firms' political influence remains unexplored.

There is some empirical evidence that financial constraints lead firms to reduce investment in occupational safety and health, leading to more accidents, injuries, and deaths (Cohn and Wardlaw 2016; Nie et al. 2015). So we know that an unsafe workplace can be the result of a firm's poor financial circumstances—a passive consequence. What we don't know is whether an unsafe workplace can also be a consequence of active strategy. Can firms use money or influence to disregard workplace safety?

7. According to the Congressional Budget Office (2015), the 2007 federal budget included $547.9 billion for defense spending and $581.4 billion for Social Security.

I am specifically interested in whether firms are able to make successful *ex ante* investments in shirking workplace safety regulations, as opposed to paying *ex post* to compensate injured workers (for example, by paying legal damages or settling law suits out of court). Because lobbying has been shown to be an effective form of investment for firms seeking to avoid certain types of regulations (Duso 2005), and was specifically mentioned in the government's investigation report as one cause of the UBB disaster, I focus on lobbying as the *ex ante* investment mechanism and examine whether firms' lobbying activities help them reduce the costs they face for not complying with regulations. It's worth noting that even though my focus in this study is on lobbying, lobbying here serves as a proxy for broader political influence.

Lobbying is a convenient form of political influence to study for several reasons. The government places no financial limits on lobbying, and firms that lobby have discretion over the issues they choose to influence. This often makes lobbying more effective than other non-market strategies, like contributions to political campaigns and political action committees (PACs) (see, for example, Hansen and Mitchell 2000; Duso 2005; Drope and Hansen 2006; Brasher and Lowery 2006; Kim 2008; Hill et al. 2013; Kang 2016).[8] It is not surprising then that corporations spend substantially more on lobbying efforts than on campaign and PAC contributions (e.g., Milyo, Primo, and Groseclose 2000; Ansolabehere, Figueiredo, and Snyder 2003; Hill et al. 2013).[9]

In finance and economic literature, lobbying has been linked to higher stock returns, lower effective tax rates, higher CEO compensation, lower rates of fraud detection, larger appropriations of government funds, and other benefits (see, for example, Figueiredo and Silverman 2006; Richter, Samphantharak, and Timmons 2009; Yu and Yu 2011; Coates IV 2012; Solé-Ollé and Viladecans-Marsal 2012; Hill et al. 2013; Skaife, Veenman, and Werner 2013; Mathur et al. 2013; Kang 2016). Generally, lobbying is more prevalent in regulated industries (Kim 2008) and in specific contexts has allowed firms to avoid price regulation (Duso 2005).[10]

So what is lobbying? Broadly, lobbying can be described as the acquisition of political influence. Companies hire lobbyists that have connections within the political apparatus,

8. By contrast, corporations have been prohibited from contributing directly to federal political campaigns since the early 1900s, and there are strict limits on how much individuals and Political Action Committees (PACs) can contribute. For the 2015 election cycle the limit was $5,000 per election cycle.

9. According to data published by the Center for Responsive Politics, in 2014 firms spent a total of $3.25 billion on lobbying, whereas PAC contributions to political candidates totaled only $466 million.

10. Lobbying is not the only way for firms to avoid regulatory scrutiny. Some firms engage in preemptive self-regulation instead–meeting a certain threshold of regulations in order to prevent formal regulatory mandates.) (Maxwell, Lyon, and Hackett 2000; Innes and Sam 2008). Perhaps these firms are simply more efficient at complying.

Table 1: Regulatory and safety outcomes of U.S. mining firms, by lobbying status

	lobbyers mean	non-lobbyers mean	difference	t-stat
inspections per quarter	15.68	9.86	5.82	7.84
citations per inspection	8.74	5.82	2.92	7.31
average proposed fine, dollars	883.96	559.29	324.67	5.85
average final fine, dollars	676.13	459.55	216.58	5.14
accidents per quarter	2.93	1.87	1.06	7.86
deaths per quarter	0.02	0.01	0.01	2.87
Observations	759	3921	4680	

and pay them to contact politicians and obtain political influence on the companies' behalf. Contacts between lobbyists and politicians do not necessarily imply direct transfer of funds—that is, lobbying is not bribery. Rather, lobbyists try to persuade politicians to act in a manner that would bring benefits to companies.[11] So the purpose of lobbying is not to facilitate transfers of money between companies and politicians or regulators, but to allow companies to obtain access to the political process and influence in the political and regulatory arena.

Researchers have defined lobbying as "the expenditure of funds by a firm to attempt to influence legislation to the ... firm's and/or industry's advantage" (Borghesi and Chang 2015) and as "the transfer of information in private meetings and venues between interest groups and politicians, their staffs, and agents" (Figueiredo and Richter 2014). Thus, we can think of the money that a firm spends on lobbying activities as a proxy for how much political influence it acquires.

Not all firms choose to lobby, however. The summary statistics in table 1 show that among U.S. mining firms, those that choose to lobby for occupational safety and health issues (lobbyers) appear to experience significantly different regulatory and safety outcomes than firms that do not lobby for these issues. On average, firms that lobby seem to be inspected more frequently, receive more citations, are assessed higher fines, and report more accidents and deaths than non-lobbyers, which suggests that certain types of firms systematically self-select into lobbying.

In order to identify the true effect of lobbying on regulatory outcomes related to occupational safety and health, I must account for non-random selection into lobbying. In my empirical analysis, I do this using the framework of endogenous switching models—a variant of Heckman's classic self-selection approach. These models are appropriate for uncensored

11. For instance, by creating favorable new laws, amending existing regulations, or supporting specific nominees to federal regulatory posts (e.g., commissioners of the Federal Mine Safety and Health Review Commission, who oversee contests of civil fines imposed on mine operators by MSHA).

data in which outcomes are observed for firms that select both *into* lobbying and *out of* lobbying (see Roy 1951; Borjas 1987; Maddala 1983; Autor 2009; Heckman and Vytlacil 2007). I use an instrumental variable approach to correct for unobserved factors that may drive a firm's lobbying decision and estimate a selection-corrected model of regulatory outcomes as a function of lobbying and other controls.

3 What drives the decision to lobby

Powell and Grimmer (2016), Fouirnaies and Hall (2018), and Bertrand et al. (2020) have shown that there exists a causal link between committee assignments in the U.S. Congress and firms' political contribution choices. Specifically, firms and interest groups strategically direct their political donations toward powerful legislators that serve on committees that oversee their industries, rather than toward legislators that display certain ideology, or along party lines. Thus, congressional representatives that serve on the agriculture committee can expect to benefit from targeted political donations from agricultural firms, whereas legislators serving on the education and labor committee can expect donations from teachers' unions, labor unions, firms operating in occupationally hazardous industries, and so on (Shepsle 1978; Shepsle and Weingast 1987; Frisch and Kelly 2006; Bertrand et al. 2020). Committee members are in essence viewed by interest groups as a captive audience, which increases these groups' propensity for political spending.

Powell and Grimmer (2016) and Fouirnaies and Hall (2018) examine a direct causal link with PAC and campaign contributions, whereas Bertrand et al. (2020) focus on charitable donations. I propose that the same link extends to lobbying. Thus, I expect that having a state representative on a congressional agriculture committee increases an ag firm's propensity to lobby on agricultural issues. Similarly, having a representative on the labor committee would increase the propensity of a firm concerned about labor issues, such as safety and health regulation, to lobby on these issues.

To test this hypothesis, I link congressional committee assignments to firm-level data on lobbying. I focus on lobbying issues within the jurisdiction of the House and Senate committees on Education and Labor.

Previous studies have found that, aside from having political connections, firms that lobby tend to be larger, have more assets, and operate in heavily regulated industries (Faith, Leavens, and Tollison 1982; Langbein 1986; Wright 1990; Humphries 1991; Austen-Smith 1995; Hillman and Hitt 1999; Schuler, Rehbein, and Cramer 2002; Tripathi, Ansolabehere, and Snyder Jr 2002; Duso 2005; Figueiredo and Silverman 2006; Drope and Hansen 2006; Kim 2008; Hill et al. 2013; Borghesi and Chang 2015; Akey 2015). Because my empirical

analysis is based on federal regulatory data from the mining industry, I do not need to control for variation in regulatory exposure, as all mining firms face the same set of federal regulations. However, firms in my sample exhibit variation in their size and asset base. Large firms may operate under different constraints than small firms, which may affect their propensity to remain in compliance and therefore to lobby. I use a Probit model to estimate selection into lobbying, regressing a lobbying indicator on an indicator for committee representation (my instrumental variable), and controlling for committee chairmanship, size of the firm, and a firm fixed effect.

My lobbying variable identifies firms with lobbying reports that indicate 'labor' as the general topic and that reference mine safety and health acts, either by name or bill number, as the specific issue being lobbied. For example, a firm might lobby about "Federal Mine Safety and Health Act of 2006", "S2231", or "HR4695" during the 109th congress.

Committee representation is an indicator that takes on the value of 1 if at least one congressman from a mining firm's state serves on a congressional committee that oversees occupational safety and health legislation. I also control for whether the representative on the committee is the committee chair, since chairmen have been found to be exceptionally powerful legislators (Berry and Fowler 2018).

To control for the size of the firm, I construct a proxy using mine output and worker hours because most U.S. mining companies are small private establishments and their financial information is not publicly available. The size of a coal mining firm is the aggregate coal production across all coal mines owned by the firm. The size of a metal or non-metal mining firm is the sum of all worker hours across the firm's mines.

I estimate the selection equation for the House and Senate Education and Labor committees, which oversee occupational safety and health issues. I also conduct placebo tests using other congressional committees that have no jurisdiction over occupational safety and health. Having a representative on these latter committees should not affect a firm's propensity to lobby for safety and health issues. Table (2) reports results of the selection model. The outcome is the propensity to lobby for mining safety and health issues. The first column lists the committee on which a firm is represented and numerical columns display the estimated marginal effects and standard errors with firm-level clustering. The first listed committee is the treatment committee, while all subsequent committees are the placebo committees.

Firms represented on the House and Senate labor committees are statistically more likely to lobby on safety and health legislation. The estimated marginal effect of representation is 0.021—a statistically significant increase of about 14.5 percent from the mean lobbying propensity of 0.145. Having a representative on any other congressional committee does not raise a firm's propensity to lobby for safety and health issues, and in some cases even lowers

it. Representation on the judiciary committee appears to be positively correlated with lobbying propensity, though this correlation is only marginally significant. One possible story is that the judges that resolve disputes over mining safety and health citations and fines are overseen by politically appointed commissioners who are confirmed by the Senate judiciary committee. It is a weaker link than that between mining firms and the labor committees' direct jurisdiction over safety and health issues, but it could explain the marginally significant coefficient for judiciary committees. These results suggest that representation raises the payoff to firms from targeted lobbying (i.e., lobbying on issues under the committee's control) and thus provide support for using congressional representation as an instrument for lobbying.

Note that having a representative on the relevant committee is also likely to affect outcomes other than lobbying decisions. For example, as Powell and Grimmer (2016) and Fouirnaies and Hall (2018) show, representation increases the likelihood of making political contributions. So it's worth emphasizing again that I use lobbying as a proxy for political influence more generally.

One might be concerned that representation might also directly affect regulatory outcomes, which would invalidate its use as an instrument. It is well known that Congress members often contact executive agencies on behalf of their constituents, so having an in-state member on the committee could lead the committee member to intervene in the regulatory process directly, influencing, for instance, inspection outcomes. However, members of Congress would have no incentive to stage such interventions if not for the demands of the constituents. Thus, intervention would be unlikely in absence of lobbying for such an intervention.

One may still be concerned about endogeneity of committee assignment in broader political influence terms. For instance, firms might spend lavishly to get their candidate (re)elected with an implicit understanding that he or she will get on the labor committee and legislate specific benefits for these firms. In that case committee representation would be endogenous to the outcomes that I observe. I address this concern in two ways. First, instead of looking at the effect of committee membership on lobbying, I look at the effect of joining and leaving the committee. Joining and leaving are more plausibly exogenous than committee membership itself and, in the spirit of Powell and Grimmer (2016), Bertrand et al. (2020), and Fouirnaies and Hall (2018), I use these events to evaluate how they affect firms' lobbying propensity and the amount of money that firms spend on lobbying activities. Results, reported in full in appendix A, show that a firm may be more likely to lobby after its congressional representative joins the Education and Labor committee, and that the firm's lobbying spending is significantly lower both before its in-state congressman joins the Education and

Table 2: Effect of committee representation on safety and health lobbying

committee	(1)	(2)	(3)	(4)
education & labor	0.020	0.019	0.021	0.021
	(0.008)	(0.007)	(0.009)	(0.010)
agriculture	−0.010	−0.011	−0.011	−0.009
	(0.008)	(0.008)	(0.008)	(0.007)
appropriations	−0.035	−0.037	−0.038	−0.034
	(0.015)	(0.015)	(0.016)	(0.015)
armed services	−0.018	−0.017	−0.020	−0.016
	(0.008)	(0.008)	(0.009)	(0.008)
banking	−0.019	−0.018	−0.020	−0.013
	(0.020)	(0.020)	(0.020)	(0.023)
budget	−0.011	−0.011	−0.010	−0.011
	(0.014)	(0.014)	(0.014)	(0.014)
commerce & science	0.004	0.004	0.002	0.005
	(0.019)	(0.020)	(0.020)	(0.020)
ethics	−0.013	−0.013	−0.013	−0.016
	(0.015)	(0.015)	(0.015)	(0.014)
foreign affairs	−0.004	−0.005	−0.003	−0.004
	(0.008)	(0.008)	(0.008)	(0.008)
intelligence	0.008	0.009	0.006	0.009
	(0.009)	(0.009)	(0.009)	(0.010)
judiciary	0.010	0.010	0.009	0.013
	(0.006)	(0.006)	(0.006)	(0.007)
public works	−0.023	−0.022	−0.023	−0.022
	(0.014)	(0.014)	(0.014)	(0.013)
natural resources	−0.000	0.000	0.001	−0.002
	(0.009)	(0.009)	(0.009)	(0.010)
rules	−0.021	−0.021	−0.022	−0.022
	(0.012)	(0.012)	(0.012)	(0.013)
small business	−0.005	−0.006	−0.004	−0.005
	(0.009)	(0.008)	(0.008)	(0.008)
veterans affairs	−0.017	−0.016	−0.018	−0.015
	(0.008)	(0.008)	(0.009)	(0.008)
N	8318	8318	8318	8162

Note: the table reports the marginal effect of being represented on the indicated committee on a firm's propensity to lobby for safety and health issues. House and Senate committees are matched based on their issue jurisdictions. The numbers reported are marginal effects from probit estimation and standard errors (in parentheses). Standard errors are clustered at the firm level. Numerical columns control for different measures of firm size: (1) log man-hours of work, (2) log coal production, (3) both, and (4) a combination of production for coal firms and man-hours for non-coal firms. All specifications control for whether state representative is committee chair and include firm-level fixed effects.

