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3) Author(s) name and affiliation:
Magali Delmas

Institute of the Environment and Sustainability and
Anderson School of Management
UCLA
Nicholas Nairn-Birch
Institute of the Environment and Sustainability
UCLA

4) Presenter name:
Magali Delmas

5) Primary contact name and e-mail (One person only):
Magali Delmas
Delmas@ucla.edu

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Corporate Environmental Performance and Political Activity

Magali Delmas*
Institute of the Environment and Sustainability and
Anderson School of Management
UCLA

Nicholas Nairn-Birch
Institute of the Environment and Sustainability
UCLA

ABSTRACT

In 2008, an estimated $3.3 billion was spent on lobbying in the United States. Such spending is largely perceived as a strategy to oppose regulation by industry. 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 hypotheses, the study leverages novel data on corporate GHG emissions and lobbying expenses aimed specifically at climate change legislation. Our results suggest that both dirty *and* clean firms are active in the public policy process, which challenges the view of adversarial corporate strategy.

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

* Correspondence Magali Delmas, Professor of Management, UCLA Institute of the Environment and Anderson School of Management, La Kretz Hall, Suite 300 Box 951496 Los Angeles, CA 90095-1496. Phone: (310)825-9310. Email: delmas@ucla.edu.

INTRODUCTION

While many scholars would agree with the assertion that political issue salience – the importance of the political issue to the firm – is a primary motivator of corporate political activity (CPA), the concept of issue salience has been largely conceived as a factor external to the firm and therefore received relatively little attention in the management literature (Bonardi & Keim, 2005; Hillman, Keim & Schuler, 2004). As such, research has barely begun to address an issue fundamental to business strategy research: how does a firm's performance on a salient political issue influence its political strategies?

For a given issue, greater political salience is commonly viewed as harmful to business, that is, more likely to provoke regulation that penalizes firms that perform poorly on the issue (Bonardi & Keim, 2005; Lyon & Maxwell, 2008). Scholars, for example, suggest threatened industries invest in 'self-regulation' to preempt attention from social and environmental advocacy groups and costly negotiations in the public policy process that could follow (Maxwell, Lyon & Hackett, 2000). The tension between business interest and policies to protect the common good is exemplified in the environmental policy context, where the prevailing view of corporate political involvement is one of dirty industries opposing government threats to clean up (Cho, Patten & Roberts, 2006; Fremeth & Richter, 2011). Strongly opposed to climate change legislation, for example, the US Chamber of Commerce spent more than $60 million (the most of any single organization) in 2008 lobbying this issue specifically (CPI, 2011). Not surprisingly, the same year one of the highest polluting electric power generators, Southern Company, spent an estimated $15 million and registered twice as many lobbyists for climate change policy than any other company (Lavelle & Donald, 2011).

The view of issue salience as a threat to business at the industry level implies that firms performing well on the issue have little interest in the policy outcome. A less adversarial view of environmental performance and regulation, however, emphasizes the opportunity for 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). As Baron (1995) advocates, effective

business strategy integrates non-market (i.e. political) and market strategies, as well as attendant firm-level competencies (e.g. exemplary environmental performance). This suggests a strategic incentive for firms on the opposite end of the environmental performance spectrum – those with proactive environmental strategies – to be politically active as well. Despite being one of the greenest utilities in the nation, for example, Pacific Gas and Electric (PG&E) spent an estimated $27.8 million (more than a ten-fold increase over the mean of all firms lobbying the same issue) lobbying climate change at the federal level in 2008 (CPI, 2011). Meanwhile the utility has openly supported a cap and trade system for carbon emissions, even splitting from the Chamber of Commerce in 2009 due to the Chamber's vociferous opposition to carbon regulation.

Notwithstanding their diverging performance records and positions on climate change policy, both Southern Co. and PG&E were two of the issue's most politically active firms. To explain this behavior, our study takes a firm-level perspective of issue salience to develop and test a hypothesis on how firm performance on a public policy issue influences its political strategies. The context for our analysis is the recent climate change policy debate. Whether and how to mitigate climate change has been the subject of considerable political debate in the US (Kolk & Pinkse, 2007) and is widely regarded as a critical socio-political policy issue for business (Bonardi & Keim, 2005; Cho, Patten & Roberts, 2006; DeShazo & Freeman, 2007; Porter & Reinhardt, 2007; Reid & Toffel, 2009). Operationalizing issue salience at the firm level, we hypothesize a U-shaped relationship between greenhouse gas (GHG) emissions and lobbying.

To test our hypothesis we analyze novel data produced by the Center for Public Integrity (CPI) estimating lobby expenditures aimed specifically at climate change and energy related issues in 2008 and 2009. Our results reveal that both dirty *and* clean firms are active in the public policy process, which challenges the popular view that corporate involvement in the environmental policy process is solely adversarial. Firms which have taken the middle road with regard to environmental strategy – having neither poor nor exemplary performance records – demonstrate the lowest levels of political activity. These findings suggest that while dirty firms lobby to maintain the status quo greener firms view environmental regulation as an opportunity to gain firm-level advantages.

Our analysis makes important theoretical and empirical contributions to the corporate political strategy literature. We operationalize the concept of political issue salience at the firm- level and in doing so answer calls for increased attention in this area (e.g. Hillman *et al.*, 2004). The current literature implicitly assumes that firms are adopting corporate political strategies for the same reasons (i.e. desired political outcome), but does not address the question of potential diverging intentions. Indeed, firms within the same field and affected by a widely salient issue could desire opposite political outcomes. We reveal a U-shaped relationship between environmental performance and corporate political strategies suggesting greener firms devote resources to promote more stringent standards.

Furthermore, to our knowledge no study has empirically examined the relationship between environmental performance and lobbying. The extant literature relies strongly on election campaign contributions via political action committees (PACs) to proxy political strategies and activity (de Figueiredo & Tiller, 2001; Hansen & Mitchell, 2000; Brasher & Lowery, 2006; Kim, 2008). Lobby expenditures, which are typically an order of magnitude higher than campaign contributions, have been markedly absent from empirical studies (de Figueiredo & Cameron, 2009). This is surprisingly considering the 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 the ensuing two sections we review the relevant literature and then develop our hypotheses. This is followed by an overview of our data and analysis methods. After describing the results of our analysis, we discuss the implications and limitation of findings, and conclude by suggesting areas for future research.

