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ABSTRACT

In 2013, the energy and natural resources sector spent $359 million lobbying. Such spending is largely perceived as a strategy by industry to oppose regulation. Research has barely begun to investigate how firm-level performance on salient political issues affects corporate political strategy. In this paper, we address this issue in the context of the recent climate change policy debate in the United States. We hypothesize a U-shaped relationship between greenhouse gas (GHG) emissions and lobbying expenditures. To test our hypothesis, our study leverages novel data on firm-level GHG emissions and lobbying expenses aimed specifically at climate change legislation. Our results based on 3,194 firm-observations during a 4 year-period, suggest that both dirty *and* clean firms are active in lobbying, which challenges the view of adversarial corporate strategy.

Keywords: Corporate Political Activity, Lobbying, Environmental Performance, Climate Change

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INTRODUCTION

Scholars agree that political issue salience—the importance of the political issue to the firm—is a primary motivator of corporate political activity (CPA) (Bonardi & Keim, 2005; Hillman, Keim, & Schuler, 2004). A salient political issue, such as social or environmental concerns, is commonly viewed as a threat to business, especially to poor performers wary of government intervention (Bonardi & Keim, 2005; Lyon & Maxwell, 2008). This view is perhaps best exemplified in the environmental policy context, where the prevailing view of corporate political involvement is one of dirty industries opposing government threats to impose more stringent regulations (Cho, Patten, & Roberts, 2006; Fremeth & Richter, 2011). Such research is consistent with the perception among the general public that the wrong incentives are driving policy decisions at the expense of the public interest (OECD, 2014).

But are industries always united in their opposition to environmentally favorable policies? What about environmentally proactive firms that stand to benefit from policies that penalize their dirtier competitors? While the existing empirical literature indeed shows dirtier firms are more likely to contribute to political campaigns, there is little if any empirical evidence that cleaner firms are actively pursuing political influence. In this paper we find evidence of a more complex relationship between a firm's performance on a political issue and its motivation to influence public policy. In particular, we establish a U-shaped relationship wherein both cleaner and dirtier firms vie for favorable political outcomes.

The prevailing view of issue salience as a threat to business at the industry level implies that firms performing well on an issue have little interest in the policy outcome. Indeed, the U.S. Chamber of Commerce spent more than $60 million (the most of any single organization) in 2008 lobbying against climate change legislation.[2] In the same year, one of the highest-polluting power generators, Southern Company, spent an estimated $14 million on climate change lobbying (see Table 2).

A less adversarial view of social and environmental performance and policy, however, emphasizes the opportunity for firms to engage in discourses that aim at setting or redefining environmental standards and regulations by assuming enlarged political co-responsibility (Kamieniecki, 2006; Prakash, 2000; Scherer, Palazzo, & Baumann, 2006); such a view also stresses the opportunity for

[2] Lobbying expenditures in this and the following paragraph were calculated using data and methods described in the data section.

socially and environmentally proactive firms with strong performance records to leverage new regulations and performance standards to gain competitive advantage over industry rivals (Fremeth & Richter, 2011; Reinhardt, 1999; Vogel, 1995). Despite being one of the greenest utilities in the nation, for example, Pacific Gas and Electric (PG&E) spent an estimated $27 million lobbying climate change at the federal level in 2008, the second highest climate lobbying spending of all firms (see Table 2). Meanwhile, the utility has openly supported a cap-and-trade system for carbon emissions, even leaving the U.S. Chamber of Commerce in 2009 due to the Chamber's vociferous opposition to carbon regulation. Notwithstanding diverging performance records and positions on climate change policy, both Southern Company and PG&E were among the most politically active firms during 2007–2009, a time when the likelihood of new climate change legislation was at its highest.

This suggests a strategic incentive for firms on the opposite ends of the environmental performance spectrum to be politically active on environmental issues. Nonetheless, with little exception, the empirical literature has paid scant attention to the relationship between environmental performance and political activity (Cho et al., 2006; Clark & Crawford, 2012; Kamieniecki, 2006). Until recently, empirical studies of corporate political activity have focused mostly on election campaign contributions via political action committees (PACs) to proxy political strategies and activity (Brasher & Lowery, 2006; de Figueiredo & Tiller, 2001; Hansen & Mitchell, 2000; Kim, 2008). Lobby expenditures, which are consistently five times larger than PAC contributions, have been markedly absent from empirical studies (de Figueiredo & Cameron, 2009; de Figueiredo & Richter, 2013). This is a concern since there is a dearth of credible evidence that campaign contributions affect political outcomes and mounting evidence that lobbying is the most effective means to influence public policy (de Figueiredo, 2002).

In this study, we use novel, issue-specific lobbying expenditures data, which have only recently become electronically available to scholars and the public, to analyze the relationship between environmental performance and political activity. We use data on lobbying produced by the Center for Responsive Politics (CRP), which we coded to obtain climate change lobbying expenditures between 2006 and 2009. Our results reveal that both dirty *and* clean firms are active in lobbying, suggesting that while dirty firms lobby to maintain the status quo clean firms view environmental regulation as an opportunity to gain firm-level advantages. Our analysis makes important empirical contributions to the corporate political strategy literature. We look beyond the linear relationship

found in existing studies to explain how a firm's environmental performance motivates political activity and find evidence that, in addition to the usual suspects, greener firms are also attempting, and perhaps competing, to influence legislative outcomes.

In the ensuing two sections we review the relevant literature and develop our testable proposition. We then describe our data and analysis methods before presenting the results. Finally, we discuss the implications and limitations of our findings, and conclude by suggesting areas for future research.

LITERATURE REVIEW

The corporate political strategy literature, which focuses on the strategies firms use to shape government policy (Baron, 1995; Baysinger, 1984; Hillman et al., 2004; Keim & Baysinger, 1988; Keim & Zeithaml, 1986), has made important strides toward explaining firms' rationales for developing political strategies (Baron, 2010; Hillman & Hitt, 1999; Kamieniecki, 2006). Scholars generally agree that as the salience of a policy debate increases, firms are more likely to become politically active (Clark & Crawford, 2012; Hillman & Hitt, 1999; Hillman et al., 2004; Hojnacki, Kimball, Baumgartner, Berry, & Leech, 2012; Kamieniecki, 2006; Mahoney, 2008; Vogel, 1996). Schuler and Rehbein (1997: 121) define issue salience as "a policy's net impact on the firm's competitive strategies and performance." Getz (1997) suggests issue salience affects the intensity of corporate political activity, while Hillman and Hitt (1999) posit issue salience affects the likelihood that a firm engages in collective action.

Overall, models of corporate political activity have yet to discover how characteristics of the firm relevant to a contested political issue impact issue salience (Kamieniecki, 2006). Conceptualized as exogenous to the individual firm, salience addresses *whether* a policy will affect an industry or set of industries and the magnitude of this impact relative to the impact of other issues. Explaining firm-level variation in political activity is left to organizational factors such as firm size, age, or formalized structures (Hillman et al., 2004) that, independent of a particular issue, affect the propensity and ability to be politically active in general (Schuler & Rehbein, 1997). Drawn from an organizational rather than strategic perspective, these factors do not account for the relationship between a firm's strategies (e.g., exemplary environmental performance) and a particular issue's characteristics.

Considering the significant expansion of environmental laws and regulations and the increased political clout of environmental groups over the past several decades (Rivera, 2010; Vogel, 1995),

environmental policy is a promising context in which to investigate the determinants of political activity (Kamieniecki, 2006). Nonetheless, only a small number of studies have empirically examined the relationship between environmental performance and political activity (Hillman et al., 2004; Lyon & Maxwell, 2008; Prakash, 2000; Richter, 2011) and these have produced mixed results. Cho et al. (2006) found that corporate political campaign spending increases as firm-level environmental performance declines and concluded that dirtier firms use political strategies to mitigate policy pressure. Clark and Crawford (2012) found evidence of a statistically significant relationship between environmental performance and one political activity tactic (financial incentive) but not another (constituency building). Interestingly, the study found that firms with neither good nor bad performance ratings (i.e., 'mixed bag' and 'non-starters') are likely to be more engaged in the financial incentive tactic but found the opposite result for constituency building.