Labor committee, and after the congressman leaves the committee. This is consistent with the evidence on lobbying propensity presented above. However, because the bulk of this analysis utilizes spending data, and because spending data are aggregated across all issues being lobbied, I cannot cleanly disentangle the effect of joining and leaving the Education and Labor committee on labor lobbying specifically, and even more narrowly, on safety and health lobbying, as I do above. Additionally, because my main interest is in the extensive margin of lobbying effects, a propensity-based instrument will better reflect the variation in lobbying that I am after.

The second thing I do is look at data on committee requests and assignments to shed some light on whether or not self-selection is a relevant concern in the committee assignment process (Frisch and Kelly 2008; Nelson 1992; Stewart and Woon 2017). The full details of this analysis are presented in appendix B. To summarize, between 1947 and 1995 (the period for which request data are available), 48.3 percent of first-term House members and 39.4 percent of returning incumbents were assigned to their top committee choice. So among all committees, the majority of House members did not get their preferred assignment. The Education and Labor committee appeared as a top choice on only 65 preference lists (2.6 percent) over these 50 years. By contrast, 412 members requested Appropriations as their top committee choice, and 319 requested Energy and Commerce. Of the 421 members who served on the Education and Labor committee between 1947 and 1995, only 37 (or 8.8 percent) self-selected onto it (i.e. they were assigned to the committee after requesting it as their top choice). By contrast, 33.6 percent self-selected onto Appropriations and 15.2 percent onto Energy and Commerce. Looking more closely at committee assignment data for both chambers of Congress (1947 to 2017), I find that House and Senate Education and Labor committees had more freshman members and higher turnover rates, and that their members had lower congressional tenure when compared to members of highly desired "influence" committees.

These statistics suggest that there has been a historic lack of interest among congressmen in serving on the Education and Labor committee. Or, alternatively, that congressmen appear to have a strong preference to find themselves assigned to committees other than Ed and Labor. These results help to dispel concerns about endogenous self-selection onto the Education and Labor committee (though not necessarily other committees in Congress) and support using representation on this committee as a valid exogenous instrument for lobbying propensity.

4 Regulatory process and influence mechanisms

In the U.S., all coal, metal, and non-metal mines are regulated under the Federal Mine Safety and Health Act of 1977.[12] Under the act, all surface and underground mines are subject to mandatory periodic safety and health inspections by MSHA. First, MSHA inspectors visit mines and document all observed violations of the law in a written citation report. Inspectors then submit their reports to MSHA's assessments office, which determines the appropriate civil financial penalty for each detected violation based on a set of written guidelines that includes several measures of violation severity, the violator's track record, and an inflation adjustment. The assessments office also tracks collection and litigation of fines, and identifies and monitors repeat violators.[13] Existence of formal guidelines for determining fines means that fines are largely formulaic, rather than discretionary, so firms seeking to reduce their noncompliance fines may try to affect the information that makes it into the violation report—that is, to influence inspectors. Inspectors' mine assignments, however, are rotated each year, which reduces opportunities for undue influence. So variability in enforcement across mines is likely to stem from pressure by regulatory officials, not mine owners. Weingast and Moran (1983) showed that Congress exerts significant influence on regulatory agencies. Members of congress are frequently contacted by their constituents with requests, complaints, etc., and congressmen routinely pass these on to the heads of regulatory agencies. In the Upper Big Branch case, the investigative report noted:

> "A mine operator who is unhappy with an inspector's actions has only to pick up the phone and call any one of a number of state officials or the governor's office to issue his complaint. ... [and] the perception that ... an intervention is possible can create a chilling effect for inspectors trying to do their jobs." (McAteer et al. 2011, p.85)

The message from congressmen can be general or specific, depending on whether complaints come from the constituency at large or from, say, high-value political donors who happen to own mines. Again, from the Upper Big Branch investigative report:

> "Many politicians were afraid to challenge Massey's supremacy because ... CEO Don Blankenship was willing to spend vast amounts of money to influence elections." (p.101)

12. Mines are regulated at both federal and state level. Here I consider only federal regulations. This allows me to evaluate a single regulatory standard (i.e., the uniform regulatory bar that applies to all states) in context of federal lobbying efforts, avoiding issues of data access for state-level lobbying activity.

13. Repeat violators are inspected with greater frequency and scrutiny.

Thus, firms that send lobbyists to congressmen with specific requests can influence regulatory enforcement outcomes at their mines even if they cannot influence the regulator directly.

Once a firm is notified of its violation and the assessed fine, it has an option of contesting the citation, the fine, or both. Firms that choose to contest their regulatory infractions do so before an independent Federal Mine Safety and Health Review Commission, set up precisely for the purpose of adjudicating these types of disputes. Fines that are not contested become final judgments. Fines that are contested before the commission go through a civil process, with the violator and an MSHA representative submitting evidence about a violation to one of 16 Administrative Law Judges (ALJs) employed by the Commission. All cases brought before the Commission are decided by judges at bench trials (i.e., without a jury) and legal representation is not required—the only requirement is that the two parties to the contest (the violator and MSHA) submit evidence related to the violation being contested. The 16 judges are appointed based on a series of merit exams and, by design, enjoy complete immunity from any liability that may stem from their judicial acts. Because of this immunity, the judges are believed to be fully insulated from political influence, so in theory the process of contesting civil fines should not favor more politically influential mining companies. Additionally, judges are appointed to the ALJ corps for life, so the type of judge who would self-select into an ALJ post is likely to be less driven by post-appointment opportunities in the private sector (i.e., revolving door options).[14] It seems unlikely therefore that a mining firm would be able to exert any direct influence over the Commission's judges. However, contested cases require an MSHA representative to submit the regulator's side of the story, and a regulator under pressure from congressmen may tell his representatives to go easy on their testimony.

Once an ALJ issues a decision on a contested case, the violator can appeal the ALJ's decision. At this point, the Commission's five commissioners may choose to review the case and issue their own ruling.[15]. Because the commissioners are appointed by the President of the United States and confirmed by the U.S. Senate, they probably have a significant amount of contact with politicians and lobbyists. So the potential for political influence may be significant at this stage of the appeals process. In reality, commissioners granted appellate review to only 0.2 percent of all mining violations contested between 2000 and 2015, so they are not obviously adjudicating in favor of violators. Nevertheless, commissioners responsive to the interests of the legislature that employed them may well set a tone or expectations of leniency for the regulatory decisions they oversee (Weingast and Moran 1983), benefitting

14. As of June 2018, over half of all federal ALJs had been in their positions for over 15 years (U.S. Office of Personnel Management 2018).

15. At least two commissioners must agree to review the case in order for the appellate review to proceed.

violators in the process. Notably, in West Virginia, then-CEO of Massey Energy, Don Blankenship, spent lavishly to get one of his friends—"a relatively obscure judge"—elected to the state Supreme Court and arbitrate in Blankenship's favor. Though such direct influence by a firm over the courts is unlikely at the Federal Level, this example validates the idea that political influence can extend even to judicial posts that are supposed to be isolated from such influence.

Once a judgment becomes final, the firm is expected to remedy the violation and pay all assessed noncompliance fines in a timely manner. All fine revenues collected by MSHA go into the general federal government budget, so there is no particular incentive for MSHA to enforce payment.[16] Not surprisingly, in 2014, an independent investigation revealed that almost $70 million in fines for safety and health infractions in the U.S. mining industry were delinquent between 1994 and 2014 (Berkes, Boiko-Weyrauch, and Benincasa 2014). Anecdotal evidence also showed that some mine owners were in no rush to settle their financial obligations to MSHA and accumulated larger delinquent balances over time (Smith et al. 2014; Kanik and Patterson 2019). By the time of the fatal explosion, Upper Big Branch had accumulated over one million dollars in penalties from MSHA. There does not appear to be a significant downside to delinquency because MSHA does not prevent delinquent firms from continuing their operations as long as they have remedied the violations for which they were cited. Thus, some mining firms appear to routinely rely on non-payment as another cost-minimization strategy. It's not obvious *a priori* whether non-payment is a substitute or complement to lobbying, so this becomes an empirical question.

Because the mining safety and health regulatory process described above is rather fragmented, involving different decision makers within and outside of the regulatory agency, I am interested in examining five distinct stages of the process: 1) inspection of mines and 2) issuance of citations (both carried out by inspectors), 3) fine assessment (by MSHA's assessment office), 4) contesting (which involves firms and the review commission), and 5) payment (firms and MSHA or the U.S. Treasury). If lobbying is effective, I expect that when firms engage in lobbying, they will be inspected less frequently, receive fewer citations and lower fines, and get more of their fines reduced through the contest process. I also expect that lobbying may facilitate a more lenient fine repayment timeline (by deflecting the regulator's attention away from the lobbying firms, for example), and thus, when firms lobby, they will pay fewer of their fines and take longer to pay those they do.

16. Fines that become delinquent are referred to the U.S. Department of the Treasury for collection.

5 Lobbying and regulatory outcomes

Data

The data I use for my main empirical analysis come from four sources.[17] Information on the regulatory outcomes of the mining sector comes from MSHA's Open Government Initiative portal. These datasets include characteristics of all coal, metal, and non-metal mines in the U.S., the attributes of entities (firms or individuals) that own and operate them, and the details of mine inspections, violations, noncompliance fines, and contest outcomes. MSHA reports all regulatory outcomes at the citation level, with multiple citations often stemming from a single inspection, and each citation resulting in a fine and, if contested, a contest decision. The industry is dynamic, with mines frequently changing owners and operators. Most mine owners are individuals or small private companies owning and operating a single mine. Others are large companies that own hundreds of mines and outsource the day-to-day activities of operating their mines to mine operators and contractors. I assume (and the data confirms) that it is the mine owners that engage in lobbying activities, and I expect that the benefits of lobbying accrue to them. Thus, I examine regulatory outcomes at the mine owner level.

However, companies in my data sample own mines in multiple states, and the extent to which mining activity is ingrained in a state's economic history and contributes to its budget can vary significantly. This type of historical variation may lead to systematic differences in regulatory scrutiny across states. For example, states with a long history of mining will, on average, have a more experienced set of mine owners and operators. Experience may be correlated with more accountable mining practices or translate into institutional knowledge that may make it easier for some firms to evade certain regulations. Similarly, a state that receives large tax revenues from its mining industry may face different incentives when it comes to enforcing costly regulations compared to a state with modest mining activity and mining-derived tax receipts. To account for this state-level variation, I aggregate regulatory outcomes at the firm-state level. Retaining state-level information also allows me to better account for lobbying incentives, which are driven by state-level political connections.

Information on political committee assignments comes from Charles Stewart's Congressional Data Page (congressional committee assignments). I generate a political connection indicator by matching the states of representatives serving on congressional labor committees with the states in which mining firms own mines. Firms that own mines in states represented on labor committees are considered politically connected.

17. See MSHA data, federal lobbying disclosures, OpenSecrets.org lobbying data, and committee assignments.

Through OpenSecrets.org, I identify which firms lobby for mine safety and health issues in each Congress and cross-check these firms' lobbying activities with federal lobbying disclosures published by the Senate Office of Public Records. These transactional lobbying reports include identifying information of the lobbying entity, the issues for which the lobbyer lobbied, and total amount of money spent on lobbying efforts during the reporting quarter. All companies that spend $3,000 or more on lobbying per calendar quarter are required by federal law to file a quarterly lobbying report. I match identified firms in the lobbying data with mine owners in MSHA data using standardized company name variants.

I aggregate all variables to a quarterly level to match the frequency of lobbying reports, so my unit of observation is a firm-state-quarter. All data span first quarter of 2000 to fourth quarter of 2018. Note that operator of the Upper Big Branch mine, Massey Energy, is not in my empirical sample, so its outcomes are not driving the results.

Impact of lobbying on inspections

All MSHA inspections are carried out by employees of MSHA's local field offices. The Federal Mine Safety and Health Act of 1977 (PL 91-173) requires all underground mines to be inspected at least four times a year, and all surface mines at least twice a year. The act gives the Secretary of Labor discretion to request additional inspections[18] and stipulates escalated schedules for serious violations.[19] There are thus two general categories of inspections: mandatory and discretionary. Mandatory inspections include regular inspections of mines in their entirety (two or four times a year, as above), compliance follow-up inspections, and accident investigations. Discretionary inspections include spot inspections that focus on a particular area of a mine, technical investigations, reporting and record-keeping audits, and others.

I examine the effect of lobbying on mandatory and discretionary inspections separately, since a reduction in mandatory inspections would have more serious implications for social welfare than a reduction in discretionary inspections. I model firms' quarterly mandatory and discretionary inspection counts as in equation 1,

$$Insp_{i,s,t} = \beta_0 + \beta_1 \widehat{L}_{i,t-1} + \beta_2 SZ_{i,s,t} + \beta_3 EV_{i,s,t} + \beta_4 COAL_{i,s,t} + \beta_5 UG_{i,s,t} + \\ + \beta_6 SFTY_{i,s,t} + \beta_7 DIST_{i,s,t} + \beta_8 RT_{i,s,t-1} + \beta_9 MA_t + \beta_{10} LB_t + \beta_{11} EB_t + \gamma_i + \varepsilon_{i,s,t}, \quad (1)$$

18. "[...] based on ... hazards found in mines ... and his experience ... and other health and safety laws".