LITERATURE REVIEW

Issue Salience

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). Within this literature, there is general agreement amongst scholars that as the salience of a policy debate increases firms are more likely to become politically active (Hillman & Hitt, 1999; Hillman *et al.*, 2004; Vogel, 1996; William & Crawford, 2011). Schuler & Rehbein (1997) define issue salience as "a policy's net impact of the firm's competitive strategies and performance" (pg. 121). Getz (1997) suggests issue salience affects the intensity of corporate political activity, while Hillman & Hitt (1999) posit issue salience affects the likelihood of a firm to engage in collective action.

Salience has largely been conceived as varying across issues (and time) rather than across firms. Bansal & Roth (2000), for example, infer issue salience from how an issue's characteristics affect a generalized group of stakeholders rather than individual firms. Focusing on the competitiveness of the political environment, Bonardi & Keim (2005) define salience at the issue-level based on the attention it receives from the voting public. The authors also examine the process by which an issue becomes *widely salient* and its strategic implications. As many scholars have emphasized, salience is not constant across time: issues begin as fringe concerns and a few become *widely salient.*[1] Issues deemed *widely salient* (e.g. the health content of fast food and climate change) are fully politicized and the focus of intense competition amongst interest groups to sway policy-makers and voters to support one of two well-delineated policy options (Bonardi & Keim, 2005; Hillman & Hitt, 1999; Rivera, 2010). Scholars note that variation in salience across issues affects the choice and efficacy of political strategies (Bonardi & Keim, 2005; Hillman & Hitt, 1999; Rivera, 2010). Knowing an issue is widely salient, however, does little to explain variation in political activity of individual firms (within a similar organizational field). Such conceptualizations of salience depend primarily on the awareness and interest of the voting public and media, distinguishing variation in salience across issues – or for a given issue variation only over time – rather than across firms.

Schuler & Rehbein (1997) develop a theoretical model wherein salience is also the product of factors external to the firm (e.g. political, industry and macroeconomic factors), but firm-level characteristics (i.e. organization

[1] The process-based view of political issues delineates the progression of an issue's salience into distinct stages. For a compendious overview of this literature, see Rivera (2010).

structure and resources, political experience, and stakeholder dependency) act to filter external cues and ultimately determine how the costs and benefits of political involvement are idiosyncratically calculated. Although the authors' model explains variation in perceived salience at the firm-level, it draws from an organizational rather than strategic perspective that, similar to issue-level conceptualizations, explains political activity across multiple issues.

Overall, models of corporate political activity have yet to accommodate how characteristics of the firm relevant to a contested political issue impact its perceived salience. Conceptualized as exogenous to the firm, salience addresses *whether* a policy will affect an industry or set of industries and magnitude of this impact relative to other issues. Explaining firm-level variation in political activity is then left to factors such as firm size, age, or formalized structures (Hillman *et al.*, 2004) that, independent of a particular issue, indicate general propensity and/or ability to be politically active (Schuler & Rehbein, 1997). These factors offer little insight into *how* a particular issue's characteristics relate to firm strategies, however, assuming instead that all politically active firms are unanimous in their desired political outcome.

Environmental Policy

The often politically contentious issue of environmental regulation, a consistent source of tension between government and business, has received little attention in the corporate political strategy scholarship (Hillman *et al.*, 2004; Lyon & Maxwell, 2008; Richter, 2012). This is surprising considering the significant expansion of government regulation in this area and increased political clout of environmental groups over the past several decades (Vogel, 1995; Rivera, 2010). As such, the corporate political strategy literature has yet to adapt existing models of political behavior to this important context.

A very small number of studies have empirically examined the relationship between environmental performance and political activity. Cho *et al.* (2006) conduct one of the few empirical studies specifically examining corporate political behavior with regard to environmental policy. The authors found corporate political campaign spending increases as firm-level environmental performance declines and conclude that dirtier firms use political strategies to mitigate policy pressure.

Focusing on climate change, Williams & Crawford (2011) find that in addition to dirty firms, those with strong environment performance records are also likely to be political active. Contrary to Cho *et al.* (2006), their findings suggests that the issue of climate change may be salient to firms for opposing reasons, that is, based on exemplary (poor) performance green (dirty) firms see an opportunity to gain (maintain) competitive advantage through political involvement. As their study looked only at firms targeted by climate change resolutions in 2007 and 2008, however, their sample was restricted to only 109 observations. As the authors point out themselves, moreover, poor performers are often targets of shareholder resolutions and thus the study results likely reflect selectivity bias.

Finally, it is important to note an empirical limitation of corporate political activity research in general. Despite being criticized as a poor indicator political activity (Munger 1988; Hansen & Mitchell, 2000; Hansen *et al.*, 2005), researchers have relied heavily on election campaign contributions through PACs to test their hypotheses (DeFigueiredo & Tiller 2001; Hansen & Mitchel, 2000; Brasher & Lowery, 2006; Kim, 2008). Firms spend far less on PACs relative to other tactics, especially lobbying. As Baron (2010) notes, firms spend more on lobbying than other strategy to influence public policy. Nevertheless, lobbying has rarely been examined in the empirical literature, no doubt due in part to the fact that data on corporate lobby expenditures weren't made publicly available until passage of the Lobbying Disclosure Act in 1995 (Baron, 2010).

In summary, considerable scholarly research has been devoted to evincing various antecedents of corporate political behavior. There is little disagreement that salience is the primary motivator of political activity, but it has not been conceptualized as a firm-level factor and therefore does little to explain firm-level variation. Moreover, this literature has given very little attention to environmental policy, while lobbying expenditures have been markedly absent from empirical studies.

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"). Our framework applies specifically to issues that are –

relative to other issues – considered salient, by this we mean highly politicized issues wherein the debate has polarized around two well-delineated policy options (Bonardi & Keim. 2005; Rivera, 2010). For such issues, the economic implications of policy alternatives are most visible and managers are capable of a more precise calculation of either outcome's impact on profitability (i.e. salience) (Rivera, 2010). We thus frame the political debate as a choice between two mutually exclusive policy options that either support the *status quo* or support new legislation/regulation. We argue that issue performance modulates the salience of the issue to the firm and thus political activity.