To date, there has been no empirical analysis of how lobbying relates to environmental performance. This might be explained by the fact that lobbying disclosures were not electronically available (or searchable by the public) until after the Lobbying Disclosure Act was amended in 2007. Existing empirical studies of corporate political activity have instead relied primarily on election campaign contributions through PACs (Brasher & Lowery, 2006; de Figueiredo & Tiller 2001; Hansen & Mitchell, 2000; Kim, 2008), which are considered to be a relatively poor indicator political activity (Hansen & Mitchell, 2000; Hansen, Mitchell, & Drope, 2005; Munger, 1988). It is also difficult to link a firm's campaign contribution to a specific political issue, such as environmental policy, as politicians typically run on a diverse platform of issues. Lobbying efforts, in contrast, target specific issues, which must be disclosed along with associated expenditures. Finally, firms devote more resources to lobbying than any other form of political activity (Baron, 2010), typically spending five times more on lobbying than on PAC contributions (de Figueiredo & Richter, 2013) in any given year. The recent electronic availability of lobbying data thus presents an opportunity to advance empirical research into the relationship between environmental performance and political activity.

In summary, considerable scholarly research has been devoted to uncovering the determinants of corporate political behavior. While there is little disagreement that salience is the primary motivator of political activity, few studies have investigated how salience is modulated by firm-level strategies. As this literature has given very little attention to environmental policy, there is no consensus on how environmental strategies and subsequent performance relate to political activity. Of the few empirical

studies that have examined this relationship, to our knowledge none has used lobbying expenditures to measure political activity.

ISSUE SALIENCE, PERFORMANCE, AND CORPORATE POLITICAL ACTIVITY

In this section we develop a framework to explain political activity as a function of each firm's performance on a political issue (henceforth "issue performance"). Issue performance is the outcome of each firm's management philosophy and strategic choices, and thus an indication of its interest in maintaining the current regulatory order. A firm with poor performance on an issue will likely view regulation as a threat to profitability and wish to preserve the status quo. A firm with exemplary performance, on the other hand, may perceive regulation as an opportunity to engender market conditions that favor good performance.

As such, we posit that the salience of an issue is highest for firms approaching either end of the performance spectrum. Firms with the least interest in the political outcome are those with average performance records, that is, middle-of-the-road performers. Taking this perspective of salience and its relationship to issue performance allows evaluation of how a contested policy's impact—and thus political activity—varies within an industry. While there are many political issues, we focus on environmental policy as it is of considerable strategic importance to businesses.

Poor Performers

The adversarial relationship between business and government is perhaps most acutely displayed in the environmental context (Rivera, 2010; Vogel, 1996). Business involvement in policy process—especially with regard to social and environmental issues—is largely viewed as a unified force of resistance to government intervention and changes to the status quo (Fremeth & Richter, 2011; Shaffer, 1995), while firms that attempt to wield political influence are widely considered to be 'evil' (Richter, 2011). The burden of environmental regulation depends on the firm's environmental management strategies, capabilities, and resulting level of performance (Leone, 1986; Reinhardt, 1999). Dirtier firms following a compliance-oriented strategy have an interest in keeping environmental standards as low as possible (Russo & Fouts, 1997). Complying with newly imposed regulations will be costlier for dirty firms than for clean firms (Reinhardt, 1999; Richter, 2011; Vogel, 1995). Indeed, empirical research has shown that poor environmental performance is associated with increased levels of political activity (Cho et al., 2006). These arguments suggest that

environmental regulatory change is salient to poorer performing firms—those with the most to lose if forced to meet higher performance standards—and thus that the salience of an environmental policy issue increases as environmental performance declines (Cho et al., 2006).

Exemplary Performers

However, as the economic theory of regulation has long argued, firms can often obtain private benefits by promoting environmental regulation, which can engender barriers to entry and other sources of competitive advantage (Gruenspecht & Lave, 1989; Peltzman, 1976; Stigler, 1971). New environmental policies create both losers and winners (Leone, 1981; Shaffer, 1995). Firms with greater capabilities for adapting to new legislation or regulation can use public policy strategically to capture firm-specific advantages over competitors (Russo & Fouts, 1997; Shaffer, 1995). Environmental regulation can foster competitive advantage for greener firms that are capable of meeting the newly generated demand (from both regulators and consumers) for environmental quality at a lower cost (Leone, 1981; Reinhardt, 1999). These arguments suggest that the salience of environmental policy also increases as firms become greener.

Middle-of-the-Road Performers

Environmental policy does not just create losers (i.e., poor performers) and winners (i.e., exemplary performers); there are also subsets of firms that are minimally affected. Firms that have taken the middle road with regard to environmental strategy—which have neither poor nor exemplary performance records—have the least at stake in the policy outcome. Without a clear environmental strategy such firms are uncertain about how proposed regulation will affect profitability and thus what side of the issue to be on (Clark & Crawford, 2012). The small benefits these firms may gain from either supporting or opposing regulation are outweighed by the costs. Thus, we would expect that the salience of an environmental policy debate decreases as environmental performance approaches an ambiguous middle ground, which is neither particularly poor nor exemplary.

Summary

Together these arguments imply a U-shaped relationship between issue salience and performance: salience is highest for both exemplary and poor performers, and lowest for middle-of-the road performers. As salience increases so does political activity (Bonardi, Hillman, & Keim, 2005; Bonardi & Keim, 2005; Clark & Crawford, 2012; Getz 1997; Hillman et al., 2004; Rivera, 2010;

Vogel, 1996; Yoffie, 1987). As such, we would expect the relationship between issue performance and political activity to be U-shaped.

METHODS

In this section we describe the data and methods used to test for a U-shaped relationship between issue performance and political activity. We focus on lobbying, wherein firms directly convey to policy makers information (e.g., political, technical, and economic assessment) that supports their preferred political outcome (Hillman & Hitt, 1999; Rivera, 2010). Scholars also note that firms are most likely to lobby when an issue has become highly politicized and when the debate has focused on several specific policy options (Hillman & Hitt, 1999). Issue performance is examined in the context of climate change environmental performance and measured through greenhouse gas (GHG) emissions.

Data

GHG emissions data were acquired from Trucost. Trucost provides a range environmental performance data for the socially responsible investment community and are increasingly used in peer-reviewed academic research (e.g., Dawkins & Fraas, 2011; Delmas, Etzion, & Nairn-Birch, 2013; Jira & Toffel, 2013). Where available, Trucost collects, standardizes, and validates company-reported environmental data from annual reports, corporate websites, and/or other public disclosures. Where not disclosed publicly, data are calculated from global fuel use or imputed by conducting a detailed sector breakdown of each firm and applying a proprietary input-output economic model based on government census and survey data, industry data and statistics, and national economic accounts. The data cover 2004 through 2008.

We obtained lobbying data from the CRP. Under the Lobbying Disclosure Act, in-house and outside lobbyists must file quarterly reports describing lobbying activity. These reports disclose the amount spent on lobbying and describe the issues lobbied.[3] These data are available from the Senate Office of Public Records and the CRP standardizes the data and makes them available to the public. We used four years of lobbying data, 2006 to 2009. This time period allowed our analysis to cover lobbying behavior before the financial crisis and during the height of climate lobbying; the Waxman-

[3] Amounts less than $5,000 are reported as $0 and amounts of $5,000 or more are rounded to the nearest $10,000.

Markey bill passed in the House in June 2009 but was not taken up in the Senate and there have been no major climate bills since.

To determine if lobbying is related to climate change, we searched issue descriptions for keywords ("climate," "global warming," "greenhouse," "GHG," and "GHGs") and bill numbers and names of two major climate bills (the Waxman-Markey bill and the Lieberman-Warner bill). If an issue description in a report contained any of the search terms, we coded the entire amount in the report as climate change lobbying. Additionally, if the name of the lobbyist firm was different than the name of the client firm or the client's parent firm (as provide by CRP), we considered that amount to be outside lobbying. We then aggregated lobbying amounts based on each firm's parent firm (or the firm itself if the parent firm was not in our GHG data).

Data used to construct our control variables were obtained from Compustat, RiskMetrics, and publicly available data on state-level environmental regulations. Merging these disparate data sets produced 3,194 firm-year observations out of which 460 engaged in climate change lobbying—54 in 2006, 105 in 2007, 141 in 2008, and 160 in 2009.[4] Lobbying is mostly focused on the House of Representatives and the Senate. Of the 460 firm-years that engaged in climate lobbying, 459 (99.8%) lobbied both houses of Congress and one (0.2%) lobbied the House but not the Senate.