19. Such as "one spot inspection ... during every five working days at irregular intervals" for mines that release more than a million cubic feet of explosive gases in a 24-hour period and for mines at which death or serious injury occurred as a result of gas explosion.

where i indexes firms (mine owners), s indexes U.S. states, and t indexes time, in calendar quarters. The outcome variable is the total number of mandatory or discretionary inspections carried out across all mines owned by firm i in state s during quarter t. I apply an inverse hyperbolic sine (IHS) transformation to inspection counts to correct for a wide dispersion in inspection frequencies in my sample while simultaneously allowing for zeros.[20] [21]

L is the firm's lobbying choice during the preceding quarter. I lag the lobbying variable by one quarter to ensure that lobbying precedes inspections. Lobbying tends to be a time-sensitive activity that intensifies as a decision on any specific legislative issue nears, and is therefore likely to be more effective over short time periods, so a one-quarter lag is appropriate in this context. I estimate firms' propensity to lobby, rather than their expenditures on lobbying, because I am interested in the extensive margin. That is, whether firms that lobby experience different regulatory outcomes than firms that don't lobby, rather than the extent to which outcomes differ across various levels of lobbying expenditures.

Firm size SZ captures the possibility that large firms operate under different constraints than small firms. For example, large firms may have more mines and so may, by law, be subject to more inspections. Large firms may also have mines that are larger and more complex—mines that have higher production levels and employ more workers may—that may (unintentionally) violate more regulations. For this reason inspectors may choose to focus their efforts on larger and/or more active firms.

EV is an indicator variable for 'excessive violation history', which the regulator takes into account when exercising his discretion in increasing the frequency of inspections. $COAL$ and UG are shares of coal and underground mines in the firm's portfolio, respectively. $SFTY$ is the share of a firm's mines that have a safety committee, which may alert the regulator to safety violations, triggering additional inspections.

$DIST$ is the driving distance, in log-miles, between the mine and the inspection field office to which it is assigned. I include this variable to allow for the possibility that inspectors visit nearby mines more often than remote mines, since it may be more costly to inspect more remote mines. RT is the field office's previous quarter inspection rate. A field office's inspection rate captures unobserved variation across inspection offices that may lead to differences in enforcement levels, as suggested by Magat and Viscusi (1990), Feinstein (1989), Kleit, Pierce, and Hill (1998), and Shimshack and Ward (2005). An increase in the inspection rate can be taken as a signal that a general increase in regulatory activity is taking place—

20. Recall that the law requires all surface mines to be inspected twice a year, so some firms may receive no inspection visits in some quarters.

21. The interpretation of an IHS-transformed variable is similar to that of a logged variable, but the IHS transformation is more flexible and thus superior to a log-transformation (Burbidge, Magee, and Robb 1988; MacKinnon and Magee 1990; Pence 2006)

either because the inspected mines are particularly non-compliant or because the inspection office is more zealous in carrying out its enforcement duties.

MA is an indicator variable for implementation of the MINER Act, which captures the effect of updated legislation that went into effect in 2007 and increased fines for safety violations.[22] LB and EB are indicators for republican control of the legislative and executive EB branches.[23] The strength of regulatory enforcement has been shown to vary with party control, with fewer or laxer regulations ascribed to Republican-controlled legislative and executive branches.

Lastly, I include a firm-level fixed effect γ to absorb systematic variation in compliance across firms. If lobbying is effective, we should see a negative and statistically significant coefficient on lobbying—that is, lower inspection counts during quarters that follow a firm's lobbying activities than quarters that do not follow lobbying activities.

I cluster standard errors at the firm level and estimate the first and second stage equations simultaneously via maximum likelihood. Abridged results displayed in table 14 explain within-firm variation in quarterly inspection counts, averaged across all states in which a firm owns mines.[24]

The first two numerical columns display results for mandatory inspections, and the last two for discretionary inspections. None of the coefficient estimates on the lobbying variable are statistically significant, although OLS and IV coefficients have different signs in both inspection categories.

Results for mandatory inspections show a positive correlation with firm size—with approximately one extra quarterly inspection being associated with an extra one million tons of coal production or one million extra hours worked—and a negative correlation with implementation of the MINER Act. The latter finding is consistent with the idea that increasing the size of the punishment allows the regulator to reduce policing efforts without impacting the damages sustained from violations (Becker 1968). Mandatory inspections are also negatively correlated with republican control of congress, but this result is almost entirely offset by a positive correlation with a republican presidency.

Results for discretionary inspections show a significant increase in discretionary inspections for coal mines. Firms that operate only coal mines get almost four times as many discretionary inspections per quarter as firms that operate only metal or non-metal mines. A field office's past inspection rate is also positively correlated with discretionary (but not

22. The MINER Act was prompted by three fatal accidents in 2006 at mines in West Virginia and Kentucky in which 21 miners died. The legislation included the most significant changes to mining safety since the 1970s and, among other provisions, raised civil and criminal penalties for safety violations.

23. LB is set to zero if control of House and Senate is split

24. See Appendix C for all unabridged results tables.

Table 3: Average treatment effect of lobbying on inspections

	Mandatory inspections		Discretionary inspections	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: inspections				
lobbied mine act$_{t-1}$	0.026	−0.009	−0.069	0.374
	(0.034)	(0.335)	(0.089)	(3.762)
firm size	0.127	0.127	0.020	0.016
	(0.064)	(0.064)	(0.085)	(0.121)
excessive violation history	−0.240	−0.241	0.360	0.372
	(0.512)	(0.509)	(0.825)	(0.883)
share of coal mines	0.251	0.251	1.333	1.317
	(0.349)	(0.348)	(0.397)	(0.437)
share underground	−0.041	−0.041	0.197	0.204
	(0.260)	(0.259)	(0.273)	(0.282)
share of mines w/safety committee	−0.225	−0.225	−0.038	−0.046
	(0.230)	(0.228)	(0.262)	(0.196)
distance from inspection office	0.091	0.091	0.056	0.057
	(0.038)	(0.038)	(0.050)	(0.051)
office inspection rate$_{t-1}$	0.153	0.153	0.828	0.833
	(0.146)	(0.146)	(0.261)	(0.213)
mean outcome	1.968		1.342	
Adjusted R^2	0.279		0.577	
Observations	5661	5661	5661	5661

Note: outcome variables are inverse hyperbolic sine (IHS) transformations of the number of mandatory and discretionary inspections conducted at a firm's mines in a given state during a given quarter. Mandatory inspections are regular inspections, compliance inspections, and accident investigations. Discretionary inspections are all other inspections and include, for example, spot inspections and technical investigations. All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors in parentheses are clustered at the firm-level.

mandatory) inspections, which means that more active inspection offices have a greater focus on performing discretionary inspections.

Impact of lobbying on citations

Next, I examine whether lobbying has any effect on citations inspectors issue. During a site visit, an inspector observes the working conditions at a mine and issues a citation for each violation of safety and health regulations he or she detects. A citation is a document that describes in detail the violation that occurred. For violations that pose immediate threat to worker safety or health, inspectors can issue an order for the mine to cease operations until the violation is resolved.

I model two outcomes: (1) the total number of citations a firm accumulates and (2) a citation rate–the number of citations it receives per inspection. These outcomes are a

function of the firm's lobbying decision L; the strictness of the regulator, proxied by the field office's quarterly inspection rate RT; the average complexity of a firm's mining operations, proxied by the number of hours an inspector spends on-site $SITE$, the share of underground UG mines in the firm's portfolio, and the average size of a firm's mines SZ; the presence of a safety committee $SFTY$; indicators for the MINER Act MA, and republican-controlled legislative LB and executive EB branches, and firm fixed effects γ.

$$Cit_{i,s,t} = \delta_0 + \delta_1 \widehat{L}_{i,t-1} + \delta_2 RT_{i,s,t} + \delta_3 SITE_{i,s,t} + \delta_4 UG_{i,s,t} + \\ + \delta_5 SZ_{i,s,t} + \delta_6 SFTY_t + \delta_7 MA_t + \delta_8 LB_t + \delta_9 EB_t + \gamma_i + \varepsilon_{i,s,t} \quad (2)$$

A single inspection can result in zero or multiple citations, depending on whether and how many violations are detected. This leads to a wide dispersion among firm-level citation counts, as well as a clustering on zero, so I apply an inverse hyperbolic sine (IHS) transformation to both outcome variables.

I include the field office's inspection rate because more active inspection offices may be better at detecting safety and health violations and so may issue more citations. A longer on-site inspection visit may signal greater mine complexity, which may lead to more violations. Large and underground mines may be more complex and so may be more prone to additional safety violations. An in-house safety committee, designed to improve a mine's safety record, may proactively report a firm's infractions to the regulator, leading to more citations. MINER Act implementation may either increase compliance through larger punishment or have no effect on violations if higher fines are accompanied by lower policing, as suggested by results on inspection counts. Finally, the stringency of enforcement may differ depending on which party controls the legislative and executive branches, as discussed above.

Results are presented in Table 15. The outcome variable in columns (1) and (2) is the IHS-transformed total citation count, while in columns (3) and (4) it is the IHS-transformed citation rate (number of citations received per inspection). The odd-numbered columns report OLS results, while even-numbered columns display estimates of IV models.

Results show a null treatment effect of lobbying on the total number of citations firms receive (columns 1 and 2), but a negative treatment effect on citation rates once selection is taken into account (columns 3 and 4). The OLS coefficient on lobbying in the citation rate model (column 3) is upward-biased compared to the instrumented coefficient. This would occur if unobservables that raised citation rates also raised lobbying propensity. For example, suppose firms that have higher productivity also have overworked miners. Since higher productivity leads to higher revenues, productivity would be positively correlated

Table 4: Average treatment effect of lobbying on citations

	Total citations		Citations per inspection	
	(1) OLS	(2) IV	(3) OLS	(4) IV
second stage: citations				
lobbied mine act$_{t-1}$	−0.037	−0.407	0.001	−0.337
	(0.060)	(1.049)	(0.048)	(0.164)
office inspection rate	0.930	0.930	−0.348	−0.350
	(0.314)	(0.314)	(0.143)	(0.143)
mean onsite hours	0.579	0.581	0.804	0.807
	(0.066)	(0.068)	(0.042)	(0.042)
share underground	0.058	0.060	−0.351	−0.349
	(0.315)	(0.311)	(0.151)	(0.149)
mine size	0.286	0.286	0.051	0.052
	(0.061)	(0.060)	(0.025)	(0.024)
share of mines with safety committee	−0.018	−0.020	−0.014	−0.013
	(0.312)	(0.305)	(0.129)	(0.127)
mean outcome	3.397		1.992	
Adjusted R^2	0.581		0.638	
Observations	5780	5780	5780	5780

Note: outcome variables are the inverse hyperbolic sine of the total number of citations a firm receives (columns 1 and 2) and the IHS transformation of the firm's citation rate (citations per inspection, columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

with lobbying. However, exhausted miners are more likely to make mistakes on the job, increasing violations. Productivity would then be positively correlated with lobbying and also positively correlated with citation rates, and a regression that did not account for selection into lobbying would produce a positive correlation between lobbying and citation rates.

Instrumented results in column 4 show that when firms lobby, they receive 29 percent fewer citations per inspection, compared to when they do not lobby. This translates to an average reduction from seven to five citations per inspection.

Several interesting insights also come from the other explanatory variables. Total time spent on-site by an inspector appears to be the largest driver of citation activity. The longer an inspector spends on-site, the higher the counts and rates of citations, which is not surprising considering that, for a given mine size, longer inspections are likely to be more thorough. Higher field office activity is correlated with more citations, but lower citation rates. This could mean two things. The first is that if mines are inspected more frequently, violations are detected as they occur, and so fewer citations are issued at each inspection. The second explanation comes from the result that more active inspection offices perform a greater number of discretionary inspections (see table 14 above), which usually focus on

a specific area of a mine, rather than on its entirety. This limits the number of potential violations that could be identified per inspection, resulting in a lower citation rate.

Larger mines are cited more, potentially due to their greater operational complexity. Underground mines, however, have lower citation rates, perhaps because they are inspected more frequently.[25]

The post-MINER Act period is associated with lower total citation counts and citation rates, which is consistent with a boost in incentives to comply that the Act aimed to provide by increasing non-compliance fines. Lastly, the combined effect of republican control of the legislative and executive branches is of fewer total citations (a reduction of about 34 percent). This confirms the general perception that the GOP is more likely to take a pro-business stance in its regulatory activities.

Impact of lobbying on noncompliance fines

Inspectors submit their written citations to MSHA's office of assessments, where staff determine appropriate fines based on the details included in citation reports. I look at MSHA's original fine assessment and the final amount due after any relevant discounts or revisions. The final fine often differs from the proposed amount for one of two reasons: either (1) the regulator reduces the proposed fine because the violator made a good faith effort to immediately resolve the detected violation (typically while the inspector is still on-site), or (2) the violator has contested a fine and received a reduction, dismissal, or—in rare cases—an increase in the originally proposed amount.

The assessments office sets fines based on five factors: "the operator's history of previous violations, the appropriateness of such penalty to the size of the business of the operator charged, whether the operator was negligent, the gravity of the violation, and the demonstrated good faith of the operator charged in attempting to achieve rapid compliance after notification of a violation" (PL 91-173, 2010, Sec 105(B)). Firms with favorable evaluations across these factors receive lower fines.[26] The regulator will also take into account the effect that a fine might have on the firm's ability to continue in business, if the firm presents evidence of hardship, so there could potentially be a great deal of discretion and deviation from the formula.

Thus, I model fines as a function of lobbying choices L; the size of the violator SZ and the complexity of its mines, captured by the share of coal $COAL$ and underground UG mines,

25. Recall that underground mines are subject to twice as many regular inspections as surface mines.

26. MSHA provides the following example for a demonstrated good faith adjustment: an inspector observes drivers of heavy machinery at a mine not wearing seat belts, as required. The inspector mentions this violation to the operator, who immediately tells drivers to put on their seat belts.

as well as the mean number of hours an inspector spends on-site $SITE$; the firm's violation history, proxied by an 'excessive violator' designation EV; the gravity of present violations, as assessed by the inspector, captured by the average negligence level NEG detected at the firm's mines, the share of violations classified as 'significant and substantial' $S\&S$, the average likelihood that the violation leads to an accident $ACDNT$, the average level of injury that would result if an accident were to occur INJ, and the number of people who would be affected by the accident $PERS$. I also control for the share of all citations in which the firm "demonstrated good faith in attempting to achieve rapid compliance" GF and, in the model for final amount due, the share of all quarterly citations that the firm contests, C, since contests can significantly reduce non-compliance fines. As in the previous models, I also include indicators for implementation of the MINER Act MA, and republican control of legislative LB and executive EB branches, as well as firm fixed effects γ.

$$\begin{aligned} Fine_{i,s,t} = \theta_0 + \theta_1 \widehat{L}_{i,t-1} + \theta_2 SZ_{i,s,t} + \theta_3 COAL_{i,s,t} + +\theta_2 UG_{i,s,t} + \theta_2 SITE_{i,s,t} + \\ + \theta_4 EV_{i,s,t} + \theta_5 NEG_{i,s,t} + \theta_6 S\&S_{i,s,t} + \theta_7 ACDNT_{i,s,t} + \theta_8 INJ_{i,s,t} + \theta_9 PERS_{i,s,t} + \\ + \theta_{10} GF_{i,s,t} + \theta_2 C_{i,s,t} + \theta_{11} MA_t + \theta_{12} LB_t + \theta_{13} EB_t + \gamma_i + \varepsilon_{i,s,t} \quad (3) \end{aligned}$$

Note that one might be concerned about potential endogeneity of the 'excessive violation history' indicator. Since this variable is likely to affect a firm's lobbying choice, including it in the model will bias the results. Removing this variable from the regression does not change the results.