With only two policy options to consider, the intentions of a firm's political activity are also more clearly linked with its respective performance on the issue. Issue performance is the outcome of each firm's management philosophy and strategic choices, and thus an indication of its interest in maintaining 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. We now narrow our focus on political issues to the context of environmental policy, which has been a setting of considerable strategic importance for business.

Poor Performers

Scholars note that the adversarial relationship between business and government is perhaps most acutely displayed in the environmental context (Vogel, 1996; Rivera, 2010). With vested interest in the *status quo* business is typically a source of particularly well-organized resistance (Bonardi, Hillman & Keim, 2005) to policy changes. Firms should not be in favor of internalizing social costs (Friedman, 1970) and with rare exception should firms benefit from environmental regulation (Palmer, Oates & Portney, 1995). As such,

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 who attempt to wield political influence are widely considered to be 'evil' (Richter, 2012). Indeed, scholars note that the prevailing behavior of business is to resist demands to provide environmental protection (Rivera, 2010) and empirical research has shown that poor environmental performance is associated with increased levels of political activity (Cho *et al.*, 2006).

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). Relative to an environmentally proactive firm, one which has eschewed a strategy of managing their environmental impacts will likely incur greater costs complying with newly imposed regulation (Reinhardt, 1999; Richter, 2012; Vogel, 1995).

Additionally, poor performance is penalized by a broader set of stakeholders than just regulators, as policy debates attract greater scrutiny from media, civil society and other non-market actors (Baron, 2010; Fremeth & Richter, 2011) and threaten to usher in new norms and standards that could harm the legitimacy of poor performing firms (Bonardi & Keim, 2005; Rivera, 2010). By preventing or forestalling environmental regulation (i.e. maintaining the *status quo*), poor environmental performers protect the value of their investments in dirtier technologies and keep demand for cleaner products and processes from otherwise rising. These arguments suggest environmental regulatory change is most salient to poorer performing firms – those with the most to lose by meeting 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 for a long time argued, business can often achieve private benefits through promoting environmental regulation, which can engender barriers to entry and other sources of competitive advantage (Gruenspect & 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 rule-making can use public policy strategically to capture firm-specific advantages over industry competitors (Russo & Fouts, 1997; Shaffer, 1995).

As management scholars have more recently pointed out, the asymmetric effects of environmental regulation can be exploited by exemplary environmental performers. According to this perspective, government intervention can create missing markets for environmental quality (Vogel 1995; Reinhardt, 2000). New environmental regulations can also disproportionately increase the operating costs of dirtier competitors (Leone, 1986; Moloney & McCormick, 1982; McEvily, Sutcliffe & Marcus, 1994; Reinhardt, 1999). In other words, environmental regulation can foster competitive advantage for greener firms who are capable of meeting the newly generated demand (from both regulators and consumers) for environmental quality at a lower cost (Leone, 1981; Reinhardt, 1999).

A recent example of a company's use of environmental policy to gain market advantages is Michelin's pursuit of government standards for 'rolling resistance" (RR). RR is responsible for, on average, one fifth of the car's total fuel consumption and as such can have a significant effect on carbon emissions. In the mid-1990's Michelin achieved what was a considered a breakthrough innovation for reducing the RR for their tires and used this feature as a source of environmental differentiation. To embolden its environmental differentiation strategy and secure costly technological barriers, Michelin successfully appealed to policy makers at the national and international level to incorporate RR ratings into environmental performance standards for automobile carbon emissions (Hanateau, 2009). Similarly, in the mid-1980s Chrysler surprisingly opposed the Reagan administration's decision to lower the Corporate Average Fuel Economy (CAFÉ) standards, as the company felt the existing higher standard would raise costs for its less efficient competitors, General Motors and Ford (Nivola & Crandall, 1995).

As Fremeth & Richter (2011) argue, by advocating for stricter standards firms can 'shape future policy around existing environmental strengths' (p. 145). Firms that have invested in costly 'clean' technologies, such as renewable energy, recycling or waste prevention processes, which exceed current compliance standards, may

see regulation as an opportunity to enhance the value of these past investments. Such firms are also well-positioned to receive government subsidies designed to encourage adoption and growth of clean practices should new legislation be enacted. Similarly, some firms may also have strong performance records from having to meet state- or local-level environmental policies, giving them an incentive to level the competitive playing field through harmonizing local regulatory stringency at the federal level (Vogel, 1995).

For example, in the 1980s BMW's largest US market was California, so the luxury car company acquired considerable experience producing cars that met the state's increasingly strict emission standards, including the mandate that all cars be equipped with catalytic converters. As this expensive and complex technology was not required in their domestic market, BMW realized it could maximize the value of its investment and raise costs for domestic competitors by importing California's standards to Europe (Vogel, 1995). Moreover, harmonizing all European Union member markets with California's standard meant BMW would no longer have to differentiate its production lines and could thus reduce costs (Hanateau, 2009).

To summarize, firms with exemplary environmental characteristics regulation can: (1) raise operating costs of poor performing competitors; (2) exploit increased demand (from regulators and consumers) for social/environmental quality; (3) maximize return on existing investments and sunk costs; and/or, (4) harmonize discordant institutional contexts (e.g. state versus federal regulation) (Baron, 1995; Reinhardt, 1999; Vogel, 1995). The above arguments and supporting examples suggest that the salience of environmental policy also increases as firms become greener.

Middle-of-the-road Performers

Environmental policy doesn't just create losers (i.e. poor performers) and winners (i.e. exemplary performers); there are also subsets of firms which are minimally affected. Firms which have taken the middle road with regard to environmental strategy – having 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 (William & Crawford, 2011). Middle-of-the-road firms also likely receive little attention – either positive or negative – from media

and the general public regarding their environmental stance and/or impacts. Recent research suggests that both exemplary and poor environmental performers attract the greatest media attention and public scrutiny, rendering environmental issues relatively less important to middle-of-the-road firms (Luo, Meier, & Oberholzer-Gee, 2012).