Data Analysis

Our model of the determinants of lobbying expenditures is as follows:

$$y_{i,j,t} = \beta_1 GHG_{i,t-1} + \beta_2 GHG^2{}_{i,t-1} + \alpha \boldsymbol{X_{i,t-1}} + \delta T_t + \theta S_j + \gamma \lambda_{i,t} + \varepsilon_{i,t} ,$$

where $y_{i,j,t}$ represents lobby expenditures for firm i in sector j in year t, and $GHG_{i,t-1}$ and $GHG^2{}_{i,t-1}$ are the linear and quadratic GHG emissions variables. $\boldsymbol{X_{i,t-1}}$ is the vector of control variables, T_t represents the year dummy variable (to control for secular changes), S_j represents sector dummy variables (to control for differences across sectors), and $\lambda_{i,t}$ represents the propensity to lobby in a given year. We lag both independent variables and all control variables one year behind the dependent variable.

[4] The overall sample is limited to 3,194 firm-year observations for which we had Trucost GHG data. The lobbying sample is limited to the 460 observations (out of the 3,194 observations) that had positive climate lobbying expenditures.

We use the two-step Heckman selection model, which is commonly used with lobbying data in the corporate political strategy and related literature (Brasher & Lowery, 2006; Hansen & Mitchell, 2000; Kim, 2008). As our sample includes only those firms that chose to lobby issues related to climate change, there is a high risk of selectivity. Selectivity is a concern if similar variables are likely to influence participation in the treatment groups (i.e., the decision to lobby) and treatment outcome (i.e., lobbying expenditures). The Heckman methodology controls for this with a two-step process. The first step uses a probit model to estimate, for all firms, the propensity to lobby. The estimate of propensity (i.e., the "hazard rate" or lambda) is then included an OLS model in second step, in effect controlling for self-selectivity bias.

To avoid having our identification rely solely on the nonlinearity of the selection equation, we included in the selection equation a dummy variable for whether the firm lobbied on any issue in the previous year. This variable captures whether the firm has an existing relationship with lawmakers and lobbyists. Developing such relationships is a fixed cost. The presence of a relationship affects whether a firm pursues climate lobbying but, once the relationship is established, it does not affect the amount spent on climate lobbying. Thus, satisfies the exclusion restriction: It affects whether a firm chooses to lobby on climate change, but does not affect its climate change expenditure.

Additionally, simultaneity is a potential issue: If a firm simultaneously chooses emissions level and lobbying expenditure, it will be difficult to draw a causal connection as GHG emissions can affect lobbying and lobbying can affect GHG emissions. We believe that GHG emissions are primarily determined by factors such as existing market conditions, technology and capital stock, and management structure, and are thus difficult to change. Therefore we believe that it is more likely that GHG emissions influence lobbying expenditure than the reverse. Nonetheless, to mitigate the problem, we lag GHG emissions by a year; current-year lobbying cannot influence previous-year emissions.

Dependent Variables

We construct two dependent variables for the two-step Heckman method. The dependent variable for the first step is a dichotomous variable *Selection* (coded '1' if a firm spent any money on lobbying the issue of climate change and '0' otherwise). The dependent variable for the second stage, *Expenditure*, is the annual amount spent on lobbying the issue of climate change at the federal level in million dollars. As complementary measures of lobbying behavior, we construct three additional

variables: (1) the annual amount a firm spends by hiring outside lobbyists firms to engage in climate lobbying, *Outside Expenditure*; (2) the number of outside lobbyist firms the firm employs for climate lobbying, *Outside Lobbyists Firms*; and (3) the percentage of each firm's climate change lobbying expenditures spent on outside lobbyists, *Percent Outside Expenditure*. The latter variable is created by dividing *Outside Expenditure* by *Expenditure*, and multiplying by 100. These additional variables allow us to understand better how firms choose to lobby, whether internally or through outside lobbying firms (Bertrand, Bombardini, & Trebbi, 2014).

Independent Variables

Each firm's GHG emissions include all GHG Protocol gases weighted by global warming potential factors and measured as tons of CO_2-equivalent (CO_2-e). We include Scope 1, Scope 2, and Scope 3 emissions as defined by the GHG Protocol—the most commonly used international GHG accounting protocol (Ranganathan, Corbier, Bhatia, Schmitz, Gage, & Oren, 2004). Scope 1 emissions are all GHGs emitted from sources directly owned or operated by the responsible firm; Scope 2 are all indirect emissions resulting from purchased electricity, heat or steam; and Scope 3 emissions are emissions from all other sources. The latter two categories of emissions belong to a firm's supply chain. Adding all three categories of emissions together we create the variable *GHG Emissions*, which is log transformed to adjust for skewedness and mitigate the influence of outliers. To avoid collinearity with the square-transformed variable, it is also centered. To test the U-shaped relationship a second variable was generated by squaring the log-transformed, centered *GHG Emissions* term. This is labeled $GHG\ Emissions^2$. Finally, for a given GHG emissions value, the balance of direct versus supply-chain emissions may vary across firms. To account for any influence this may have on a firm's lobbying behavior we construct the variable *Percent Supply-Chain GHG*, which is calculated by dividing the sum of Scope 2 and Scope 3 emissions by *GHG Emissions* and multiplying it by 100.

Control Variables

We control for other factors that affect lobby expenditures. Firms are more likely to participate in corporate political activity when the private benefits are concentrated within a smaller group of firms (Olson, 1965). Thus, we include *Concentration Ratio*, calculated from Compustat as the market share of 4 largest firms at the 3-digit NAICS code level. Additionally, shareholders can exert pressure on firms to influence their stance on social and environmental issues (Delmas & Montes-Sancho, 2010;

Reid & Toffel, 2009) and political involvement (Schuler & Rehbein, 1997). To account for heterogeneity in shareholder activism we include a binary *Resolutions* variable, which is coded '1' if a firm is targeted by at least one shareholder resolution related to climate change in a given year or '0' otherwise (Reid & Toffel, 2009). Resolutions data were gathered from RiskMetrics.

Scholars note that the political behavior of firms is likely influenced by antecedent state-level political debates and regulatory efforts (Reid & Toffel, 2009). This is especially relevant to climate change, as there is considerable variation in each state's stance on the issue (Cragg, Zhou, Gurney, & Kahn, 2012; Delmas & Montes-Sancho, 2011; DeShazo & Freeman, 2007; Reid & Toffel, 2009). To account for heterogeneity in state-level regulation, we include three binary variables indicating whether a firm is headquartered in a state that (at the time): (1) has passed climate change legislation (i.e., *California*); (2) is a member of the Regional Greenhouse Gas Initiative (*RGGI*); and (3) has enacted Renewable Portfolio Standards (*RPS*).

We include several financial variables shown in prior research to affect CPA, all of which are constructed using data from Compustat. We construct the variable *Firm Size* as total assets (King & Lenox, 2002). Hillman et al. (2004) note that firms with less debt have greater organizational slack and can afford to lobby more intensely. As such we include the variable *Leverage*, calculated as the ratio of total debt to total assets. Similarly, slack resources are also affected by firm performance. We proxy *Firm Performance* as return on assets (ROA), which we calculate as earning performance interest divided by total assets (King & Lenox, 2002). We also include *Capital Intensity*, capital expenditures divided by total sales, to account for variation in available capital. All financial control variables, other than *Firm Performance*, are log transformed. Additionally, we include sector dummy variables, based on Industrial Classification Benchmark (ICB) super sectors, and year dummy variables. We also included a variable that satisfies the exclusion restriction, whether the firm had engaged in *Previous-Year Lobbying* (on any issue).

RESULTS

Table **Error! Reference source not found.** displays summary statistics of lobbying expenditures and mean GHG emissions by sector for firms that spent money on climate lobbying, the sample pertinent to our expenditures analysis. We see that firms from almost all sectors of the economy

lobbied the issue of climate change at the federal level.[5] The automobiles and parts, basic resources, and utilities sectors appear most active in lobbying, with a high percentage of firm-years engaging in climate lobbying, which is consistent with the expected economic impact of climate change legislation (Reid & Toffel, 2009). Interestingly, firms from sectors less sensitive to carbon regulation, such as banks, financial services, and healthcare, also lobbied on climate change.

In our sample, 14% of the firms lobbied on climate change. The mean estimated annual lobby expenditure per firm across all sectors is approximately $2.3 million with a relatively high standard deviation (approximately $3.8 million) and a maximum of $29 million spent by Exxon Mobil in 2008 (see Table **Error! Reference source not found.**). As shown in Table 2, the top five lobbying firms exhibit various levels of GHG emissions. For example Exxon's and PG&E's lobbying expenses are relatively similar in 2008 ($29 million and $27.25 million respectively) but differ greatly in their GHG emissions (306 million tons and 4.26 million tons respectively).