I report results in table (16). The first two numerical columns report results of OLS and IV specification for proposed fines and the last two columns present results for the final amount due. Lobbying seems to have no statistical effect on fine levels, but the other explanatory variables present some interesting evidence. Primarily, the results in table (16) point to a general increase in regulatory stringency and the use of dynamic enforcement for particularly bad violations or violators, which has been found to be an effective strategy for increasing compliance (see Blundell, Gowrisankaran, and Langer (2020) for an analysis of EPA's dynamic enforcement of polluters). The three main drivers of high fines are implementation of the MINER Act, a 'significant & substantial' designation for the violation, and an 'excessive violation history' designation of the violator. The MINER Act, implemented in 2007, raised the stringency of safety and health regulations by increasing fines for all violations. After the Act's implementation the average non-compliance fine approximately doubled (from around \$500-550 to \$1,100-1,300). In addition to this regulatory update, MSHA implements increasingly costly penalties for more serious infractions. For violations flagged as 'significant & substantial', the average fine increased 6 to 7 times (to \$3,100-3,800).

Table 5: Average treatment effect of lobbying on noncompliance fines

	Proposed fine		Amount due	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: fines				
lobbied mine act$_{t-1}$	−0.017	0.637	0.010	0.516
	(0.048)	(0.447)	(0.035)	(0.504)
violator size	0.043	0.043	0.036	0.036
	(0.004)	(0.004)	(0.004)	(0.004)
share of coal mines	0.183	0.187	0.135	0.141
	(0.265)	(0.253)	(0.239)	(0.230)
share underground	−0.131	−0.115	−0.105	−0.093
	(0.090)	(0.087)	(0.073)	(0.071)
mean onsite hours	0.115	0.114	0.114	0.112
	(0.026)	(0.025)	(0.022)	(0.021)
excessive violation history	4.161	4.128	3.740	3.740
	(0.635)	(0.579)	(0.355)	(0.352)
negligence	0.586	0.605	0.586	0.598
	(0.111)	(0.116)	(0.097)	(0.102)
share s&s violations	1.971	1.939	1.844	1.821
	(0.072)	(0.084)	(0.069)	(0.076)
accident likelihood	−0.246	−0.238	−0.202	−0.197
	(0.034)	(0.038)	(0.030)	(0.032)
potential injury	0.308	0.307	0.281	0.281
	(0.038)	(0.038)	(0.035)	(0.034)
persons affected	0.317	0.327	0.208	0.213
	(0.097)	(0.101)	(0.083)	(0.087)
good faith	−1.317	−1.323	−1.019	−1.029
	(0.196)	(0.207)	(0.208)	(0.220)
share of citations contested			0.480	0.487
			(0.124)	(0.128)
mean outcome	6.306		6.220	
Adjusted R^2	0.565		0.580	
Observations	5780	5780	5780	5780

Note: outcome variable is the average IHS-transformed fine assessed by MSHA per citation (columns 1 and 2) and the average IHS-transformation final fine amount (columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Finally, a violator with excessive violation history (a truly bad type) saw the average fine multiply 40 to 60 times (to $21,000-34,000).

The main driver of lower fines is the 'good faith' indicator, which is associated with a 64-73 percent reduction in the average fine (from the $500-550 range to $150-180). Exhibiting good faith in correcting a violation is one of the two ways in which a firm can get a lower fine; the other way being a formal administrative contest. A 'good faith' reduction is granted by the regulator (MSHA), while contests are reviewed and adjudicated by the Federal Mine Safety and Health Review Commission (henceforth, the Commission)—an independent panel of

judges that reviews citations and fines that firms contest. To better understand what drives fine reductions, I look at the effect of lobbying on the share of fines that are reduced and on the average size of the reduction.

Impact of lobbying on fine reductions

I look at reductions of contested and uncontested fines separately to differentiate between routine reductions and reductions that result as an outcome of a formal contest process. This distinction is important to make because routine reductions granted by MSHA do not require any action on the part of the violator, while contested reductions involve a formal civil process and submission of evidence by both the violator and MSHA.

I model reductions as a function of firms' lobbying choices L; firm's operational complexity, represented by the share of coal $COAL$ and underground UG mines in a firm's portfolio; the average negligence level of the cited violations NEG; the average gravity of citations, represented by the mean number of penalty points per violation PTS; the share of violations in which the firm showed 'good faith' in restoring compliance GF; the share of all citations that a firm contests C, to account for the possibility that firms become better at contesting with more experience; and the share of the firm's contests that are reviewed by the Commission's Chief ALJ $CAJL$. The Chief ALJ typically has the longest tenure at the Commission[27] and is responsible for overseeing the other ALJs and the proceedings of the Commission in general. This responsibility suggests that a Chief ALJ may have a stricter adjudication doctrine than a regular ALJ. However, CALJs also have adjudicative responsibilities, and the Commission's CALJ has reviewed the largest number of contested cases over the time period I observe. A CALJ's high case load may result in a routine reduction or upholding of fines. I also include indicators for the MINER Act and republican control of legislative and executive branches of government, as well as a firm fixed effect γ.

$$\begin{aligned} Reductions_{i,s,t} = \alpha_0 + \alpha_1 \widehat{L}_{i,t-1} + \alpha_2 COAL_{i,s,t} + \alpha_3 UG_{i,s,t} + \alpha_4 NEG_{i,s,t} + \\ + \alpha_5 PTS_{i,s,t} + \alpha_6 GF_{i,s,t} + \alpha_7 C_{i,s,t} + \alpha_8 CALJ_{i,s,t} + \alpha_9 MA_t + \alpha_1 0 LB_t + \alpha_1 1 EB_t + \\ + \gamma_i + \varepsilon_{i,s,t}, \quad (4) \end{aligned}$$

Table (17) shows the average treatment effect of lobbying on the share of fines that end up being reduced. Columns 1 and 2 show the effect on uncontested fines, and columns 3 and 4 show the results for contested fines.

27. The Commission's, Chief ALJ, Robert J. Lesnick, became an ALJ in 1994 and the Commission's Chief ALJ in 2003. He was replaced as Chief ALJ on September 30, 2019.

Table 6: Average treatment effect of lobbying on the share of fines reduced

	Uncontested fines		Contested fines	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: share of fines reduced				
lobbied mine act$_{t-1}$	0.016	0.080	−0.014	−0.053
	(0.008)	(0.024)	(0.005)	(0.024)
share of coal mines	0.018	0.018	−0.001	−0.001
	(0.008)	(0.007)	(0.014)	(0.014)
share underground	0.003	0.005	0.003	0.002
	(0.007)	(0.007)	(0.007)	(0.007)
negligence	−0.022	−0.021	0.019	0.018
	(0.008)	(0.008)	(0.024)	(0.024)
penalty points	0.036	0.035	0.082	0.082
	(0.008)	(0.007)	(0.023)	(0.022)
good faith	−0.112	−0.106	0.021	0.019
	(0.039)	(0.036)	(0.042)	(0.041)
share of citations contested			0.351	0.356
			(0.043)	(0.046)
share reviewed by CALJ			−0.013	−0.013
			(0.003)	(0.003)
mean outcome	0.023		0.048	
Adjusted R^2	0.168		0.581	
Observations	5780	5780	2338	2338

Note: outcome variables are the share of a firm's uncontested quarterly fines that are reduced (columns 1 and 2), and the share of contested fines reduced (columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

OLS results suggest that lobbying has a marginally positive effect on reductions of uncontested fines (routine reductions) and a negative effect on reductions of contested fines. Instrumented results show a stronger positive effect for uncontested fines and a negative effect for contested fines. When a firm lobbies, its average share of reduced fines increases from 2.3 percent to over 10 percent: a four-fold increase.

Among contested fines, however, lobbying appears to be negatively correlated with the share of fines reduced. The main driver of more reductions is contesting activity. A firm that contests none of its fines would obtain reductions for only about five percent of all its non-compliance fines, while a firm that contests all of its fines would get nearly 40 percent of its fines reduced.

The effect of lobbying on the size of the reduction is shown in table (18). Lobbying is associated with a higher average fine reduction for both contested and uncontested fines in instrumented regressions, but not in OLS regressions. OLS coefficients on lobbying are only marginally significant and downwardly biased compared to the instrumented coefficients.

The downward bias in OLS suggests that unobservable factors that lead to larger fine reductions are negatively correlated with unobservables that lead to a higher lobbying propensity. For instance, suppose that certain financial constraints lead firms to reduce investment in mining safety, which in turn leads to higher fines. Suppose also that at the adjudication stage, judges may be willing to issue larger reductions for fines that would otherwise push a firm into financial distress or bankruptcy. So the more financially troubled a firm is, the larger the fine reduction. Since financially constrained firms are less likely to lobby, lobbying will be negatively correlated with the size of fine reductions. In an OLS model, this relationship would cause the effect of lobbying on the size of fine reductions to be downward biased.

Let's now focus on instrumented results. Among uncontested fines, lobbying is correlated with a 5.5 percentage point increase in the size of the fine reduction (from 1.2 percent to 6.7 percent)—an economically modest, but statistically significant effect. Among contested fines, however, lobbying is correlated with a 33.7 percentage point increase in the size of the fine reduction, bringing the average contested reduction for lobbyers from 28 to 61 percent. Together, the results in tables (17) and (18) suggest that contesting and lobbying are complementary strategies, with the former increasing the share of fine reductions and the latter increasing the size of reductions.

It may seem strange that a significant benefit of lobbying is granted by arbiters who are supposed to be insulated from political influence by design of the adjudication system. My results suggest that any political esteem that firms earn through their lobbying (and other political influence) activities likely also extends to regulators and judges. Thus, isolating judges from political influence may not actually isolate them from the influence of "politicking." This could have important implications for social welfare and social justice, distorting, for example, the distribution of wealth and opportunities within industries.

Impact of lobbying on payments and delinquency

An independent investigation carried out in 2014 by NPR and Mine Safety and Health News found that the mining industry suffers from chronically high rates of fine delinquency among a modest share of firms (Berkes, Boiko-Weyrauch, and Benincasa 2014). Delinquencies are concentrated in coal mining (23 percent of coal mines are delinquent on their noncompliance fines, compared to eight percent of all U.S. mines) and among firms with inferior records in safety and health (injury rates at delinquent mines were 50 percent higher than at mines that paid their regulatory noncompliance fines on time). Does lobbying make it easier for particularly insubordinate firms to delay or altogether avoid the financial repercussions of

Table 7: Average treatment effect of lobbying on the size of fine reductions

	Uncontested fines		Contested fines	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: average fine reduction				
lobbied mine act$_{t-1}$	0.007	0.055	−0.045	0.337
	(0.004)	(0.009)	(0.023)	(0.027)
share of coal mines	0.003	0.003	0.056	0.023
	(0.004)	(0.003)	(0.065)	(0.054)
share underground	0.001	0.002	0.009	0.029
	(0.003)	(0.004)	(0.028)	(0.028)
negligence	−0.011	−0.010	0.052	0.049
	(0.005)	(0.004)	(0.049)	(0.040)
penalty points	0.022	0.021	0.187	0.172
	(0.004)	(0.004)	(0.073)	(0.067)
good faith	−0.093	−0.081	−0.020	−0.012
	(0.032)	(0.027)	(0.119)	(0.104)
share of citations contested			−0.171	−0.130
			(0.046)	(0.046)
share reviewed by CALJ			−0.019	−0.032
			(0.021)	(0.020)
mean outcome	0.012		0.276	
Adjusted R^2	0.132		0.079	
Observations	5748	5748	1016	1016

Note: outcome variables are the average size of a fine reduction among uncontested fines (columns 1 and 2), and the average reduction among contested fines (columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

their noncompliance?

To answer this question, I look at (1) what share of its outstanding noncompliance fines (the fines that are due) a firm pays, (2) what share of fines are deemed delinquent, and (3) how long the firm takes to pay its fines. I model payment outcomes as a function of firms' lobbying choices L; the share of coal mines $COAL$ in a firm's mining portfolio and the average injury rates $INJRT$ at the firm's mines, since these attributes were found by the investigation to be associated with delinquencies; the share of citations a firm contests C, since contests take time to resolve and therefore prolong the time that passes before MSHA seeks to recover payment, which affects the timing of payments; and the size of the firm SZ, which may constrain ability to pay. As with all previous models, I also include indicator variables for a republican control of legislative and executive branches LB and EB,

implementation of the MINER Act MA, and a firm-level fixed effect γ.

$$Payment_{i,s,t} = \kappa_0 + \kappa_1 \widehat{L}_{i,t-1} + \kappa_2 COAL_{i,s,t} + \kappa_3 INJRT_{i,s,t} + \kappa_4 C_{i,s,t} + \kappa_5 SZ_{i,s,t} + \\ + \kappa_6 MA_t + \kappa_7 LB_t + \kappa_8 EB_t + \gamma_i + \varepsilon_{i,s,t}. \quad (5)$$

Table 19 displays the results of payment models. The first two numerical columns are results for the share of fines paid; the second two for the share of fines delinquent; and the last two columns are for the average amount of time it takes a firm to pay its non-compliance fines. Instrumented specifications in columns (2), (4), and (6) show that lobbying has no impact on delinquencies or the timing of payment, but is negatively associated with the share of fines paid. The corresponding OLS coefficient is biased up, which suggests that unobservables that raise the share of fines paid occur with unobservables that raise lobbying propensity. This could happen if, for example, firms that are more conscious of their public image pay more of their fines. Such image-conscious firms are also more likely to engage in social and political activities, including lobbying. In this case, lobbying will be positively related to the share of fines firms pay, which would generate an upward bias in OLS regressions.