The small benefits these firms may gain from either supporting or opposing regulation are easily outweighed by the costs. Moreover, as there are likely many more firms with average – rather than exceeding good or poor – performance records, the benefit of either political outcome will be concentrated within a relatively small number of firms on either end of the environmental performance spectrum. The benefits of a political outcome will be diffusely distributed for firms in the middle of this spectrum, which – according to collective action theory – suggests a strong incentive to adopt a free-riding strategy (Olson, 1965; Yoffie, 1987). As such, 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 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. This relationship is depicted in Figure 1. As salience increases so does political activity (Getz 1997; Bonardi *et al.*, 2005; Bonardi & Keim, 2005; Hillman *et al.*, 2004; Rivera, 2010; Vogel, 1996; Williams & Crawford, 2011; Yoffie, 1987). As such, we would expect environmental performance and political activity to have a U-shaped relationship. Stated formally:

H1: All else equal, the relationship between environmental performance and corporate political activity is U-shaped.

Insert Figure 1 Here

METHODS

In this section we describe the data and methods used to test for a U-shaped relationship between environmental performance and political activity. We focus on lobbying – a widely used tactic of an information strategy – 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). Below we describe the data and analysis methods used to conduct this analysis.

Data

GHG emissions data were acquired from Trucost. Trucost provides a range environmental performance data for the socially responsible investment community and increasingly used in peer reviewed academic research (e.g. Dawkins & Fraas, 2011; Jira & Toffel, 2012; Marquis & Toffel, 2012). 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 (IO) economic model based on government census and survey data, industry data and statistics and national economic accounts. The data cover annual performance from 2004 through 2008.

Corporate lobbying expenditures on issues related to climate change and energy policy were produced and made publically available by the Center for Public Integrity (CPI) for the years 2008 and 2009.[2] CPI examined lobbying disclosure reports filed with the Secretary of the Senate's Office of Public Records. The records became available electronically for the first time in 2008, allowing for key word searches. CPI researchers included all lobbyists registered to represent clients using the keywords "climate" and "global warming," and/or bill numbers and terms associated with climate change legislation during 2008 and 2009. To estimate

[2] http://www.publicintegrity.org/investigations/climate_change/pages/methodology/

amount spent, CPI coded each disclosure record to reflect whether the lobbyist was hired for representation on the issue of climate change exclusively or multiple issues. Expenses reported only as "less than $5,000" were not included.[3]

Financial data used to construct our control variables were obtained from Compustat and Risk Metrics. Merging these disparate data sets resulted in sample of 285 complete firm-year observations – 120 lobbying firms in 2008 and 165 in 2009. The sample size is limited by lobbying expenditures: out of 988 possible firm-year observations, only 285 contain lobbying expenditures.

Dependent Variable

Employing the two-step Heckman methodology (see Data Analysis section below), two dependent variables are constructed. For the first stage a dichotomous variable *Selection* was coded '1' if a firm spent at least $5000 on lobbying the issue of climate change in 2008 or 2009, and '0' otherwise. The dependent variable for the second stage, *Expense*, is the annual amount spent on lobbying in $ US at the Federal level.

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 ($C0_2$-e). We include only Scope 1 emissions as defined by the GHG Protocol – the most commonly used international greenhouse gas 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. We label this variable *GHG Emissions.* This variable 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 *GHG Emissions*. This is labeled $GHG\ Emissions^2$.

[3] The Appendix contains additional descriptive statistics for these data.

Control Variables

Several control variables are included to account for factors other than environmental performance that affect lobby expenditures. Firms are more likely to act collectively when the private benefits are concentrated within a smaller group of firms (Olson, 1965). To control for this we include *Concentration Ratio*, calculated from Compustat as the market share of 4 largest firms at the 3-digit naics code level. Shareholders can exert pressure on firms to influence their stance on social and environmental issues (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 or other environmental issues in a given year or '0' otherwise (Reid & Toffel, 2009). Resolutions data were gathered from Risk Metrics.

Scholars note that the political behavior of firms is likely influenced by antecedent state-level political debates and regulatory efforts (Reid & Toffel, 2009). This consideration is especially relevant to climate change, as there is considerable variation in each state's stance on the issue (Cragg & Kahn, 2009; DeShazo & Freeman, 2007; Reid & Toffel, 2009). According to DeShazo & Freeman (2007), this motivates firms to seek uniformity and regulatory certainty through federal legislation. To account for heterogeneity in the state-level regulatory setting, 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); or (3) has enacted Renewable Portfolio Standards (RPS).[4] We label these variables, respectively: *CA*, *RGGI*, and *RPS*.

We include several financial variables shown in prior research to affect CPA, which are all 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

[4] Reid & Toffel (2009) differentiate between firms from these states in sectors that are likely to be impacted by climate change regulation from sectors less likely to be impacted.

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 across firms in available capital. With the exception of *Firm Performance*, all financial control variables are log transformed. Finally, we include industry dummy variables based on 20 Industrial Classification Benchmark (ICB) super sectors, as well as year dummy variables.

Data Analysis

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

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

where $y_{i,j,t}$ represents lobby expenditures for firm *i* in industry *j* in year *t*, and $GHG_{i,t}$ and $GHG^2{}_{i,t}$ are the linear and quadratic-transformed GHG emissions variables, respectively. X_{ijt} is the matrix of control variables, T represents the year dummy variable (to control for secular changes) and λ_{it} represents the propensity to lobby in a given year. We lag both independent variables, as well as *Resolutions*, one year behind the dependent variable.

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 of firms only those lobbying 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 self-selectivity bias by estimating a two-step process. The first step estimates the propensity (of both lobbying and non-lobbying firms) to lobby using a probit model. 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.

RESULTS

Table 1 displays summary statistics of lobbying expenditures and mean GHG emissions by sector. We see that firms from almost all sectors of the economy lobbied the issue of climate change at the federal level. The industrial goods and services, oil and gas, technology and utilities sectors appear most active in 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 climate change. The mean estimated lobby expenditure across all sectors is approximately $2.15 million with a relatively high standard deviation (approximately $3.9 million) and a maximum of $27.8 million spent by PG&E in 2008.[5]

Insert Table 1 Here

Variable descriptions and summary statistics are shown in Table 2. Variable correlations are contained in Table 3, which also includes the binary *Selection* variable used in the first stage of the Heckman analysis. As expected, *Firm Size* and both *GHG Emissions* variables are positively correlated with lobbying expenditures. The variable *Resolutions* is also positively correlated to lobbying expenditures. Interestingly, while concentration ratio shows a positive correlation with lobby expenditures there is no significant association with the decision to lobby (i.e. *Selection*).