[5] We excluded from two sectors (investment instruments and telecommunications) from our analysis as no firms in those sectors performed any climate lobbying at over the time period and dropped out of our analysis in both stages of the Heckman model.

TABLE 1
Climate Change Lobbying Selection (for All) and Expenditure and GHG Emissions (for Climate Lobbying Firm-Years)

	All	Climate lobbying firm-years							
	%		Climate lobbying expenditure (million $)				GHG emissions (million tons CO_2-e)			
	Lobby	N	Mean	(S. d.)	Min.	Max.	Mean	(S. d.)	Min.	Max.
Automobiles and parts	31.82	14	5.67	(4.61)	0.17	14.28	39.61	(26.99)	8.55	74.90
Banks	1.50	2	4.26	(1.59)	3.14	5.39	2.69	(0.97)	2.00	3.38
Basic resources	41.67	35	1.91	(1.90)	0.04	7.79	24.82	(25.53)	2.75	81.60
Chemicals	28.71	29	1.33	(1.52)	0.08	6.64	15.59	(18.05)	1.40	68.30
Construction and materials	23.28	17	0.55	(0.75)	0.04	3.14	2.38	(1.41)	0.94	5.51
Financial services	3.42	5	1.64	(1.24)	0.21	3.31	5.40	(8.06)	0.03	18.30
Food and beverage	16.19	17	1.80	(2.82)	0.06	9.37	19.63	(17.02)	3.39	57.30
Healthcare	1.81	5	2.73	(2.63)	0.57	6.38	4.50	(4.19)	1.09	9.65
Industrial goods and services	15.09	75	3.23	(4.60)	0.01	26.40	8.98	(6.78)	1.05	35.00
Insurance	5.59	9	3.37	(2.71)	0.27	8.46	2.09	(1.88)	0.60	5.64
Media	2.59	3	0.25	(0.12)	0.14	0.38	0.23	(0.21)	0.05	0.46
Oil and gas	22.31	56	3.73	(6.61)	0.03	29.00	55.01	(84.82)	0.31	329.00
Personal and household goods	8.54	14	1.15	(1.89)	0.14	7.20	9.58	(11.47)	1.12	42.60
Real estate	2.24	3	0.30	(0.25)	0.02	0.49	0.45	(0.06)	0.39	0.52
Retail	2.98	7	1.70	(2.31)	0.03	6.59	15.41	(22.07)	0.32	47.60
Technology	8.58	29	1.40	(1.26)	0.06	5.07	5.57	(5.09)	0.12	16.20
Travel and leisure	9.76	12	2.59	(2.88)	0.31	10.30	19.14	(9.82)	2.57	31.80
Utilities	60.09	128	1.79	(3.20)	0.02	27.25	40.49	(37.52)	0.90	167.00
Total	14.44	460	2.32	(3.83)	0.01	29.00	25.86	(41.05)	0.03	329.00

TABLE 2

Top Five Climate Lobbying Firms by Year

Company	Sector	Lobbying expenditure (million $)	GHG emissions (million tons CO_2-e)
Year 2009			
Exxon Mobil	Oil and gas	27.43	302.00
General Electric	Industrial goods and services	26.40	31.30
Chevron	Oil and gas	20.82	148.00
ConocoPhillips	Oil and gas	18.07	129.00
Boeing	Industrial goods and services	16.85	11.30
Year 2008			
Exxon Mobil	Oil and gas	29.00	306.00
Pacific Gas and Electric	Utilities	27.25	4.26
General Electric	Industrial goods and services	18.66	28.60
Southern Company	Utilities	13.98	165.00
General Motors	Automobiles and parts	13.10	66.10
Year 2007			
General Motors	Automobiles and parts	14.28	72.90
General Electric	Industrial goods and services	9.84	35.00
Union Pacific	Industrial goods and services	9.73	9.84
Chevron	Oil and gas	8.95	152.00
Southern Company	Utilities	7.28	158.00
Year 2006			
Exxon Mobil	Oil and gas	14.52	329.00
Ford Motor	Automobiles and parts	9.10	66.90
American International Group	Insurance	5.02	3.78
General Motors	Automobiles and parts	4.70	74.90
Honeywell	Industrial goods and services	4.42	9.07

Figure 1 shows the mean climate lobbying expenditure and mean all-issue lobbying expenditure by sector. Sectors that devote the majority of their lobbying to climate change include: automobiles and parts, basic resources, utilities, and oil and gas.

FIGURE 1

Means of All Lobbying and Climate Lobbying Expenditure by Sector

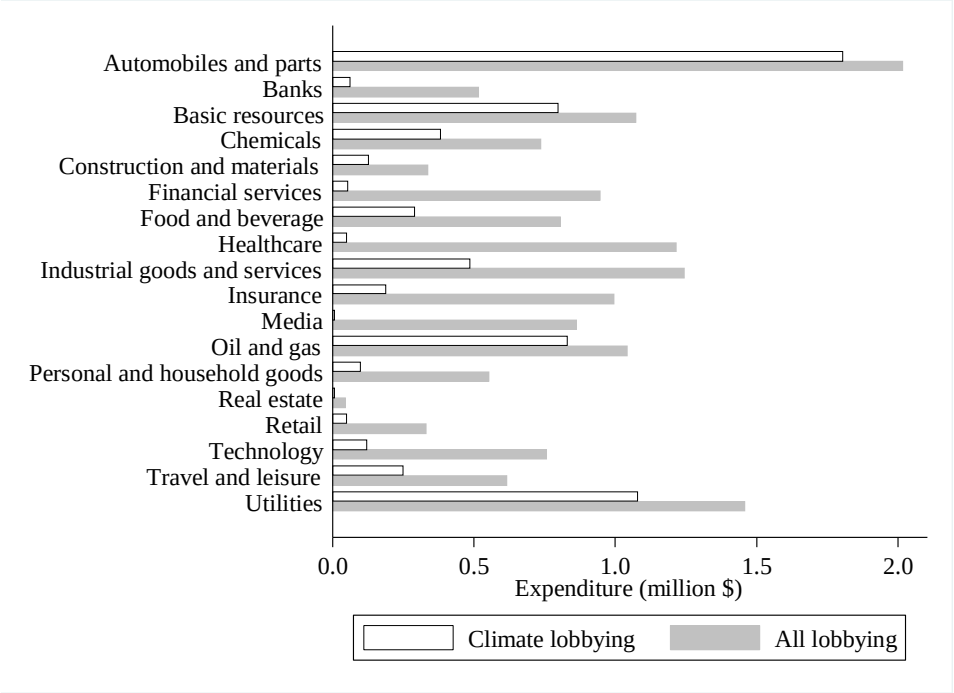
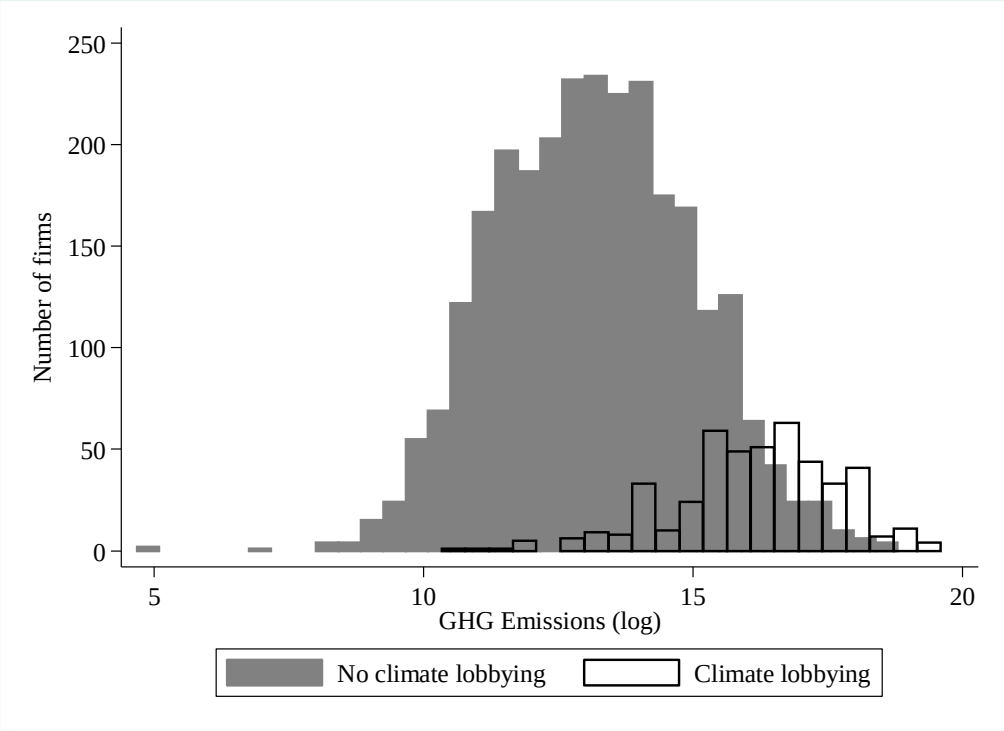


Figure 2 shows the distribution GHG emissions among firms for the firm-years that engaged in climate lobbying and those that did not. Both distributions look approximately normal but the climate lobbying sample has a higher mean.