Table 8: Average treatment effect of lobbying on payment outcomes

	Share paid		Share delinquent		Time to payment	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	OLS	IV	OLS	IV
second stage: payment outcomes						
lobbied mine act$_{t-1}$	0.003	−0.101	−0.001	−0.003	−0.004	−0.129
	(0.002)	(0.008)	(0.001)	(0.001)	(0.058)	(0.119)
share of coal mines	−0.015	−0.015	0.001	0.001	0.508	0.508
	(0.009)	(0.006)	(0.000)	(0.000)	(0.143)	(0.142)
share contested	−0.015	−0.009	0.001	0.001	2.910	2.908
	(0.011)	(0.011)	(0.002)	(0.002)	(0.221)	(0.219)
violator size	0.001	0.001	−0.000	−0.000	0.038	0.038
	(0.001)	(0.000)	(0.000)	(0.000)	(0.019)	(0.019)
injury rate	−0.044	−0.042	−0.007	−0.008	−0.159	−0.164
	(0.045)	(0.036)	(0.004)	(0.004)	(0.442)	(0.443)
mean outcome	0.973		0.002		5.062	
Adjusted R^2	0.035		0.010		0.424	
Observations	3783	3783	3783	3783	3779	3779

Note: outcome variables are the average share of outstanding fines paid (columns 1 and 2), the average share of fines delinquent (columns 3 and 4), and the average time it takes a firm to pay its fines (columns 5 and 6). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Column (2) shows that when firms lobby, they pay about ten percentage points fewer of their outstanding fines than when they do not lobby. Remember that lobbying happens during the quarter before the observed outcomes, so firms are not just paying lobbyists the money that they would otherwise use to pay fines. What seems to be happening is that lobbying helps mining firms avoid a portion of their financial obligation to the safety and

health regulator. Notably, the realized benefit of lobbying is that of avoiding, rather than delaying paying fines, as there is no statistically significant difference across lobbying status in the amount of time that firms take to settle fines that they do pay (column 6).

5.1 Impact of lobbying on safety outcomes

My results have so far shown that lobbying allows firms to reduce their expected non-compliance costs. This would be a problem if, as a result, firms are shirking on safety and experiencing worse safety outcomes. To check whether safety outcomes are indeed influenced by firms' lobbying choices, I look at the rate of accidents, injuries, and deaths that firms report when they lobby and when they do not. I express my outcomes as the number of accidents, injuries, and deaths per million hours of work and model these rates as a function of firms' lobbying choices L; the share of coal $COAL$ and underground UG mines in a mining company's portfolio, to control for the mine complexity and hazard potential; and the size of the violator SZ, which is likely to influence the firm's ability to invest in safety and health. As with all previous models, I control for MINER Act implementation and republican control of legislative and executive branches, as well as a firm fixed effect γ.

$$Safety_{i,s,t} = \lambda_0 + \lambda_1 \widehat{L}_{i,t-1} + \lambda_2 COAL_{i,s,t} + \lambda_3 UG_{i,s,t} + \lambda_4 SZ_{i,s,t} + \\ + \lambda_5 MA_t + \lambda_6 LB_t + \lambda_7 EB_t + \gamma_i + \varepsilon_{i,s,t} \quad (6)$$

Results are displayed in table 20. OLS results suggest that lobbying is negatively correlated with accident and injury rates and not correlated with death rates. Compared to IV results, which show a positive treatment effect on all outcomes, OLS results are downward biased. This would happen if unobservables that raise accident, injury, and death rates are negatively correlated with unobservables that raise lobbying propensity. For example, suppose that large firms provide more rigorous safety training to miners than small firms. Large firms would then have better safety outcomes. And since large firms are also more likely to lobby, lobbying will be correlated with better safety outcomes. So if we don't account for selection into lobbying, it will appear that lobbying is correlated with lower accident, injury, and death rates—a downward OLS bias.

The instrumented coefficients on accident and injury rates in table 20 are only marginally significant, but the treatment effect on deaths is positive and significant at the one percent level. When firms lobby, their death rates increase from about one to 1.4 per million hours worked – a 40 percent increase. To find out whether this effect is persistent, I next look at

Table 9: Average treatment effect of lobbying on accident, injury, and death rates

	Accident rate		Injury rate		Death rate	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	OLS	IV	OLS	IV
second stage: safety outcomes						
lobbied mine act$_{t-1}$	−0.121	1.747	−0.119	1.810	0.003	0.318
	(0.050)	(0.986)	(0.050)	(0.949)	(0.009)	(0.082)
share of coal mines	1.032	1.074	0.990	1.030	0.003	−0.000
	(0.547)	(0.559)	(0.565)	(0.577)	(0.013)	(0.011)
share underground	0.848	0.879	0.611	0.657	0.032	0.027
	(0.176)	(0.180)	(0.216)	(0.232)	(0.017)	(0.017)
violator size	0.058	0.057	0.058	0.055	0.001	0.001
	(0.013)	(0.013)	(0.013)	(0.013)	(0.001)	(0.001)
mean outcome	2.122		2.004		0.027	
Adjusted R^2	0.215		0.179		0.003	
Observations	6009	6009	6009	6009	6009	6009

Note: outcome variables are the inverse hyperbolic sine of the average numbers of accident, injuries, and deaths per one million miles worked. All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

how lobbying affects the death rate during each of the four quarters that follow lobbying activity. Table 21 presents the IV results. Lobbying is statistically associated with higher death rates for three quarters following lobbying activity. The treatment effect is strongest during the first two quarters, much smaller but still statistically significant during the third quarter, and statistically indistinguishable from zero one year after lobbying. In numerical terms, the increase in the death rate during each of the first and second quarters following lobbying is about 0.4 persons per million hours—a 40 percent increase, and the aggregate effect across all three quarters is 0.85 deaths per million hours.

5.2 The aggregate benefits of political influence

So what is the aggregate benefit of political influence, as proxied by lobbying, in mining safety and health? To answer this question I compare firms' average financial obligation to MSHA when they lobby to the same obligation when they don't lobby. I start with mean values of inspections, citation rates, proposed fines, reduction, and payment outcomes, and inflate or deflate them by the relevant statistically significant treatment effects of lobbying. The expected quarterly cost of compliance for a lobbyer is about $59,893, while for a non-lobbyer it is about $86,604. Thus, when firms lobby, they pay about 69 percent of what they pay when they do not lobby. In other words, lobbying reduces expected non-compliance costs by 30 percent—a difference of roughly $26,700 per quarter.

It is difficult to say how this compares to lobbying expenditures and, more generally, to firms' combined influence activities. The average firm in my sample spends about $320,000 on lobbying, but this is an aggregate expenditure across all issues for which a firm lobbies

Table 10: Average treatment effect of lobbying on future deaths

	(1) deaths_t	(2) deaths_{t+1}	(3) deaths_{t+2}	(4) deaths_{t+3}
second stage: deaths				
lobbied mine act_{t-1}	0.318	0.350	0.035	0.031
	(0.082)	(0.097)	(0.012)	(0.017)
share of coal mines	−0.000	0.013	−0.005	0.001
	(0.011)	(0.012)	(0.015)	(0.027)
share underground	0.027	0.007	0.011	0.002
	(0.017)	(0.013)	(0.017)	(0.013)
violator size	0.001	0.001	0.000	−0.001
	(0.001)	(0.001)	(0.001)	(0.002)
mean outcome				
Observations	6009	5385	5386	5238

Note: outcome variable is the inverse hyperbolic sine of the average number of deaths per million hours worked. All columns display IV results. Column (1) displays the ATE of lobbying on deaths for the quarter after that in which the firm engaged in safety and health lobbying; column (2) for the second quarter following that in which lobbying occurred; column (3) for the third quarter following lobbying; and column (4) for the fourth quarter (or one year) following lobbying activity. All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

(four, in my sample), and it's infeasible to break this down. It would be unrealistic to assume that lobbying expenditures are distributed equally across issues, since firms spend more efforts and resources on topics of greatest concern. And beyond that, each issue includes a multitude of topics that further fragment total lobbying expenditures. Safety and health lobbying, for example, is just one topic in the 'labor' issue category, which also includes questions of pensions, unions, and other matters that are likely to take up a lot of a mining firm's attention. Note also that lobbying is typically not an isolated strategy. Firms that lobby often engage in other types of political influence behavior, like campaign contributions and donations to PACs and political foundations. The treatment effects that my analysis picks up are likely to be affected by all of these activities.

6 Conclusion

In this study, I examine evidence on whether political influence, proxied here by lobbying, allows firms in dangerous occupations to systematically reduce their noncompliance costs related to safety and health regulation. Using conclusions drawn from existing literature on lobbying and drawing motivation from the 2010 Upper Big Branch mine disaster, I combine highly disaggregated data on regulatory outcomes from the U.S. mining industry, federal transactional lobbying data, and information on the historical make-up of congressional labor

committees to examine whether lobbying has a statistically significant effect on regulatory and safety outcomes, and if so, at what stage of the regulatory process the private benefits to lobbying (and political influence broadly) become detectable.

Although results of OLS regressions do not reveal significant benefits to lobbying, a different story emerges once I account for non-random selection into labor lobbying among mining firms. Instrumented results show that when firms lobby, their have lower citation rates, succeed in getting larger reductions of their non-compliance fines, especially through the formal contesting process, and pay a lower share of their outstanding fines—in essence evading some of their financial obligations to the regulator—compared to when they do not lobby. In aggregate, when firms lobby, they reduce their non-compliance fines by about 30 percent or $26,700 per quarter. More concerning, average death rates rise by about 40 percent after lobbying and remain high for three consecutive quarters, adding 0.85 extra deaths per million hours worked to a mining firm's average reported death rate.

The most significant benefit of lobbying is associated with the administrative contest process, which involves judges who are meant to be isolated from political influence by design of the regulatory system. This finding highlights that shielding regulators and adjudicators from political influence may not in fact shield them from the wide reach of politicking—an idea that has broad implications for social justice (for example, the distribution of resources and opportunities within industries).

One might wonder if these results hint at regulatory dealing à la Harrington (Heyes and Rickman 1999). Mining firms are regulated on a multitude of issues besides safety and health—most notably, environmental. It's possible, but unlikely that the regulators are going easy on mining firms in the safety dimension in order to gain more compliance in the environmental dimension. It would be unusual for these types of bargains to be extended to firms only when they lobby. Besides, such tradeoff appears rather costly when measured in human lives. It is more likely that political influence gives firms leeway in compliance. In other words, my results suggest the presence of regulatory capture that enables firms to transfer the cost of workplace safety to society.

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Appendices

A Effect of joining and leaving committee

In this analysis I exploit the timing of joining and leaving a committee, in the spirit of Powell and Grimmer (2016), Bertrand et al. (2020), and Fouirnaies and Hall (2018), to show whether a congress member's joining or leaving a committee has an effect on constituents' lobbying expenditures. This analysis addresses concerns that committee representation may

be endogenous if congress members self-select onto the Education and Labor committee. For example, if constituents spend a lot of money to get their preferred candidate re-elected with the understanding that the candidate will remain on the Education and Labor committee, then the subsequent lobbying of the committee will be correlated with representation. However, the timing of open slots on an Education and Labor committee is much more likely to be exogenous to lobbying activity, so a congress member's joining the committee will be uncorrelated with lobbying activity directed at the committee. Similarly, when a spot on a highly desirable committee opens up, there is naturally a lot of competition to fill this spot. Suppose a member of the Education and Labor committee is chosen to fill the desirable committee's opening. This member's leaving the Education and Labor committee is exogenous to lobbying directed at the committee.

To estimate the effect of an in-state congressman joining and leaving the Education and Labor committee, I regress a lobbying indicator on a representation indicator and a set of quarterly pre- and post-event dummies. The linear probability model takes the following form:

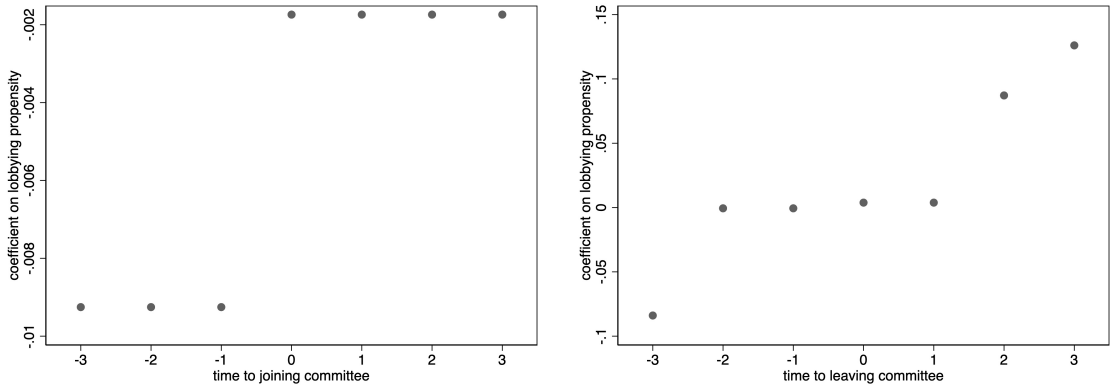
$$L_{i,s,t} = \alpha_0 + \alpha_1 REP_{i,s,t} + \alpha \sum_{k=-2}^{3} EVENT_{i,s,t-k} + \gamma_i \tau_s + \varepsilon_{i,s,t}, \tag{7}$$

where L is an indicator variable set to 1 if a firm lobbied for labor issues and 0 otherwise; REP is the representation indicator equal to one when a firm's in-state rep sits on the Education and Labor committee, and zero otherwise; $EVENT_{t-k}$ is a set of event dummies set to one for each quarter from three quarters before the joining or leaving event to three quarters after the event, with the event itself occurring in $k = 0$; and $\gamma\tau$ is a firm-by-state fixed effect. I include a representation dummy in the regression to account for the average effect of being represented on the committee on lobbying propensity. If we believe that there is something special about the timing of joining or leaving, which is key to this analysis, then we expect to see an additional effect on lobbying propensity of joining or leaving beyond that of being represented or not represented.