Insert Table 2 and Table 3 Here

The results of the two-step Heckman regression analysis are tabulated in Table 4. The quadratic transformation of the GHG emissions variable is added in Model 2. Columns 1(a) and 2(a) contain the results from the first stage probit estimates for the factors influencing the likelihood of lobbying. Looking at Models 1(a) and 2(a), we find concentration ratio to be associated with a greater likelihood of lobbying. This 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. The results show a firm's rate of growth ($p<0.05$) is also

[5] In 2008, Exxon Mobil recorded the second highest amount at $26.6 million (CPI, 2011).

associated with an increased proclivity to lobby, as found in prior research (Kim, 2008). Although positive, surprisingly the effect of *Firm Size* does not differ significantly from zero. In contrast to prior studies, this suggests larger firms are no more likely to lobby than their smaller counterparts. The coefficient estimate for *GHG Emissions* is positive and significant, indicating firms are more likely to lobby as their pollution levels increase. Adding $GHG\ Emissions^2$ in model 2(a), however, does not appear to increase likelihood of lobbying.

Insert Table 4 Here

Noteworthy differences are apparent between the first (i.e. Models 1(a) and 2(a)) and second stages (i.e. Models 1(b) and 2(b)). Although *Firm Size* had no significant effect on the likelihood of lobbying, it shows a relatively large positive effect on lobby expenditures ($p < 0.01$). Together this suggests firms with greater resources spend more than smaller firms but are not necessarily more likely to become politically active. Similarly, *Leverage* was insignificant in the first stage, but has a negative effect ($p < 0.05$) on expenditures. The negative relationship between leverage and lobby expenditures confirms a relationship similar to that of firm size mentioned above: firms with less debt have greater organizational slack and can afford to lobby more intensely (Hillman *et al.*, 2004).

Focusing on model 2(b), we see *Concentration Ratio* displays a large and significant positive effect on lobby expenditures. This provides evidence that firms from industries where market share is increasingly shared by fewer firms devote more resources to influence policy (Hansen *et al.*, 2005; Kim, 2008). Interestingly, the coefficient for *Resolutions* suggests that *ceteris paribus* being the target of at least one shareholder resolution increases lobbying expenditures by approximately $1.69 million. Of the variables controlling for state-level climate change policy initiatives, the indicator variable for California is significant, which suggests that being headquartered in California increases lobbying expenditures by approximately $1.3 million. Neither *RGGI* or *RPS* appear to have a significant association with lobby expenditures.

Supporting our hypothesis, the quadratic GHG emissions term is positive and highly significant ($p<0.01$). The model 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 2. The graph shows a concave-up parabola with the minimum expenditure corresponding to a logged emission level approximately 14 (i.e. 1.2 million tons). This tells us expenditures increase as GHG emissions either increase *or* decrease from this value; thus, evidence of a curvilinear relationship between GHG emissions and lobby expenditures.

Insert

Figure 2 Here

It is important to note that our analysis thus far includes all economic sectors. However, in industries with minimal carbon intensity, such as the financial services and insurance, a firm's motivation to influence climate change policy likely has little to do with firm-level environmental performance. Moreover, our measure of environmental performance – Scope 1 GHG emissions – accounts only emissions that result from processes directly owned by each firm, that is, it excludes downstream emissions from product use. For certain industries, firm's interest a specific climate change policy outcome likely comes from the environmental performance of its product(s) rather than its own processes. For example, a firm with a strategy of producing fuel efficient cars may view a price on carbon and an increase in fuel prices as an opportunity to gain market share. Likewise, a firm developing renewable technology may have a similar interest in encouraging constraints on fossil fuels. The 'greenness' of each of these firms, however, is not necessarily captured by Scope 1 emissions. Using such a measure, we should expect to evidence of the relationship described in the

hypothesis section for industries with relatively high levels of direct GHG emissions. As a robustness check, we repeat the above analysis but restrict our sample to sectors most sensitive to climate change regulation. This includes the five highest polluting sectors (see Table 1 for GHG emissions by sector): basic resources, chemicals, oil and gas, travel and leisure, and utilities. The results using the restricted sample space are displayed in Table 5, where the number of observations is reduced from 285 to 146. The results corroborate our initial findings.

Insert Table 5 Here

Although the Heckman methodology was used to correct for anticipated selection bias in testing our hypothesis, this appears to have been unnecessary. The coefficient for lambda (i.e. the unobserved proclivity to lobby) included in the second is not significant. An insignificant lambda suggests the decision to lobby and expenditures are not endogenous. Indeed that is what our results show (without looking at lambda): the results of the 1st stage probit model (Models 1a and 2a) demonstrate the likelihood of participation increases linearly with GHG emissions. Moreover, *GHG Emissions* appears to be the only significant predictor of the likelihood of lobbying. This suggests that the proclivity to lobby isn't necessarily an indicator of how much firms intend to spend.

In summary, the results corroborate our hypothesis. All else equal, the likelihood of lobbying increases linearly as a firm's GHG emissions increase. This finding is consistent with prior research that suggests higher polluting firms become politically active to avoid costly protective regulation (Cho *et al.*, 2006). However, the results from the second stage provide evidence that the likelihood of lobbying does not necessarily determine expenditures. The findings show GHG emissions instead exhibit a curvilinear relationship with expenditures, implying that spending increases for lobbying firms as they approach either end of the environmental performance spectrum. Together, the results from both stages of the Heckman analysis also reveal differences between the effect of GHG emissions on the decision to lobby and its effect on the amount subsequently spent. This is also true for control variables (e.g. firm size and leverage) commonly thought to affect political activity in prior research.