FIGURE 2

Histogram of Greenhouse Gas Emissions



Variable descriptions and summary statistics are shown in Table **Error! Reference source not found.**, and variable correlations are displayed in Table **Error! Reference source not found.**. As expected, the largest positive correlations with lobbying expenditures come from *Firm Size* and *GHG Emissions*. The presence of *Resolutions* is also relatively highly correlated with the dependent variable. The correlation of previous year's lobbying with selection supports its inclusion in the first stage of the Heckman analysis. Overall, no correlations are high enough to raise collinearity concerns.

The results of the two-step Heckman regression analysis with *Expenditures* as the dependent variable are shown in Table **Error! Reference source not found.**. Model 1(a) presents the results from the first stage probit estimates for the factors influencing the likelihood of lobbying on climate change issues. *Concentration Ratio* has a positive but insignificant effect on a firm's choice to lobby. Nonetheless, the positive coefficient is consistent with Olson's (1965) prediction that firms are more likely to act collectively when the private benefits are concentrated within a smaller group of firms. Similarly, the effect of *Firm Size* is positive but insignificant; it is consistent in its sign with the

literature. The high positive coefficient estimated for *Previous Year's Lobbying* suggest this variable is a good predictor of whether or not a firm will choose to lobby on climate change and is consistent with the literature (Kerr, Lincoln, & Prachi, 2014).

Looking at the three GHG variables, *Percent Supply-chain GHG* is negative ($p < 0.01$) while the coefficient for *GHG Emissions* is positive and significant. These results suggest that, as expected, a firm's choice to lobby depends on GHG emissions and that this relationship is strongest when emissions come from direct sources.

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TABLE 3
Summary Statistics

Variable	Variable description	Mean	(S. d.)	Min.	Max.
Expenditure	Total climate change lobbying expenditure (million $); source: CRP	0.33	(1.66)	0.00	29.00
Outside lobbyist expenditure	Total amount spent on outside climate lobbyists; source: CRP	0.03	(0.16)	0.00	2.67
Outside lobbyist firms	Number of outside climate lobbyist firms hired; source: CRP	0.20	(0.83)	0.00	15.00
Percent outside expenditure	Outside climate lobbyist expenditure as a percentage of total climate lobbying expenditure (set at 0 if no climate lobbying); source: CRP	3.46	(16.01)	0.00	100.00
Selection	Firm lobbied on climate change (dummy); source: CRP	0.14	(0.35)	0	1
Concentration ratio	Market share of four largest firms in industry based on three-digit NAICS code; source: Compustat	0.38	(0.18)	0.14	1.00
Leverage	Total debt divided by total assets (logged); source: Compustat	-1.80	(1.19)	-4.61	0.78
Growth	Annual change in sales ratio (logged); source: Compustat	0.08	(0.32)	-12.68	1.43
Capital intensity	Capital expenditures divided by total sales (logged); source: Compustat	-2.90	(1.01)	-5.88	5.26
Firm performance	Return on assets (ROA); source: Compustat	0.05	(0.10)	-1.16	0.95
Firm size	Total assets (logged); source: Compustat	8.77	(1.47)	3.49	14.60
Resolutions	Firm targeted by climate resolution(s) (dummy); source: RiskMetrics	0.05	(0.22)	0	1
California	Firm headquartered in California (dummy)	0.13	(0.34)	0	1
RGGI	Firm headquartered in a state participating in RGGI (dummy)	0.19	(0.39)	0	1
RPS	Firm headquartered in state which has RPS legislation (dummy)	0.69	(0.46)	0	1
Percent supply-chain GHG	Percentage of total emissions from supply chain (logged); source: Trucost	4.23	(0.66)	0.09	4.61
GHG emissions	GHG emissions directly emitted by the firm (tons CO_2-e, logged and centered); source: Trucost	0.00	(2.07)	-8.91	6.02
GHG emissions^2	Quadratic transformed GHG emissions	4.28	(5.57)	0.00	79.34
Previous-year lobbying	Firm lobbied on any issue in the previous year (dummy); source: CRP	0.53	(0.50)	0	1

Note: Number of observations = 3,194

TABLE 4
Correlation Matrix

	Expenditure	Outside expenditure	Outside lobbyist firms	Percent outside expenditure	Selection	Concentration ratio	Leverage	Growth	Capital intensity	Firm performance	Firm size	Resolutions	California	RGGI	RPS	Percent supply-chain GHG	GHG emissions	GHG emissions^2
Expenditure	1.00																	
Outside expenditure	0.58	1.00																
Outside lobbyist firms	0.58	0.87	1.00															
Percent outside expenditure	0.07	0.41	0.44	1.00														
Selection	0.49	0.46	0.56	0.53	1.00													
Concentration ratio	0.04	-0.01	-0.04	-0.05	-0.06	1.00												
Leverage	0.04	0.06	0.09	0.09	0.12	-0.06	1.00											
Growth	-0.02	0.00	-0.01	0.01	-0.02	-0.01	-0.06	1.00										
Capital intensity	0.09	0.12	0.17	0.13	0.19	0.01	0.09	0.05	1.00									
Firm performance	-0.01	0.01	-0.02	-0.04	-0.03	0.05	-0.21	0.12	-0.02	1.00								
Firm size	0.29	0.18	0.22	0.05	0.29	-0.11	0.25	-0.14	-0.08	-0.12	1.00							
Resolutions	0.28	0.23	0.24	0.03	0.18	0.01	0.08	-0.02	0.07	0.00	0.22	1.00						
California	0.00	-0.03	-0.04	-0.07	-0.06	-0.13	-0.19	0.05	-0.04	-0.02	-0.10	0.01	1.00					
RGGI	0.00	-0.03	-0.05	-0.03	-0.03	-0.03	0.04	-0.06	-0.12	-0.03	0.11	0.00	-0.19	1.00				
RPS	-0.03	-0.05	-0.07	-0.04	-0.05	-0.08	-0.05	0.02	-0.01	0.01	-0.01	0.00	0.26	0.33	1.00			
Percent supply-chain GHG	-0.16	-0.26	-0.40	-0.30	-0.45	0.14	-0.21	-0.01	-0.42	0.06	-0.11	-0.11	0.11	0.11	0.10	1.00		
GHG emissions	0.33	0.30	0.37	0.22	0.51	0.04	0.25	-0.05	0.21	0.06	0.46	0.25	-0.15	-0.08	-0.07	-0.51	1.00	
GHG emissions^2	0.35	0.32	0.37	0.12	0.34	-0.13	0.02	0.03	0.07	-0.08	0.14	0.16	-0.03	-0.01	-0.06	-0.33	0.10	1.00
Previous-year lobbying	0.19	0.18	0.22	0.16	0.36	0.03	0.08	-0.06	0.04	0.00	0.37	0.13	-0.04	0.05	-0.03	-0.17	0.42	0.08