I estimate equation (7) separately for joining and leaving events, clustering standard errors at the firm level. Results are depicted graphically in Figure (1). The two panels plot coefficients on the $EVENT$ dummies. Because I include firm-by-state fixed effects and the representation dummy, the reference propensity is the average lobbying propensity of the same firm in the same state one year or more before the event and more than one year after the event, holding representation status constant.

The left panel of the figure shows an increase in lobbying propensity upon a congressman's joining of the committee, but the right panel does not show the expected negative effect upon

Figure 1: Lobbying expenditures when state representative joins and leaves Education and Labor committee



Note: figures plot coefficient estimates on quarterly dummies before and after event (joining or leaving committee). The outcome variable is an indicator variable set to 1 if a firm lobbied for mine safety and health issues; and zero otherwise. Regressions include firm-by-state fixed effects. Standard errors are clustered at the firm level.

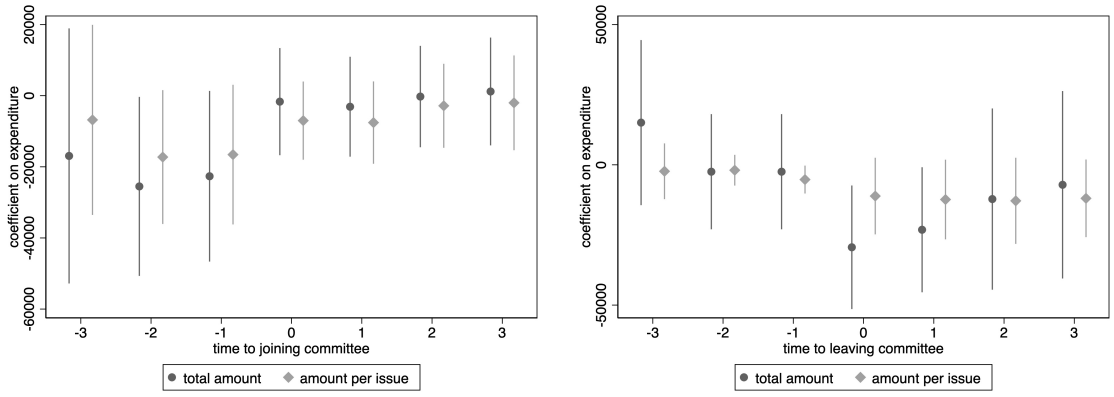
leaving. In fact, none of the estimated quarterly event coefficients are statistically significant. This is because joining and leaving are fairly rare events for my committee. I observe only 14 instances of joining and 12 instances of leaving—sample sizes that do not allow me to detect the effect of joining or leaving on a binary lobbying outcome with any acceptable level of precision.

What sample size would I need in order to be able to detect a statistically significant effect of joining or leaving? If my sample was representative, then I would simply need to draw more observations from the population. If I were to do that, keeping the ratio of event to non-event observations the same and taking into accounting firm-level clustering of standard errors, I would need 168 join observations and 132 leave observations—roughly ten times more data that I have. Since I don't have that much data, I ask a slightly different question: what effect does a congressman's joining and leaving the committee have on the lobbying expenditures firms direct toward the committee? Because spending is a continuous variable, it offers a lot more variation and is therefore more informative than a binary indicator variable. So given the small sample size of observed joining and leaving events, I am more likely to pick up changes in spending than changes in the propensity to lobby. This new question, however, addresses the intensive margin of lobbying and results will tell me whether firms redistribute their lobbying dollars toward (away from) the Education and Labor committee when their in-state congressman joins (leaves) the committee.

One downside of looking at spending instead of propensity is that firms report only their aggregate spending for the quarter and there is no way to parse this total at the issue level.

This means I cannot match dollars directly to safety and health lobbying, as I did in the analysis of lobbying propensity. To try and get at the effect of joining and leaving on safety and health lobbying, I restrict my analysis to only those quarters in which firms lobbied for labor issues—a broader category of issues that includes safety and health and that is under the direct jurisdiction of the Education and Labor committee. The intensity of lobbying activities that target policies under other committees' jurisdictions should not be affected by a representative's joining or leaving the Education and Labor committee. Thus, if I include in my analysis time periods during which firms lobbied only for other (irrelevant) issues, the estimated coefficients would not reflect the true effect that joining or leaving the Education and Labor committee has on lobbying expenditures. I estimate the effect of joining or leaving on spending by running regression in equation (7), but with spending as the outcome variable. Results are shows graphically in figure (2).

Figure 2: Lobbying expenditures when state representative joins and leaves Education and Labor committee



Note: figures plot coefficient estimates on quarterly dummies before and after event (joining or leaving committee). The outcome variables are 1) the average amount of lobbying expenditures, in dollars, per firm and 2) the average spending per issue lobbied, also in dollars. Regressions include firm-by-state fixed effects. Standard errors are clustered at the firm level.

Focusing on the dark circles that represent total spending, the left panel shows a negative effect on spending during two quarters before an in-state member joins the Education and Labor committee. This is what we would expect: holding representation constant, total lobbying spending is lower before an in-state representative joins the committee. Two quarters before a joining event, spending is about $25,000 (9.3 percent) lower and significant at the five percent level. One quarter before joining, spending is $22,600 (8.3 percent) lower, and significant at the ten percent level. It's possible that in-state constituents begin to redistribute lobbying spending toward the Education and Labor committee after their candidate is elected (or re-elected) but before he or she officially joins the committee. After joining,

"excess" spending hovers around zero for the year following committee joining.

The right panel of the figure shows that when the constituents' in-state legislator leaves the Education and Labor committee, firms in the legislator's state significantly reduce their lobbying expenditures for issues under this committee's jurisdiction. The effect of leaving the Education and Labor committee persists for two quarters. The immediate effect is an almost $30,000 (10.7 percent) reduction in spending, with an additional reduction of $23,000 (8.4 percent) during the following quarter. Both quarters' coefficients are significant at the five percent level. After two quarters, spending starts to rebound, potentially as firms begin to establish rapport with the other legislators on the committee.

The coefficient estimates represented by gray diamonds are for per-issue spending. Since these firms lobby for more than just labor issues during each quarter under analysis, I calculate a crude per-issue spending amount to approximate how much firms may be spending on labor issues alone. This is not a very clean measure of spending, however, since I assume that an equal share of spending goes to each issue. This is most likely not the case as firms spend more money and efforts on lobbying for policies that address their most pressing concerns—which for mining firms may very well be labor issues. Although results demonstrate the same qualitative effects of joining and leaving according to this per-issue spending variable, the results are not as statistically significant.

So a congressman's joining and leaving the Education and Labor committee does appear to have a significant (and expected) effect on the amount of money the member's in-state constituents spend on lobbying the committee. The effects are roughly symmetric, with spending going up and down on the order of 17-19 percent upon joining or leaving, respectively. However, because spending information is aggregated across all issues being lobbied, I cannot cleanly disentangle the effect of joining and leaving on labor lobbying specifically (or even more narrowly, safety and health lobbying). Thus, I retain my original instrument of lobbying propensity based on committee membership in the main analysis because this specification allows me to accurately isolate lobbying for safety and health issues. Additionally, because my main interest is in the extensive margin, a propensity-based instrument will better reflect the variation in lobbying that I am after.

B Self-selection on congressional labor committees

In order to successfully self-select onto a committee, a U.S. Congress member must request assignment to a committee (or a list of committees) on which he or she would like to serve, and the congressman's committee-on-committees (CC) must grant this request. Congressmen

submit preference lists every two years, before the start of each new congressional term.[28] The republican and democratic CCs then compile preference lists of their members and meet in closed sessions to reconcile these preferences against a list of available committee seats.

We can look at historic information on committee requests and subsequent assignments to get a general sense of how frequently congress members are able to secure a desired committee spot. Frisch and Kelly (2008) have compiled preference lists for members of the U.S. House of Representatives from 1947 to 1995. Combining this information with committee assignments data (Nelson 1992; Stewart and Woon 2017) reveals that over this time period, 48.3 percent of first-term congressmen and 39.4 percent of returning incumbents were assigned to their top committee choice. The majority of House members therefore did not get their choice assignment. As Frisch and Kelly (2006) note, "committee assignments are the result of individual behaviors in the context of a collective process that is complex and often unpredictable ... subject to individual members' lobbying of committee-on-committees members, attempts by party leaders to influence assignments, intraparty conflicts, and coalitions that form within the assignment committees." So in general, the idea that congressmen are able to effectively self-select onto committees of their choice is not supported by the data. To what extent does this vary across committees?

In my main empirical analysis I focus on congressional committees that deal with occupational safety and health issues. These are the House Education and Labor Committee and the Senate Committee on Health, Education, Labor, and Pensions (I will refer to these as labor committees). There are several things we can learn from available data about these two committees. Preference lists can tell us how desirable the House Educational and Labor committee has been relative to other House committees. Because congressmen aim to self-select onto committees they find more desirable, the more requests a committee receives, the higher its relative appeal and attempts at self-selection.

Committee assignment data can tell us what the average seniority level of a Senate and House labor committee's members is, what fraction of a committee's members are freshmen, and what the average turnover rate is among members. Generally, a congressman's seniority is positively associated with his or her ability to self-select onto a committee of choice (Shepsle 1978). One reason for this is that people who have spent more time in congress have simply had more opportunities and a wider ranges of strategies to secure a good committee

28. Not all members of congress submit committee preference lists. All newly-elected members are encouraged to do so (and nearly all do). Among returning members, only those seeking a committee transfer submit a preference list.

assignment.[29] [30] This means that committees with longer-serving members are more likely to suffer from self-selection, whereas committees with a higher share of freshman members will be less prone to self-selection.

One important historical feature of the committee assignment process is the property right norm, whereby "a member, once assigned to a committee, has a claim to his committee slot in the next session of congress... [and] ... to his position in the seniority queue so that, if he has accrued the most committee seniority, and his party is in the majority, he can expect to be named committee chairman" (Shepsle 1978). Because the property right norm guarantees that a committee member will move up in the committee's ranks over time, seeking a transfer from one committee to another is costly, as it places the transferring congressman at the end of the new committee's seniority queue. The cost of failing to advance in committee seniority is indeed high, as much of congressional power appears to be concentrated among committee chairs (Berry and Fowler 2018). Thus, a congressman will seek to transfer committees only if he/she is significantly dissatisfied with his/her current assignment.[31] A high turnover rate on a committee would therefore signal negative selection (i.e., self-selection *away* from the committee), whereas a stable membership with low turnover would indicate positive selection. Positive selection onto congressional labor committees would challenge the validity of my instrument, whereas negative selection would not.

I now turn to the data, beginning with preference lists. Table 11 summarizes top choice committee requests and assignment outcomes for House members between 1947 and 1995. The first three columns report statistics for all House members, the next three columns for members representing mining states, and the last three columns for members representing coal mining states.[32]

The first column in each state grouping (% requests) summarizes what percent of all submitted top choice requests were made for each House committee. The most requested

29. In addition to submitting a preference list, senior congress members can signal their interest in specific committees by lobbying their CC chairperson for committee spots behind the scenes or negotiating trades with CC members (e.g., votes in exchange for a committee spot).

30. Seniority became somewhat less important in committee and chairmanship assignments after Republicans gained control of the House in 1995, with more emphasis being put on things like a member's voting record. However, because more senior members have more time to demonstrate their commitment to party values, more senior members were still often at an advantage in competition for influential committee posts.

31. Congress members can sometimes lose their committee spots because of circumstances unrelated to their preferences (e.g., if the member's party loses control of the congressional chamber), but this type of "exile" (Powell and Grimmer 2016) is rare compared to voluntary preference-driven transfers.

32. Mining and coal mining states are categorized using MSHA data. Coal states are Kentucky, West Virginia, Pennsylvania, Virginia, Alabama, Ohio, and Indiana. They are home to more than 90 percent of coal mines and more than 80 percent of coal production. Mining states are coal states plus Texas, New York, Wisconsin, Minnesota, California, Michigan, Arizona, Colorado, Missouri, Washington, Montana, Utah, and Oregon. These states are home to more than half of all metal and non-metal mines and account for more than two thirds of total hours worked by the mining labor force.

Table 11: Top committee choices of U.S. House Representatives, 1947-1995

	All House members			Mining states			Coal states		
Committee	% requests	% requests granted	% self-selected	% requests	% requests granted	% self-selected	% requests	% requests granted	% self-selected
Appropriations	16.7	31.5	33.6	14.8	34.0	34.1	14.6	35.8	32.4
Ways & Means	11.0	27.0	27.1	11.1	26.9	26.8	11.3	19.2	18.9
Agriculture	6.7	63.4	21.5	5.2	63.0	18.2	4.1	52.6	13.5
Armed Services	7.9	48.4	20.1	8.2	45.2	20.4	6.5	36.7	12.1
Foreign Affairs	7.8	36.9	17.4	8.4	33.9	17.1	6.3	31.0	12.9
Budget	6.8	39.9	16.5	7.9	43.2	20.3	8.9	26.8	16.2
Rules	2.9	25.7	15.8	3.3	17.0	13.3	3.7	5.9	6.3
Energy & Commerce	12.6	18.9	15.2	11.9	22.6	17.0	13.5	30.6	23.8
Banking, Finance, & Urban Affairs	4.5	56.9	11.6	4.4	53.2	10.6	6.3	44.8	12.4
Natural Resources	4.6	50.5	11.6	5.1	43.1	11.5	2.6	25.0	6.5
Judiciary	3.0	51.4	11.0	2.9	51.2	10.6	3.5	50.0	12.3
Public Works & Transportation	3.9	59.6	9.3	4.3	60.0	10.2	5.0	65.2	12.8
Education & Labor	2.6	59.7	8.8	3.1	55.8	9.8	3.5	50.0	9.5
Science, Space, & Technology	2.3	60.7	7.3	2.8	59.0	7.9	3.0	35.7	6.2
Merchant Marine & Fisheries	1.4	61.8	6.8	1.6	52.2	6.7	1.3	66.7	7.3
District of Columbia	0.7	58.8	5.7	0.6	55.6	5.3	1.1	60.0	8.6
House Administration	0.8	50.0	4.2	0.9	69.2	6.4	0.9	50.0	3.9
Post Office & Civil Service	0.6	66.7	4.1	0.6	75.0	3.8	0.7	66.7	3.2
Veterans Affairs	0.4	66.7	1.5	0.4	80.0	1.8	0.7	100.0	3.3
Standards of Official Conduct	0.1	66.7	1.4	0.1	50.0	1.1	0.2	0.0	0.0
Small Business	0.5	36.4	1.0	0.4	50.0	1.4	0.4	50.0	1.4

Note: Data come from preference lists submitted by members of the U.S. House of Representatives. Columns reflect the percentage of all top choice requests each committee accounted for (% requests), the percentage of requesting members that were assigned to their top committee choice (% requests granted), and the percentage of all committee members who indicated the committee as their top choice and were assigned to it (% self-selected). Coal states are Kentucky, West Virginia, Pennsylvania, Virginia, Alabama, Ohio, and Indiana. According to MSHA data, these states are home to over 90 percent of coal mines and more than 80 percent of total coal production. Mining states include coal states plus Texas, New York, Wisconsin, Minnesota, California, Michigan, Arizona, Colorado, Missouri, Washington, Montana, Utah, and Oregon. These additional states account for more than half of all metal and non-metal mines and two thirds of total hours worked by the mining labor force.

committees overall were Appropriations, Energy and Commerce, and Ways and Means, each of which topped more than ten percent of preference lists. Two of these committees—Appropriations and Ways and Means—are "influence" committees, considered powerful because they control congressional agenda and access to congressional finances. The third committee, Energy and Commerce, is a "policy" committee that deals with preeminent economic issues and is therefore broadly appealing to congressmen from all states. The House Committee on Education and Labor appears to be decidedly less desirable: it was a top choice on only 2.6 percent of preference lists. If congressmen from mining states were self-selecting onto the Education and Labor committee with an aim of influencing safety and health legislation, we would observe more congressmen from mining states requesting assignment to this committee. But the data does not reveal such a pattern—preference lists of

members representing mining and coal states do not show a higher request rate for Education and Labor. The request rate increases by half of a percentage point among mining state representatives and by 0.9 percentage points among representatives from coal states. In fact, coal state representatives reveal a greater relative preference for committees on Banking, Finance, and Urban Affairs; and Budget (another influence committee) than for Education and Labor.