DISCUSSION AND CONCLUSION

The study's results strongly support our hypothesis that environmental performance relates to political activity in a U-shaped manner. 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 a variable external to the firm, which varies across issues and/or time. But this perspective assumes no heterogeneity in the orientation of firms to the outcome of a given political issue. Furthermore, scholars have largely viewed increased issue salience as a threat to business. This perspective is particularly evident in the context of environmental policy, where politically active firms are assumed to be unanimous in their opposition 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 greener firms can gain advantage vis-à-vis competitors from more stringent environmental standards. This suggests variation in issue salience across firms for a given issue and motivates this study to conceptualize issue salience as variable at the firm-level. By doing so, we show that firms with increasingly good or bad performance have a greater stake in the outcome of contested environmental policy issue (i.e. greater salience). These results shed a critical light on the perceived adversarial relationship between business and environmental policy. 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 be both harmful and advantageous depending on whether the firm performs negatively or positively on the issue, respectively. These findings also support Baron's (1995) integrated strategy perspective, which posits a complementary relationship between non-market and market components required of an overall effective

strategy. That our results imply firms are adapting their political strategies to issue performance indicates firms may indeed be integrating non-market and market strategies. More specifically, the results suggests firms may be reacting strategically to environmental regulatory uncertainty by aligning their environmental strengths and political strategies in the manner proposed by Fremeth & Richter (2011).

We test our hypotheses on lobbying – a political tactic that has received surprisingly little attention in the empirical corporate political strategy literature. To the author's knowledge, this is the first study to test 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 with considerable material implications for business and a specific issue that is considered widely salient. To achieve this we create and analyze a novel data set that merges multiple years of GHG emissions and estimates of lobbying expenditures aimed at the issue of climate change.

Before highlighting avenues for future research, it is prudent to note several limitations of our study. First, although our results suggest heterogeneity in the desired policy outcome of politically active firms, 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. Second, the time period for our study concluded at what could be considered a peak in public concern for climate change. Since this period climate change legislation has stalled and public concern for climate change has flagged. This suggests a period of temporal variation in the issue's salience. Future research could examine how this change affects political activity and the firm-level factors that may modulate it.

Future research could also investigate if the relationship between issue salience, issue performance and other corporate political activities such as corporate disclosure. Such research could compare the effect of environmental performance on information disclosure, which has been described as complementary to lobbying (Hillman & Hitt, 1999; Cho *et al.*, 2006), and be therefore able to assess the impact of environmental performance on a broader set of corporate political strategies. By disclosing information related to environmental strategies and performance, dirty firms can either demonstrate to stakeholders that they are

clean (i.e. through greenwashing; Lyon & Maxwell, 2011) or their intention to mitigate environmental harm and actions taken to this end (Kolk & Pinkse, 2007; Williams & Crawford, 2011). By doing so, they send the message that government intervention is redundant. At the same time, exemplarily performing companies convey to voters an achievable standard by which competing firms should be held and thus increase the legitimacy of environmental legislation (Reinhardt, 1999).

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

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TABLES

Table 1 Climate change lobbying expenditures & GHG emissions by sector

Sector	2008 -2009 Lobbying (USD in thousands)				GHG Emissions (Tons CO_2-e)
	N	Mean	Min	Max	Mean
Automobiles & Parts	7	5252	180	13,500	836,759
Banks	1	200	200	200	10,164
Basic Resources	20	1754	30	5,570	7,623,982
Chemicals	19	1324	50	5,200	3,772,340
Construction & Materials	10	473	70	2,116	441,484
Financial Services	6	1042	80	3,580	298,511
Food & Beverage	11	1109	20	6,544	933,679
Healthcare	5	794	60	1,720	131,376
Industrial Goods & Services	53	2859	6	19,600	824,359
Insurance	3	4517	1480	8,460	28,242
Investment Instruments	0	0	0	0	359
Media	3	195	136	240	24,501
Oil & Gas	37	3555	5	26,600	6,508,602
Personal & Household Goods	7	579	170	1,415	429,589
Real Estate	3	230	20	400	26,891
Retail	5	817	130	1,750	343,838
Technology	24	1173	40	5,080	123,056
Telecommunications	0	0	0	0	128,655
Travel & Leisure	7	2129	110	5,440	3,295,664
Utilities	64	2145	5	27,800	25,300,000
Overall	**285**	**2148**	**5**	**27,800**	**2,847,392**

Table 2 Summary Statistics

Variable	Variable Description	N	Mean	Standard Deviation	Min	Max
Expenditures (CPI)	Total annual lobby expenditures on issues related to current climate change legislation ($1000 USD)	285	2,145	3,935	5	27,800
Concentration Ratio (Compustat)	Market share of 4 largest firms in industry based on 3-digit naics code	988	0.38	0.19	0.19	1.00
Leverage (Compustat)	Total debt divided by total assets (logged)	988	-1.64	1.03	-4.61	0.34
Growth (Compustat)	Annual change in sales ratio (logged)	988	0.05	0.46	-12.68	1.43
Capital Intensity (Compustat)	Capital expenditures divided by total sales (logged)	988	-2.82	0.96	-5.88	0.64
Firm Performance (Compustat)	Return on Assets (ROA)	988	0.05	0.10	-0.85	0.41
Firm Size (Compustat)	Total assets (logged)	988	9.45	1.36	6.70	14.60
Resolutions (Risk Metrics)	At least one climate change or environment related resolution directed at firm	988	0.13	0.34	0.00	1.00
CA	Firm headquartered in California	988	0.12	0.32	0	1
RGGI	Firm headquartered in state participating in RGGI	988	0.24	0.43	0	1
RPS	Firm headquartered in state which has enacted RPS legislation	988	0.71	0.45	0	1
GHG Emissions (Trucost)	GHG emissions directly emitted by the firm (log transformed and centered)	988	1.04	2.69	-5.35	7.66
GHG Emissions^2 (Trucost)	Quadratic transformed GHG emissions	988	8.30	11.51	0.00	58.67