TABLE 5
Heckman Regression Results for Climate Lobbying Expenditure

Model	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)
Sectors	All		Climate-sensitive		Top lobbying	
	Selection	Expenditure	Selection	Expenditure	Selection	Expenditure
Concentration ratio	0.15 (0.80)	2.37 (0.11)	-0.19 (0.85)	5.31* (0.06)	-0.09 (0.85)	3.26** (0.02)
Leverage	-0.14* (0.07)	-0.75** (0.03)	-0.08 (0.63)	-1.93*** (0.00)	0.05 (0.70)	-1.69*** (0.00)
Growth	0.32 (0.23)	-0.86 (0.32)	-0.88 (0.10)	-0.72 (0.60)	-0.54 (0.23)	-0.60 (0.65)
Capital intensity	0.21*** (0.01)	0.09 (0.77)	0.24* (0.10)	-0.33 (0.41)	0.29** (0.02)	-0.59 (0.12)
Firm performance	-0.46 (0.45)	-1.88 (0.33)	-0.28 (0.79)	-3.92 (0.24)	0.77 (0.45)	-4.67* (0.10)
Firm size	0.10 (0.28)	1.64*** (0.00)	0.18 (0.20)	1.54*** (0.00)	0.09 (0.45)	2.43*** (0.00)
Resolutions	-0.08 (0.53)	1.50** (0.01)	-0.07 (0.79)	2.10*** (0.00)	-0.11 (0.65)	1.64*** (0.00)
California	-0.04 (0.88)	0.60 (0.45)	0.72* (0.10)	0.60 (0.50)	0.40 (0.27)	0.46 (0.59)
RGGI	0.15 (0.45)	0.69 (0.42)	0.45* (0.09)	-0.56 (0.41)	0.35 (0.11)	0.32 (0.61)
RPS	0.14 (0.29)	-0.06 (0.82)	0.14 (0.42)	-0.45 (0.32)	-0.06 (0.66)	-0.18 (0.66)
Percent supply-chain GHG	-0.29*** (0.01)	0.06 (0.91)	-0.28* (0.07)	0.03 (0.95)	-0.20 (0.14)	-0.51 (0.20)
GHG emissions	0.42*** (0.00)	-1.01** (0.01)	0.44** (0.03)	-2.26*** (0.00)	0.67*** (0.00)	-2.09*** (0.00)
GHG emissions^2	0.01 (0.56)	0.31** (0.02)	-0.01 (0.77)	0.45*** (0.00)	-0.03 (0.33)	0.38*** (0.00)
Previous-year lobbying	1.37*** (0.00)		1.18*** (0.00)		1.37*** (0.00)	
Lambda		0.59 (0.44)		0.23 (0.76)		0.50 (0.47)
Observations	3,194	460	697	250	1,089	308

Sector and year dummy variables included but not shown; bootstrap standard errors clustered at sector level for model 1; p values in parentheses
* $p < 0.1$
** $p < 0.05$
*** $p < 0.01$

Looking at the second stage of the Heckman analysis in Model 1(b), *Concentration Ratio* displays a large and almost significant ($p = 0.11$) positive effect on lobby expenditures, which indicates that firms from industries where market share is shared by fewer firms devote more resources to influence policy (Hansen et al., 2005; Kim, 2008). Although *Firm Size* has no significant effect on the likelihood of lobbying, it shows a relatively large positive effect on lobby expenditures ($p < 0.01$). Likewise, the positive and significant coefficient estimate for *Resolution* suggests that being targeted by at least one shareholder resolution increases lobbying expenditures by approximately $1.5 million, even though it does not affect the choice to lobby. This is consistent with the literature showing shareholder pressure influencing firm disclosure and political activity (Reid & Toffel, 2009; Schuler & Rehbein, 1997).

The negative relationship between *Leverage* and lobby expenditures at both stages supports the view that firms with less debt have greater organizational slack and can afford to lobby more intensely (Hillman et al., 2004). None of the variables controlling for state- or regional-level climate change policy initiatives are significant, indicating that existing regulation at the sub-national level has no significant bearing on a firm's lobbying behavior. However, note that some of these variables become significant for our regressions with a reduced sample of climate-sensitive and top lobbying sectors. (For instance, the California and RGGI variables are positive and significant at the 10% level for the selection equation for climate-sensitive sectors. Regression results for the reduce samples are shown in Models 2 and 3 and discussed later in the paper). Somewhat surprisingly, the non-significant result for *Percent Supply-chain GHG* indicates that the source of emissions (i.e., direct versus supply-chain) does not affect lobbying expenditures.

Supporting our proposition, the quadratic GHG emissions term is positive and highly significant ($p = 0.02$). The results also show that the complete effect of GHG emissions on lobby expenditures includes a negative linear term ($p = 0.01$). Holding all other variables constant, the estimated relationship between lobby expenditures and direct greenhouse emissions is represented by the following model:

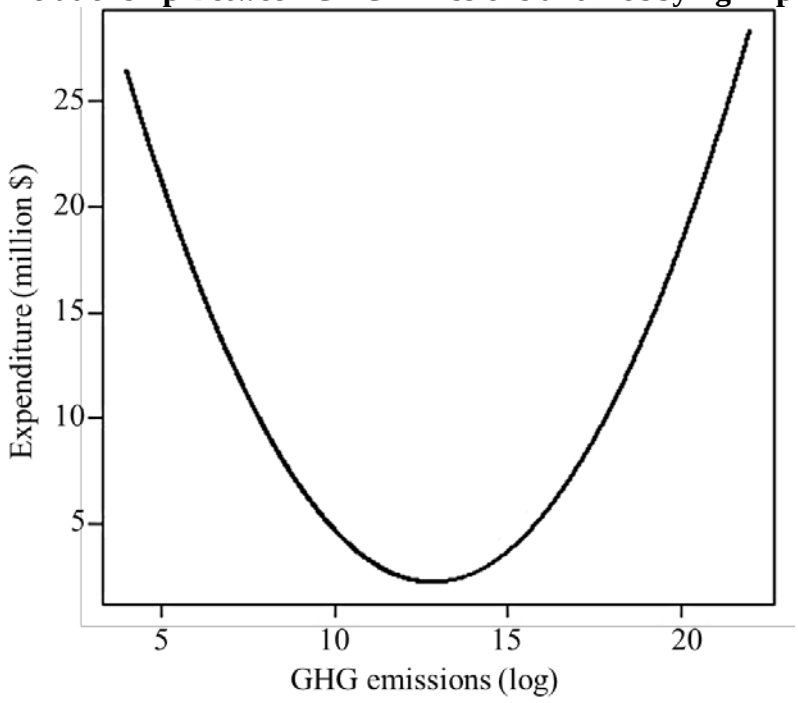
$$y = \beta_1 x + \beta_2 x^2,$$

where x is GHG emissions, β_1 and β_2 are the estimated coefficients for the linear and quadratic terms, respectively. A graphical interpretation of these results, depicting the estimated relationship between GHG emissions and lobby expenditures holding all other factors at their mean, is shown in

Figure 3. The graph shows a concave-up parabola with the minimum expenditure corresponding to 0.80 million tons of emissions (logged emission of 13.59). This tells us that expenditures increase as GHG emissions either increase *or* decrease from this value, evidence of a curvilinear relationship between GHG emissions and lobby expenditures.

FIGURE 3

Graph of Relationship Between GHG Emissions and Lobbying Expenditure



Our analysis thus far includes all economic sectors. However, in sectors with minimal carbon intensity, such as financial services and insurance, a firm's motivation to influence climate change policy likely has less to do with firm-level environmental performance than other factors that are difficult to measure and are thus not included in our model (e.g., downstream emissions or increased likelihood of catastrophic weather events). To minimize the potential for any of these factors to influence the regression results, we repeat the above analysis but restrict our sample to sectors most sensitive to climate change regulation. This includes the five most polluting sectors based on average emissions for each sector (for both climate lobbying and non- lobbying firms): automobiles and parts, basic resources, food and beverage, oil and gas, and utilities. The results using the restricted sample space are displayed in Model 2 of Table **Error! Reference source not found.**; the number of observations is reduced from 460 to 250.

Additionally, firms in regulated sectors have the most to gain from CPA as they are most affected by regulations (Hadani & Schuler, 2013) and we expect the U shape to be more pronounced in these sectors. While it is difficult to determine which sectors are most affected by legislation that was not passed, the amount of lobbying might be a good proxy. Thus, we carried out a similar robustness test for the top five sectors that had the highest mean climate lobbying expenditure (see Model 3 of Table **Error! Reference source not found.**): automobiles and parts, basic resources, industrial goods and services, oil and gas, and utilities. The results for both subsample analyses corroborate our initial findings.

As an additional robustness test, we ran a fixed effects regression model on the 210 firms that lobbied in at least one year during the time period. The results confirm that, controlling for any unobservable time-invariant firm characteristics, the relationship between GHG emissions and climate lobbying is still U-shaped. Results of this regression are available from the authors.

Table 6 shows the results for the same Heckman analysis and robustness tests using the three complementary measures of climate lobbying behavior: *Outside Expenditures*, *Outside Lobbyists*, and *Percent Outside Expenditures*. The first stage results for all three measures are in Model 4(a). Looking at Models 4(b), 5 and 6, the coefficient of the quadratic term in each is highly significant ($p < 0.05$), confirming the proposed U-shaped relationship. The robustness tests for various subsamples, presented in the appendix, corroborate these results.