The second column (% requests granted) summarizes what percent of congressmen who requested a specific committee as their top preference were actually assigned to that committee during the congress in which they submitted their preference request. Not surprisingly, it does not appear to be too difficult to self-select onto a relatively unpopular committee. With few requests for the Education and Labor committee, there was also little competition for available spots. As a result, the success rate of congressmen requesting this committee was quite high: on average, between 50 and 60 percent of members whose top committee choice was Education and Labor were assigned to it. Coal mining representatives were less successful in attaining assignment to Education and Labor, with 50 percent of coal state requesters receiving a spot on the committee, compared to 60 percent of all House members. So an average congressman was slightly more successful at self-selecting onto the committee than was an average congressman from a coal mining state. To get a sense of how prevalent self-selection is at the committee, rather than congressman level, we need to consider the ability to self-select in context of a committee's full membership.

The third column in each state grouping (% self-selected) reports what percent of all members of a specific committee successfully self-selected onto that committee (i.e., members who requested assignment to the committee and whose requests were granted). House members (from all states) who expressed a top preference for and were assigned to the Education and Labor committee account for only 37 of 421 representatives who served on this committee between 1947 and 1995. Thus, over a 50 year period, only 8.8 percent of Education and Labor committee members successfully self-selected onto it. The rest ended up on the committee essentially through a CC lottery. Even among representatives of coal and mining states, fewer than 10 percent self-selected onto the Education and Labor committee. This means that over about five decades, nine out of every ten members of the House Education and Labor committee did not self-select onto the committee. By contrast, among coal state representatives that served on the Energy and Commerce committee, almost 24 percent self-selected onto it. Appropriations, Ways and Means, and the Budget committee were also much more prone to self-selection by congressmen representing coal and mining states.

Table 11 lists the 21 standing committees in the U.S. House of Representatives in order

of self-selection prevalence (by all House members). This ordering does not change much across the mining and coal state groupings and in each of the three groups the Education and Labor committee falls in the bottom half of the list. So although self-selection may be a concern for some committees in the House, it is much less of a concern for the Education and Labor committee. Because a commanding majority of the committee's members were assigned to the committee by chance, not choice, changes in the committee's membership are credibly exogenous to the interests of congressmen's voting constituents.

Next, I look at committee membership characteristics provided by committee assignments data. For simplicity, I compare members of House and Senate labor committees to those of "constituency" and "influence" committees. A constituency committee is a committee with a narrow jurisdiction that holds particular appeal to certain politicians (e.g., the Agricultural committee for politicians from agricultural districts, the Armed Services committee for politicians from congressional districts with high military presence, or the Foreign Affairs committee for congressmen from immigrant districts). Politicians whose primary motivation is serving their constituents' interests are most likely to request a spot on the relevant constituency committee. Influence committees, as mentioned above, are powerful congressional committees that control congressional agenda and access to congressional finances. These committees include Appropriations, Budget, Rules, and Ways and Means. Most politicians aim to end up on an influence committee at some point in their career, and politicians whose primary motivation is to gain personal power and influence within their congressional chamber will be most likely to lobby aggressively for spots on influence committees. Frisch and Kelly (2006) identify constituency and influence committees as being more prone to self-selection. Thus, I expect that congressmen returning to these committees will on average be more senior and the share of freshman members joining these committees will be lower than on labor committees.

Table 12 presents the means and t-tests of seniority characteristics for labor committees compared to influence and constituency committees.[33] The top panel of Table 12 shows that between 1947 and 2017, the average congressman returning to an influence committee had more than three extra years of service in the House and two more years of service in the Senate than an average congressman returning to a labor committee. Influence committees also had a significantly lower freshman membership than labor committees. Less than five percent of House influence committee members were freshmen, compared to more than 22 percent of House labor committee members. The difference in the Senate was 16 percent for influence committees vs. 22 percent for the labor committee.

33. As defined by Frisch and Kelly (2006), influence committees are Appropriations, Budget, Rules, and Ways and Means; constituency committees are Agriculture, Armed Services, and Foreign Affairs.

Table 12: Seniority of congressional committee members, 1947-2017

	Average seniority of incumbents		Share of freshmen	
	house	senate	house	senate
	Labor v. influence committees			
mean of influence committees	13.792	11.014	4.839	16.373
mean of labor committees	10.500	8.822	22.371	22.298
mean influence−mean labor	3.292	2.193	−17.532	−5.925
t statistic	13.835	5.239	−11.783	−2.181
H_1 p-value	(0.000)	(0.000)	(0.000)	(0.017)
$\text{Obs}_{\text{influence}}$	4365	1550	131	95
$\text{Obs}_{\text{labor}}$	1060	499	36	37
	Labor v. constituency committees			
mean of constituency committees	11.410	8.647	16.330	19.366
mean of labor committees	10.500	8.822	22.371	22.298
mean constituency−mean labor	0.910	−0.175	−6.040	−2.932
t statistic	3.862	−0.440	−3.598	−1.137
H_1 p-value	(0.000)	(0.670)	(0.000)	(0.131)
$\text{Obs}_{\text{non-influence}}$	3927	1576	108	109
$\text{Obs}_{\text{labor}}$	1060	499	36	37

Note: Data span the 80th through the 114th Congresses (1947-2017). Analysis reflects only permanent standing committees; special, select, and ad hoc committee are excluded. Seniority refers to a politician's seniority within his or her chamber of service and is expressed in the total number of years served. Freshman members are congressmen serving their first term in Senate or House of Representatives. Two-sample t-tests assume unequal variance among groups. p-values reported for one-tailed test in the direction of the alternative hypothesis (difference > 0 for seniority and difference < 0 for freshmen).

The bottom panel of Table 12 presents a comparison between labor and constituency committees. The House constituency committees had a more senior membership than the House labor committee, with an extra year of service for incumbent members and six percentage points fewer freshmen (22 percent vs. 16 percent). Results for Senate committees are not statistically significant, likely because there are fewer Senators than House representatives, which might affect the way members are assigned to committees. These statistics add to the evidence that self-selection is less likely to be a concern for congressional labor committees than for constituency and influence committees.

Table 13 compares average turnover rates of House and Senate labor committees to those of congressional constituency and influence committees. The data shows that among returning congressmen (i.e. those who did not resign, die in office, or were defeated for reelection, and thus could choose whether to stay on their previously assigned committee or transfer to another committee), the average member turnover rate on congressional labor committees has been three to six percentage points higher than on influence and constituency committees. On average, 12-15 percent of all labor committee members chose not to return to their previous committee assignment during a given congress. Turnover rates on influence and constituency committees were below ten percent–a statistically significant difference.

Thus, historically, negative selection away from labor committees has been higher than from influence and constituency committees, which casts a bit more doubt on the idea that congress members might be actively selecting onto labor committees to benefit their mining constituents.

Table 13: Biennial committee turnover rates among returning members, 1947-2017

	house	senate
	Labor v. influence committees	
mean turnover rate of influence committees	9.831	9.192
mean turnover rate of labor committees	15.424	12.046
mean influence−mean labor	−5.592	−2.854
t statistic	−3.120	−1.342
H_1 p-value	(0.001)	(0.092)
$\text{Obs}_{\text{influence}}$	127	92
$\text{Obs}_{\text{labor}}$	35	36
	Labor v. constituency committees	
mean turnover rate of constituency committees	9.883	8.512
mean turnover rate of labor committees	15.424	12.046
mean constituency−mean labor	−5.541	−3.534
t statistic	−4.112	−1.894
H_1 p-value	(0.000)	(0.032)
$\text{Obs}_{\text{constituency}}$	105	106
$\text{Obs}_{\text{labor}}$	35	36

Note: Data span the 80th through the 114th Congresses (1947-2017). Analysis reflects only permanent standing committees; special, select, and ad hoc committee are excluded. Test statistics reflect biennial committee turnover for all adjoining congresses. Turnover is calculated as the number of members not returning to a committee in the next congress, divided by the total number of committee members who continue in the next congress, expressed in percent. Two-sample t-tests assume unequal variance among groups. Alternative hypothesis p-values reported for one-tailed test of difference < 0.

Writing about the House Education and Labor Committee, Shepsle (1978) notes that, during the 1970s, many House members retreated from this committee, due to its "often frustrating and unproductive" nature. Since then the committee may have become more productive in terms of generating benefits for its constituents, but such sentiment could help explain the historic lack of interest. Altogether, the evidence presented here points to the general practical difficulties of successfully self-selecting onto a specific congressional committee, and also to the specific lack of interest among congressmen in serving on labor committees.

C Full results

Table 14: Average treatment effect of lobbying on inspections

	Mandatory inspections		Discretionary inspections	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: inspections				
lobbied mine act$_{t-1}$	0.026	−0.009	−0.069	0.374
	(0.034)	(0.335)	(0.089)	(3.762)
firm size	0.127	0.127	0.020	0.016
	(0.064)	(0.064)	(0.085)	(0.121)
excessive violation history	−0.240	−0.241	0.360	0.372
	(0.512)	(0.509)	(0.825)	(0.883)
share of coal mines	0.251	0.251	1.333	1.317
	(0.349)	(0.348)	(0.397)	(0.437)
share underground	−0.041	−0.041	0.197	0.204
	(0.260)	(0.259)	(0.273)	(0.282)
share of mines with safety committee	−0.225	−0.225	−0.038	−0.046
	(0.230)	(0.228)	(0.262)	(0.196)
distance from inspection office	0.091	0.091	0.056	0.057
	(0.038)	(0.038)	(0.050)	(0.051)
office inspection rate$_{t-1}$	0.153	0.153	0.828	0.833
	(0.146)	(0.146)	(0.261)	(0.213)
MINER Act	−0.285	−0.285	−0.203	−0.201
	(0.089)	(0.088)	(0.115)	(0.139)
republican-controlled congress	−0.067	−0.067	0.155	0.152
	(0.027)	(0.027)	(0.084)	(0.080)
republican president	0.065	0.064	−0.092	−0.079
	(0.019)	(0.022)	(0.062)	(0.120)
constant	0.737	0.740	0.073	0.042
	(0.137)	(0.147)	(0.254)	(0.353)
first stage: lobbying choice				
represented on committee		0.110		0.020
		(0.118)		(0.732)
chair of committee		−0.204		−0.207
		(0.145)		(0.168)
firm size		0.068		0.216
		(0.144)		(1.145)
constant		−1.574		−1.472
		(0.080)		(1.072)
mean outcome	1.968		1.342	
Adjusted R^2	0.279		0.577	
Observations	5661	5661	5661	5661

Note: outcome variables are inverse hyperbolic sine (IHS) transformations of the number of mandatory and discretionary inspections conducted at a firm's mines in a given state during a given quarter. Mandatory inspections are regular inspections, compliance inspections, and accident investigations. Discretionary inspections are all other inspections and include, for example, spot inspections and technical investigations. All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors in parentheses are clustered at the firm-level.