Note: Data sources are in parentheses

Table 3 Correlation matrix

		1	2	3	4	5	6	7	8	10	11	12	13	14	15
1	Selection	1.00													
2	Expenditures	0.05	1.00												
3	Concentration Ratio	-0.04	0.17	1.00											
4	Leverage	0.08	-0.05	-0.08	1.00										
5	Growth	0.03	-0.03	0.00	-0.05	1.00									
6	Capital Intensity	0.28	0.00	-0.07	0.14	-0.02	1.00								
7	Firm Performance	-0.01	-0.01	0.02	-0.26	0.12	0.02	1.00							
8	Firm Size	0.14	0.54	-0.08	0.13	-0.14	-0.07	-0.17	1.00						
10	Resolutions	0.11	0.38	0.08	0.03	-0.01	0.11	0.00	0.19	1.00					
11	CA	-0.07	0.16	-0.15	-0.25	0.05	-0.07	0.07	-0.06	-0.05	1.00				
12	RGGI	-0.14	0.03	-0.04	0.01	-0.07	-0.16	-0.02	0.11	-0.02	-0.21	1.00			
13	RPS	-0.12	0.02	-0.05	-0.10	0.02	-0.07	0.11	-0.01	-0.01	0.23	0.36	1.00		
14	GHG Emissions	0.51	0.29	0.00	0.26	0.02	0.46	0.04	0.16	0.23	-0.14	-0.21	-0.15	1.00	
15	GHG Emissions^2	0.46	0.33	-0.12	0.13	0.03	0.34	-0.05	0.22	0.20	-0.10	-0.16	-0.16	0.56	1.00

* All coefficients greater in absolute value that 0.06 are significant

Table 4 Heckman regression results

Model	1(a)	1(b)	2(a)	2(b)
	1st Stage	*2nd Stage*	*1st Stage*	*2nd Stage*
Variables				
Concentration Ratio	0.18	3,737,361***	0.18	3,750,501***
	(0.716)	(0.002)	(0.720)	(0.001)
Log Leverage	-0.12	-1018585***	-0.11	-770,579***
	(0.248)	(0.001)	(0.295)	(0.008)
Growth	0.37	630,296	0.37	235,815
	(0.295)	(0.571)	(0.307)	(0.826)
Capital Intensity	0.11	-12,476	0.11	137,656
	(0.310)	(0.960)	(0.290)	(0.568)
Firm Performance	0.72	-4500534*	0.77	-3720208
	(0.470)	(0.056)	(0.438)	(0.102)
Firm Size	0.13	2,016,022***	0.14	1,969,708***
	(0.143)	(0.000)	(0.118)	(0.000)
Resolutions	0.07	1,960,842***	0.05	1,688,930***
	(0.746)	(0.000)	(0.835)	(0.000)
CA	-0.28	1,197,638	-0.28	1,430,960*
	(0.338)	(0.123)	(0.331)	(0.057)
RGGI	-0.10	208,923	-0.09	581,168
	(0.642)	(0.740)	(0.674)	(0.342)
RPS	-0.08	71,589	-0.07	85,994
	(0.664)	(0.864)	(0.702)	(0.831)
GHG Emissions	0.30***	-49,956	0.26***	-743,954***
	(0.000)	(0.737)	(0.001)	(0.000)
GHG Emissions ^{2}			0.01	134,984***
			(0.418)	(0.000)
Sector Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Lambda	287,531		469,040	
	(0.747)		(0.573)	
Observations	988	285	988	285

p-values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Heckman regression results (climate sensitive industries)

Model	3(a)	3(b)	4(a)	4(b)
	1st Stage	*2nd Stage*	*1st Stage*	*2nd Stage*
Variables				
Concentration Ratio	-1.13	-832,414	-0.91	163,926
	(0.377)	(0.806)	(0.480)	(0.958)
Log Leverage	-0.51*	-1,255,305**	-0.50*	-865,442
	(0.076)	(0.045)	(0.078)	(0.137)
Growth	-4.81***	-124,454	-4.95***	-943,744
	(0.000)	(0.954)	(0.000)	(0.634)
Capital Intensity	0.02	-345,394	0.05	-253,225
	(0.923)	(0.373)	(0.759)	(0.480)
Firm Performance	-1.92	1,112,394	-1.61	870,883
	(0.412)	(0.819)	(0.473)	(0.845)
Firm Size	-0.22	2,283,551***	-0.25	1,832,548***
	(0.243)	(0.000)	(0.195)	(0.000)
Resolutions	-0.42	2,253,564***	-0.55	1,734,131***
	(0.221)	(0.002)	(0.125)	(0.010)
CA	0.01	2,866,605**	0.07	4,339,014***
	(0.988)	(0.037)	(0.906)	(0.001)
RGGI	-0.37	-1,608,788	-0.35	-1,710,345
	(0.417)	(0.181)	(0.443)	(0.125)
RPS	-0.32	-234,691	-0.31	-154,337
	(0.277)	(0.710)	(0.298)	(0.791)
GHG Emissions	0.33***	127,804	0.08	-2,445,673***
	(0.000)	(0.643)	(0.717)	(0.000)
GHG Emissions ^{2}			0.04	339,986***
			(0.240)	(0.000)
Sector Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Lambda	1,704,492		1,176,080	
	(0.162)		(0.301)	
Observations	262	146	262	146