Of the three complementary measures of lobbying behavior, the results in Model 6 provide particularly interesting insights into the relationship between environmental performance and lobbying behavior. First, the high significance and magnitude of the negative coefficient for *Firm Size* indicates that smaller firms devote less of their lobbying expenditures to outside lobbyists than do their larger counterparts. This can be explained by the fact that outside lobbyists have higher expertise than in-house lobbyist and are therefore more expensive (Bertrand et al., 2014). Second, the significant quadratic terms suggests that as the issue of climate change becomes more salient (whether via exemplary or poor environmental performance) the percentage of lobbying expenditures going to outside firms increases. Not only do firms on either end of the performance spectrum spend the most on lobbying, but they also seem to have a preference for hiring outside lobbying firms rather than keeping things in-house. One possible explanation for this relationship

could be that, similar to hiring consultants for their expertise, outside firms are hired as specialists when an issue such as climate change is of paramount importance to a firm.

TABLE 6
Heckman Results for Measures of Outside Climate Lobbying

Model	4(a)	4(b)	5	6
Dependent variable	Selection	Outside expenditure	Outside lobbyist firms	Percent outside expenditure
Concentration ratio	0.15	0.19	0.89*	-9.69
	(0.80)	(0.31)	(0.10)	(0.62)
Leverage	-0.14*	0.03	0.14	8.92
	(0.07)	(0.48)	(0.32)	(0.12)
Growth	0.32	0.10	0.63*	15.16*
	(0.23)	(0.26)	(0.06)	(0.07)
Capital intensity	0.21***	0.05	0.25**	-0.12
	(0.01)	(0.15)	(0.04)	(0.98)
Firm performance	-0.46	0.42	0.68	-17.19
	(0.45)	(0.34)	(0.56)	(0.49)
Firm size	0.10	-0.02	0.07	-13.61**
	(0.28)	(0.64)	(0.57)	(0.01)
Resolutions	-0.08	0.13*	0.61*	-4.22
	(0.53)	(0.07)	(0.07)	(0.34)
California	-0.04	0.10	0.19	0.07
	(0.88)	(0.12)	(0.42)	(0.99)
RGGI	0.15	0.06	-0.02	6.78
	(0.45)	(0.59)	(0.90)	(0.22)
RPS	0.14	-0.03	-0.05	0.60
	(0.29)	(0.35)	(0.75)	(0.83)
Percent supply-chain GHG	-0.29***	0.04	-0.37**	-5.41
	(0.01)	(0.61)	(0.02)	(0.18)
GHG emissions	0.42***	-0.03	-0.32	-6.28
	(0.00)	(0.61)	(0.22)	(0.35)
GHG emissions^2	0.01	0.03***	0.18***	1.72**
	(0.56)	(0.01)	(0.01)	(0.04)
Previous-year lobbying	1.37***			
	(0.00)			
Lambda		0.13***	0.61***	4.69
		(0.01)	(0.01)	(0.47)
Observations	3,194	460	460	460

Sector and year dummy variables included but not shown; bootstrap standard errors clustered at sector level; p values in parentheses
* $p < 0.1$
** $p < 0.05$
*** $p < 0.01$

In summary, the results corroborate our proposed relationship. All else equal, the likelihood of lobbying increases as a firm's GHG emissions increase. This is consistent with prior research that suggests higher polluting firms become politically active to avoid costly regulation (Cho et al., 2006). However, a firm's GHG emissions exhibit a curvilinear relationship with lobbying intensity, implying that firms devote increasing resources to influence environmental policy as they approach either end of the environmental performance spectrum. The curvilinear relationship is found not only with lobbying expenditures, but also with three additional, complementary measures of lobbying behavior. Not only are the dirtiest and cleanest firms spending the most, they are also more reliant on outside lobbyist firms to influence policy makers.

DISCUSSION AND CONCLUSION

Our results strongly support our proposed U-shaped relationship between issue performance and political activity. In the context of climate regulation policy, we find that firms on opposite ends of the environmental performance spectrum spend the most lobbying policy-makers, while middle-of-the-road performers—firms with neither exemplary nor particularly poor performance records—spend the least. Below we discuss the theoretical and empirical implications of these findings to the corporate political strategy literature.

Although it is widely accepted that greater political issue salience increases political activity, relatively little attention been devoted to unpacking this concept at the firm level. Prior research has largely viewed salience as external to the firm, which varies across issues and/or time. Furthermore, scholars have largely viewed increased issue salience as detrimental to a firm's profitability. This perspective is particularly evident in the context of environmental policy, where politically active firms are assumed to be unanimously opposed to environmental regulation. It follows from this view that green firms have little incentive to participate in the public policy process.

A small body of theoretical work and anecdotal evidence indicate, however, that more stringent environment standards can give greener firms an advantage vis-à-vis their competitors. This suggests variation in issue salience across firms for a given issue and motivates this study to conceptualize and measure issue salience as variable at the firm level. Using novel data on lobbying expenditures aimed at a specific environmental policy issue, we show that firms with increasingly good or bad performance spend more to influence the outcome of a contested environmental policy issue. While

confirming the stereotype that dirtier firms are more politically active, our findings suggest that greener firms are also vying for political influence. More generally, our results suggest that the salience of a given political issue can provide both potential advantages or disadvantages depending on whether the firm's strategies increase or decrease performance on the issue, respectively.

We study lobbying, a political tactic that has received surprisingly little attention in the empirical corporate political strategy literature. To the authors' knowledge, this is the first study to examine the relationship between environmental performance and lobbying. Focusing on environmental policy in general and climate change specifically, we also address a class of political issues that have considerable material implications for business and a specific issue that is widely considered as salient. To achieve this we create and analyze a novel data set that merges multiple years of GHG emissions and lobbying expenditures specifically targeting the issue of climate change.

We develop several measures of lobbying to account not only for lobbying expenditures but also for the form of lobbying. We found that the U-shaped relationship between environmental performance and lobbying holds for all the forms of lobbying we examined. Interestingly greener as well as dirtier firms were more likely to favor lobbying through outside lobbyists rather than in-house lobbyists. This result might seem surprising since one might anticipate that firms faced with increased issue salience firms might want to decrease the potential transactional hazards related to outside lobbying. In a different context, de Figueiredo and Tiller (2001) show that transactional hazards affect the quantity and organization of lobbying. However, some anecdotal evidence indicates that firms might not want to expose their lobbying position and might use outside lobbyists to promote their agenda without having their name associated with the issue. This might be the case for dirtier firms fighting climate change regulation but also for greener firms operating in industries that are otherwise united against climate change regulation. Furthermore, with increased issue salience, lobbyist expertise might become even more valuable to firms. Lobbyists' legislative and technical expertise, as well as personal connections to politicians, are relevant assets in defining their job and outside lobbyists are more likely to have the relevant connections and expertise than in-house lobbyists (Bertrand et al., 2014). In-house lobbyists have been portrayed as watching the day-to-day activity of Congress in order to identify potential issues of interest and call in specialist outside lobbyists as needed. Such day-to-day monitoring might not require as much expertise or as many connections and in-house lobbyists might not be equipped to handle some issues that are very salient to their employers. This

would explain why firms with high or low issue performance prefer to rely on the expertise of outside lobbyists.

Scholars have argued that the current theory on lobbying tends to be focused on the amount of lobbying that occurs, and has largely omitted the options firms have to organize their lobbying (de Figueiredo & Tiller, 2001). Our research shows that studying empirically how firms organize their lobbying, whether internally or externally, is a particularly interesting area to pursue with this new data.

While we focus on environmental performance, our findings are potentially generalizable to performance in other issues. For instance, firms that rely heavily on minimum-wage employees might oppose increasing the minimum wage while their competitors that do not rely on minimum-wage employees (perhaps because they have automated their production process) might seek an increase in the minimum wage, which would give them a competitive advantage. Similarly, firms that are very dependent on high-skilled immigrant labor may support increasing H1-B visa quotas while firms that are less reliant on immigrant labor might seek a competitive advantage in maintaining or reducing H1-B visa quotas. Lastly, firms that rely on imports might support free trade agreements while their competitors that are less reliant on imports might lobby against free trade agreements to maintain competitiveness.