Table 15: Average treatment effect of lobbying on citations

	Total citations		Citations per inspection	
	(1) OLS	(2) IV	(3) OLS	(4) IV
second stage: citations				
lobbied mine act$_{t-1}$	−0.037	−0.407	0.001	−0.337
	(0.060)	(1.049)	(0.048)	(0.164)
office inspection rate	0.930	0.930	−0.348	−0.350
	(0.314)	(0.314)	(0.143)	(0.143)
mean onsite hours	0.579	0.581	0.804	0.807
	(0.066)	(0.068)	(0.042)	(0.042)
share underground	0.058	0.060	−0.351	−0.349
	(0.315)	(0.311)	(0.151)	(0.149)
mine size	0.286	0.286	0.051	0.052
	(0.061)	(0.060)	(0.025)	(0.024)
share of mines with safety committee	−0.018	−0.020	−0.014	−0.013
	(0.312)	(0.305)	(0.129)	(0.127)
MINER Act	−0.418	−0.418	−0.211	−0.210
	(0.077)	(0.076)	(0.071)	(0.072)
republican-controlled congress	−0.156	−0.156	−0.167	−0.166
	(0.051)	(0.051)	(0.026)	(0.025)
republican president	0.097	0.090	0.095	0.088
	(0.051)	(0.057)	(0.037)	(0.036)
constant	0.261	0.276	−0.411	−0.402
	(0.297)	(0.293)	(0.179)	(0.178)
first stage: lobbying choice				
represented on committee		0.148		0.141
		(0.091)		(0.090)
chair of committee		−0.235		−0.309
		(0.144)		(0.153)
firm size		−0.007		0.101
		(0.276)		(0.046)
constant		−1.639		−1.640
		(0.060)		(0.072)
mean outcome	3.397		1.992	
Adjusted R^2	0.581		0.638	
Observations	5780	5780	5780	5780

Note: outcome variables are the inverse hyperbolic sine of the total number of citations a firm receives (columns 1 and 2) and the IHS transformation of the firm's citation rate (citations per inspection, columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Table 16: Average treatment effect of lobbying on noncompliance fines

	Proposed fine		Amount due	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: fines				
lobbied mine act$_{t-1}$	−0.017	0.637	0.010	0.516
	(0.048)	(0.447)	(0.035)	(0.504)
violator size	0.043	0.043	0.036	0.036
	(0.004)	(0.004)	(0.004)	(0.004)
share of coal mines	0.183	0.187	0.135	0.141
	(0.265)	(0.253)	(0.239)	(0.230)
share underground	−0.131	−0.115	−0.105	−0.093
	(0.090)	(0.087)	(0.073)	(0.071)
mean onsite hours	0.115	0.114	0.114	0.112
	(0.026)	(0.025)	(0.022)	(0.021)
excessive violation history	4.161	4.128	3.740	3.740
	(0.635)	(0.579)	(0.355)	(0.352)
negligence	0.586	0.605	0.586	0.598
	(0.111)	(0.116)	(0.097)	(0.102)
share s&s violations	1.971	1.939	1.844	1.821
	(0.072)	(0.084)	(0.069)	(0.076)
accident likelihood	−0.246	−0.238	−0.202	−0.197
	(0.034)	(0.038)	(0.030)	(0.032)
potential injury	0.308	0.307	0.281	0.281
	(0.038)	(0.038)	(0.035)	(0.034)
persons affected	0.317	0.327	0.208	0.213
	(0.097)	(0.101)	(0.083)	(0.087)
good faith	−1.317	−1.323	−1.019	−1.029
	(0.196)	(0.207)	(0.208)	(0.220)
share of citations contested			0.480	0.487
			(0.124)	(0.128)
MINER Act	0.861	0.852	0.809	0.802
	(0.066)	(0.078)	(0.052)	(0.063)
republican-controlled congress	−0.095	−0.094	−0.018	−0.018
	(0.022)	(0.022)	(0.021)	(0.023)
republican president	0.001	0.013	−0.012	−0.003
	(0.031)	(0.029)	(0.024)	(0.021)
constant	3.034	2.923	2.778	2.716
	(0.454)	(0.481)	(0.366)	(0.376)
first stage: lobbying choice				
represented on committee		0.154		0.164
		(0.091)		(0.092)
chair of committee		−0.107		−0.127
		(0.189)		(0.207)
firm size		0.123		0.102
		(0.058)		(0.051)
constant		−1.681		−1.643
		(0.075)		(0.075)
mean outcome	6.306		6.220	
Adjusted R^2	0.565		0.580	
Observations	5780	5780	5780	5780

Note: outcome variable is the average IHS-transformed fine assessed by MSHA per citation (columns 1 and 2) and the average IHS-transformation final fine amount (columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Table 17: Average treatment effect of lobbying on the share of fines reduced

	Uncontested fines		Contested fines	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: share of fines reduced				
lobbied mine act$_{t-1}$	0.016	0.080	−0.014	−0.053
	(0.008)	(0.024)	(0.005)	(0.024)
share of coal mines	0.018	0.018	−0.001	−0.001
	(0.008)	(0.007)	(0.014)	(0.014)
share underground	0.003	0.005	0.003	0.002
	(0.007)	(0.007)	(0.007)	(0.007)
negligence	−0.022	−0.021	0.019	0.018
	(0.008)	(0.008)	(0.024)	(0.024)
penalty points	0.036	0.035	0.082	0.082
	(0.008)	(0.007)	(0.023)	(0.022)
good faith	−0.112	−0.106	0.021	0.019
	(0.039)	(0.036)	(0.042)	(0.041)
MINER Act	0.004	0.003	−0.041	−0.041
	(0.004)	(0.003)	(0.013)	(0.013)
republican-controlled congress	0.011	0.012	−0.013	−0.013
	(0.004)	(0.004)	(0.004)	(0.004)
republican president	−0.020	−0.020	0.010	0.008
	(0.005)	(0.005)	(0.006)	(0.005)
share of citations contested			0.351	0.356
			(0.043)	(0.046)
share reviewed by CALJ			−0.013	−0.013
			(0.003)	(0.003)
constant	0.041	0.032	−0.399	−0.393
	(0.039)	(0.037)	(0.114)	(0.111)
first stage: lobbying choice				
represented on committee		0.111		0.069
		(0.077)		(0.142)
chair of committee		−0.138		−0.230
		(0.146)		(0.157)
firm size		0.097		0.146
		(0.042)		(0.042)
constant		−1.611		−6.978
		(0.132)		(1.353)
mean outcome	0.023		0.048	
Adjusted R^2	0.168		0.581	
Observations	5780	5780	2338	2338

Note: outcome variables are the share of a firm's uncontested quarterly fines that are reduced (columns 1 and 2), and the share of contested fines reduced (columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Table 18: Average treatment effect of lobbying on the size of fine reductions

	Uncontested fines		Contested fines	
	(1)	(2)	(3)	(4)
	OLS	IV	OLS	IV
second stage: average fine reduction				
lobbied mine act$_{t-1}$	0.007	0.055	−0.045	0.337
	(0.004)	(0.009)	(0.023)	(0.027)
share of coal mines	0.003	0.003	0.056	0.023
	(0.004)	(0.003)	(0.065)	(0.054)
share underground	0.001	0.002	0.009	0.029
	(0.003)	(0.004)	(0.028)	(0.028)
negligence	−0.011	−0.010	0.052	0.049
	(0.005)	(0.004)	(0.049)	(0.040)
penalty points	0.022	0.021	0.187	0.172
	(0.004)	(0.004)	(0.073)	(0.067)
good faith	−0.093	−0.081	−0.020	−0.012
	(0.032)	(0.027)	(0.119)	(0.104)
MINER Act	0.001	0.000	0.008	0.026
	(0.002)	(0.002)	(0.200)	(0.151)
republican-controlled congress	0.007	0.007	0.068	0.070
	(0.003)	(0.003)	(0.203)	(0.150)
republican president	−0.010	−0.009	0.032	0.034
	(0.003)	(0.003)	(0.021)	(0.025)
share of citations contested			−0.171	−0.130
			(0.046)	(0.046)
share reviewed by CALJ			−0.019	−0.032
			(0.021)	(0.020)
constant	0.044	0.032	−0.680	−0.630
	(0.036)	(0.030)	(0.360)	(0.333)
first stage: lobbying choice				
represented on committee		0.074		−0.028
		(0.074)		(0.092)
chair of committee		−0.105		−0.136
		(0.125)		(0.075)
firm size		0.101		0.045
		(0.023)		(0.039)
constant		−1.559		−4.396
		(0.116)		(0.549)
mean outcome	0.012		0.276	
Adjusted R^2	0.132		0.079	
Observations	5748	5748	1016	1016

Note: outcome variables are the average size of a fine reduction among uncontested fines (columns 1 and 2), and the average reduction among contested fines (columns 3 and 4). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Table 19: Average treatment effect of lobbying on payment outcomes

	Share paid		Share delinquent		Time to payment	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	OLS	IV	OLS	IV
second stage: payment outcomes						
lobbied mine act$_{t-1}$	0.003	−0.101	−0.001	−0.003	−0.004	−0.129
	(0.002)	(0.008)	(0.001)	(0.001)	(0.058)	(0.119)
share of coal mines	−0.015	−0.015	0.001	0.001	0.508	0.508
	(0.009)	(0.006)	(0.000)	(0.000)	(0.143)	(0.142)
share of citations contested	−0.015	−0.009	0.001	0.001	2.910	2.908
	(0.011)	(0.011)	(0.002)	(0.002)	(0.221)	(0.219)
violator size	0.001	0.001	−0.000	−0.000	0.038	0.038
	(0.001)	(0.000)	(0.000)	(0.000)	(0.019)	(0.019)
injury rate	−0.044	−0.042	−0.007	−0.008	−0.159	−0.164
	(0.045)	(0.036)	(0.004)	(0.004)	(0.442)	(0.443)
republican-controlled congress	−0.009	−0.007	0.001	0.001	−0.361	−0.362
	(0.005)	(0.004)	(0.001)	(0.001)	(0.075)	(0.075)
republican president	0.002	0.001	0.001	0.001	−0.055	−0.057
	(0.003)	(0.003)	(0.001)	(0.001)	(0.048)	(0.048)
MINER Act	−0.007	−0.005	0.004	0.004	−0.488	−0.488
	(0.006)	(0.005)	(0.001)	(0.001)	(0.073)	(0.073)
constant	0.970	0.975	−0.002	−0.002	4.752	4.760
	(0.004)	(0.004)	(0.001)	(0.001)	(0.226)	(0.228)
first stage: lobbying choice						
represented on committee		0.106		0.162		0.163
		(0.058)		(0.128)		(0.134)
chair of committee		−0.170		−0.311		−0.317
		(0.105)		(0.210)		(0.207)
firm size		0.096		0.112		0.104
		(0.063)		(0.025)		(0.024)
constant		−1.407		−1.671		−1.675
		(0.078)		(0.099)		(0.106)
mean outcome	0.973		0.002		5.062	
Adjusted R^2	0.035		0.010		0.424	
Observations	3783	3783	3783	3783	3779	3779

Note: outcome variables are the average share of outstanding fines paid (columns 1 and 2), the average share of fines delinquent (columns 3 and 4), and the average time it takes a firm to pay its fines (columns 5 and 6). All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Table 20: Average treatment effect of lobbying on accident, injury, and death rates

	Accident rate		Injury rate		Death rate	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	OLS	IV	OLS	IV
second stage: safety outcomes						
lobbied mine act$_{t-1}$	−0.121	1.747	−0.119	1.810	0.003	0.318
	(0.050)	(0.986)	(0.050)	(0.949)	(0.009)	(0.082)
share of coal mines	1.032	1.074	0.990	1.030	0.003	−0.000
	(0.547)	(0.559)	(0.565)	(0.577)	(0.013)	(0.011)
share underground	0.848	0.879	0.611	0.657	0.032	0.027
	(0.176)	(0.180)	(0.216)	(0.232)	(0.017)	(0.017)
violator size	0.058	0.057	0.058	0.055	0.001	0.001
	(0.013)	(0.013)	(0.013)	(0.013)	(0.001)	(0.001)
MINER Act	−0.872	−0.853	−0.921	−0.892	−0.021	−0.017
	(0.098)	(0.093)	(0.098)	(0.098)	(0.019)	(0.017)
republican-controlled congress	−0.286	−0.290	−0.282	−0.282	0.001	−0.000
	(0.039)	(0.042)	(0.043)	(0.044)	(0.008)	(0.007)
republican president	0.194	0.257	0.174	0.239	−0.003	0.003
	(0.070)	(0.064)	(0.076)	(0.065)	(0.010)	(0.010)
constant	2.506	2.378	2.567	2.433	0.033	0.016
	(0.118)	(0.153)	(0.122)	(0.152)	(0.018)	(0.019)
first stage: lobbying choice						
represented on committee		0.160		0.144		0.117
		(0.064)		(0.063)		(0.054)
chair of committee		−0.184		−0.170		−0.157
		(0.166)		(0.167)		(0.122)
firm size		0.090		0.106		0.065
		(0.037)		(0.050)		(0.029)
constant		−1.703		−1.697		−1.461
		(0.087)		(0.085)		(0.150)
mean outcome	2.122		2.004		0.027	
Adjusted R^2	0.215		0.179		0.003	
Observations	6009	6009	6009	6009	6009	6009

Note: outcome variables are the inverse hyperbolic sine of the average numbers of accident, injuries, and deaths per one million miles worked. All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.

Table 21: Average treatment effect of lobbying on future deaths

	(1) deaths_t	(2) deaths_{t+1}	(3) deaths_{t+2}	(4) deaths_{t+3}
second stage: deaths				
lobbied mine act_{t-1}	0.318	0.350	0.035	0.031
	(0.082)	(0.097)	(0.012)	(0.017)
share of coal mines	−0.000	0.013	−0.005	0.001
	(0.011)	(0.012)	(0.015)	(0.027)
share underground	0.027	0.007	0.011	0.002
	(0.017)	(0.013)	(0.017)	(0.013)
violator size	0.001	0.001	0.000	−0.001
	(0.001)	(0.001)	(0.001)	(0.002)
MINER Act	−0.017	−0.025	−0.008	−0.017
	(0.017)	(0.016)	(0.013)	(0.021)
republican-controlled congress	−0.000	0.000	−0.002	0.005
	(0.007)	(0.008)	(0.007)	(0.010)
republican president	0.003	0.010	0.007	0.001
	(0.010)	(0.009)	(0.008)	(0.009)
constant	0.016	0.146	0.043	0.022
	(0.019)	(0.017)	(0.014)	(0.020)
first stage: lobbying choice				
represented on committee	0.117	0.132	0.098	0.153
	(0.054)	(0.067)	(0.099)	(0.108)
chair of committee	−0.157	−0.164	−0.198	−0.231
	(0.122)	(0.148)	(0.166)	(0.179)
firm size	0.065	0.066	0.083	0.102
	(0.029)	(0.030)	(0.028)	(0.025)
constant	−1.461	−1.616	−1.458	−1.824
	(0.150)	(0.086)	(0.078)	(0.087)
mean outcome				
Observations	6009	5385	5386	5238

Note: outcome variable is the inverse hyperbolic sine of the average number of deaths per million hours worked. All columns display IV results. Column (1) displays the ATE of lobbying on deaths for the quarter after that in which the firm engaged in safety and health lobbying; column (2) for the second quarter following that in which lobbying occurred; column (3) for the third quarter following lobbying; and column (4) for the fourth quarter (or one year) following lobbying activity. All models include firm-level fixed effects. First and second stage IV regressions are estimated simultaneously via maximum likelihood. Standard errors are clustered at the firm level.