Before highlighting avenues for future research, it is prudent to note several limitations of our study. Although our results suggest that lobbying firms desire competing policy outcomes, this is inferred indirectly from environmental performance. Greater confidence in this inference could be gained from a more direct measure of each firm's stance on climate change legislation; however, firms are currently not legally obligated to report this information in their lobbying disclosures (OECD, 2014). Fortunately, voluntary efforts to improve transparency are beginning to address this data gap. The Carbon Disclosure Project, an organization that works to disclose GHG emissions of major corporations and is backed by more than 750 institutional investors representing more than $90 trillion in assets, recently added a section to their annual questionnaire asking companies to disclose their lobbying positions on climate change. Pairing this information with the publicly available climate-change-specific lobbying data provided by this study could open up promising avenues of empirical research. Following a recent call for environmental ratings to reflect corporate political activity (Schendler & Toffel, 2011), for example, these data could be used to supplement or

complement ratings that have traditionally focused on operational impacts and ignored the indirect impact of firms' political activity weakening or strengthening public environmental policy. Furthermore, while we address simultaneity as best we can with the existing data, it is nonetheless possible that firms simultaneously determine both GHG emissions and lobbying. Future research could use instrumental variables or introduce larger lags between GHG emissions and lobbying in order to address simultaneity.

We also note that a considerable amount of political spending occurs through industry trade associations, such as the U.S. Chamber of Commerce or the American Petroleum Institute (Bebchuk & Jackson, 2013). Although such trade associations are required to report their lobbying spending, they are not required to disclose each member-firm's contribution to the trade association's lobbying budget and strategy. Thus, we could not account for it in our study. Future research could examine firms' choices to contribute to such associations and coordination of political strategy between trade associations and their members.

Additionally, future research could investigate the relationship between issue salience, issue performance, and other forms of corporate political activity such as corporate disclosure, which has been described as complementary to lobbying (Cho et al., 2006; Hillman & Hitt, 1999). By disclosing information related to environmental strategies and performance, dirty firms can either demonstrate to stakeholders that they are clean (e.g., through greenwashing) (Lyon & Maxwell, 2011) or their intention to mitigate environmental harm and actions taken to this end (Clark & Crawford, 2012; Kolk & Pinkse, 2007).

Other research avenues include a better understanding of the returns of lobbying for different levels of issue performance. Recent research shows that firms' political investments are negatively associated with market performance and cumulative political investments worsen both market and accounting performance (Hadani & Schuler, 2013). It would be interesting to examine how such results differ when taking into account issue performance. A more dynamic analysis of lobbying might also explain when these returns are more favorable (Kerr et al., 2014). For example, Rivera (2010) argues that business responses to public policy are likely to display an inverted U-shaped relationship with protective policy development; increasing in resistance as the process moves from initiation to selection and then decreasing in resistance during mid-implementation, eventually

moving to cooperation and beyond compliance. Further research could investigate lobbying behavior during these different phases for firms experiencing greater political issue salience.

There also needs to be further investigation into the particular conditions under which business groups succeed and fail in influencing public policy, and how much lobbying efforts impact agenda setting and policy making in the executive, legislative and judicial branches at the federal, state and local government (Kamieniecki, 2006). For example, Kamieniecki (2006) provided a comprehensive investigation of several case studies of corporate influence on agenda building and environmental policymaking since 1970, and concluded that lobbying activities of businesses can have an enormous impact on the nation's effort to protect the environment and natural resources.

One might also explore how organizational characteristics mediate the relationship between environmental performance and corporate political strategy. These include how differences in organizational functions (Delmas & Toffel, 2008; Hoffman, 2001), firms' capabilities, resources, and ownership structure (Darnall & Edwards, 2006; Sharma, 2000; Sharma & Vredenburg, 1998), board size (Kassinis & Vafeas, 2002), corporate identity and managerial discretion (Sharma, 2000), and the characteristics of individual managers (Bansal & Roth, 2000; Cordano & Frieze, 2000).

Finally, while our research focused on the United States, further research should study the relationship between corporate environmental performance and firm involvement in global environmental and ethics standards, which are often used to complement efforts by legislation to better address social and environmental issues (Gilbert & Rasche, 2007; Rasche & Esser, 2006; Scherer and Smid, 2000).

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APPENDIX

TABLE A1
Heckman Results for Measures of Outside Climate Lobbying for Climate-Sensitive Sectors

Model	1(a)	1(b)	2	3
Dependent variable	Selection	Outside expenditure	Outside lobbyist firms	Percent outside expenditure
Concentration ratio	-0.19	-0.24	0.88	-66.97**
	(0.85)	(0.50)	(0.60)	(0.02)
Leverage	-0.08	0.10	0.50	20.01***
	(0.63)	(0.19)	(0.16)	(0.00)
Growth	-0.88	0.11	0.74	12.53
	(0.10)	(0.53)	(0.35)	(0.34)
Capital intensity	0.24*	0.01	0.10	-15.70***
	(0.10)	(0.80)	(0.66)	(0.00)
Firm performance	-0.28	1.28***	2.91	-13.70
	(0.79)	(0.00)	(0.14)	(0.67)
Firm size	0.18	0.01	0.22	-6.62*
	(0.20)	(0.85)	(0.35)	(0.09)
Resolutions	-0.07	0.20***	0.94***	-5.10
	(0.79)	(0.00)	(0.00)	(0.34)
California	0.72*	0.14	0.36	11.87
	(0.10)	(0.21)	(0.49)	(0.17)
RGGI	0.45*	-0.09	-0.39	1.90
	(0.09)	(0.29)	(0.33)	(0.78)
RPS	0.14	-0.03	-0.10	3.39
	(0.42)	(0.59)	(0.71)	(0.44)
Percent supply-chain GHG	-0.28*	0.05	-0.32	-13.23***
	(0.07)	(0.37)	(0.23)	(0.00)
GHG emissions	0.44**	-0.13	-0.96**	-25.26***
	(0.03)	(0.11)	(0.01)	(0.00)
GHG emissions^2	-0.01	0.05***	0.26***	3.62***
	(0.77)	(0.00)	(0.00)	(0.00)
Previous-year lobbying	1.18***			
	(0.00)			
Lambda		0.14	0.51	10.93
		(0.14)	(0.23)	(0.12)
Observations	697	250	250	250

Sector and year dummy variables included but not shown; p values in parentheses
* $p < 0.1$
** $p < 0.05$
*** $p < 0.01$

TABLE A2
Heckman Results for Measures of Outside Climate Lobbying for Top Lobbying Sectors

Model	4(a)	4(b)	5	6
Dependent variable	Selection	Outside expenditure	Outside lobbyist firms	Percent outside expenditure
Concentration ratio	-0.09 (0.85)	0.12 (0.47)	0.55 (0.49)	-8.74 (0.53)
Leverage	0.05 (0.70)	0.13** (0.03)	0.41 (0.14)	22.00*** (0.00)
Growth	-0.54 (0.23)	0.16 (0.30)	0.72 (0.33)	8.46 (0.51)
Capital intensity	0.29** (0.02)	0.01 (0.89)	0.06 (0.79)	-12.57*** (0.00)
Firm performance	0.77 (0.45)	1.11*** (0.00)	2.20 (0.16)	-3.46 (0.90)
Firm size	0.09 (0.45)	0.01 (0.84)	0.23 (0.25)	-10.90*** (0.00)
Resolutions	-0.11 (0.65)	0.17*** (0.00)	0.73*** (0.01)	-3.56 (0.47)
California	0.40 (0.27)	0.17* (0.09)	0.34 (0.47)	11.79 (0.15)
RGGI	0.35 (0.11)	0.02 (0.82)	-0.15 (0.67)	5.54 (0.36)
RPS	-0.06 (0.66)	-0.07 (0.13)	-0.20 (0.38)	0.98 (0.81)
Percent supply-chain GHG	-0.20 (0.14)	0.03 (0.50)	-0.40* (0.07)	-10.90*** (0.01)
GHG emissions	0.67*** (0.00)	-0.11 (0.15)	-0.81** (0.02)	-21.89*** (0.00)
GHG emissions^2	-0.03 (0.33)	0.04*** (0.00)	0.23*** (0.00)	3.46*** (0.00)
Previous-year lobbying	1.37*** (0.00)			
Lambda		0.05 (0.51)	0.29 (0.44)	6.51 (0.34)
Observations	1,089	308	308	308

Sector and year dummy variables included but not shown; p values in parentheses
* $p < 0.1$
** $p < 0.05$
*** $p < 0.01$

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