p-values in parentheses

*** p<0.01, ** p<0.05, * p<0.1

FIGURES

Figure 1 Diagram of political issue salience versus issue performance

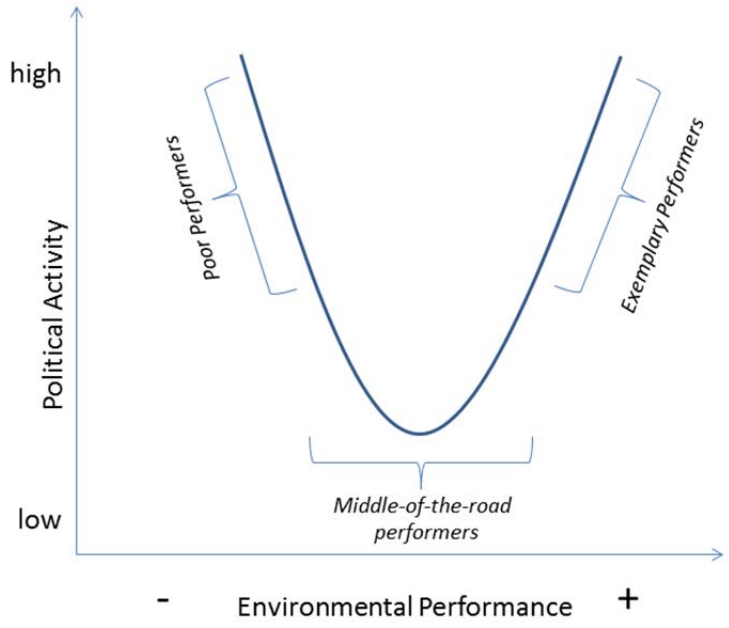
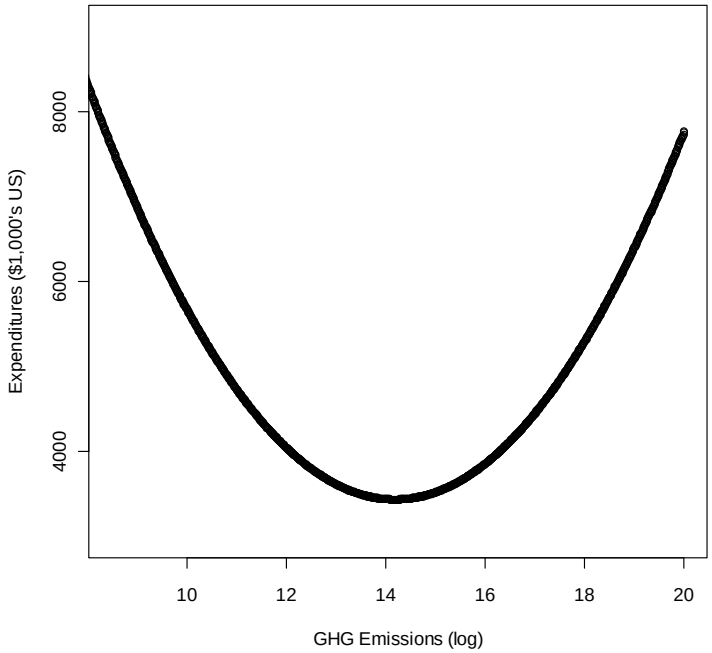


Figure 2 Graphical representation of curvilinear relationship between GHG emissions and lobby expenditures



APPENDIX

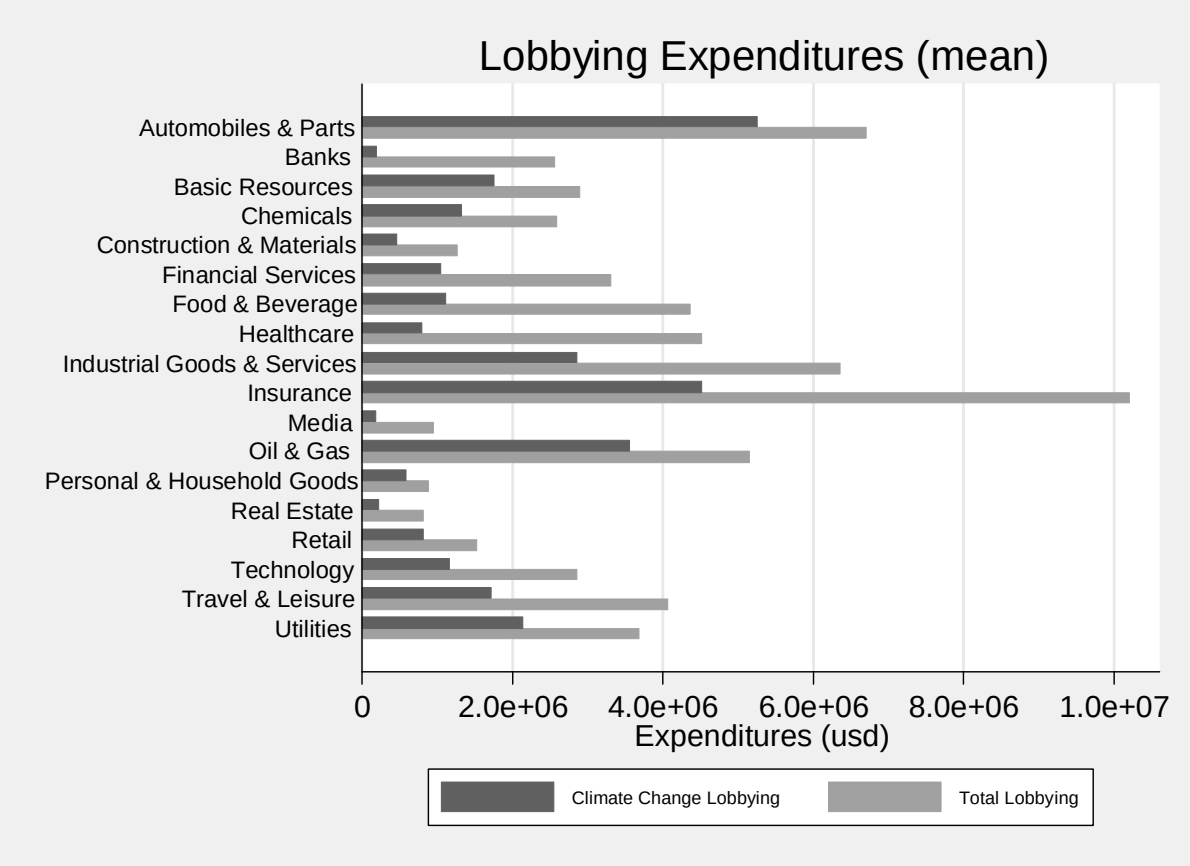
Table A. 1 Highest 10 lobbying firms in 2009

	ICB Super Sector	Company	Amount
1	Oil & Gas	Exxon Mobil Corp.	$21,998,240
2	Industrial Goods & Services	General Electric Co.	$19,630,000
3	Oil & Gas	Chevron Corp.	$16,845,000
4	Oil & Gas	ConocoPhillips	$13,282,079
5	Utilities	Southern Co.	$10,962,500
6	Industrial	Boeing Co.	$8,875,000
7	Oil & Gas	Marathon Oil Corp.	$7,740,000
8	Industrial Goods & Services	United Parcel Service Inc.	$7,187,632
9	Automobiles & Parts	General Motors Co.	$7,170,000
10	Food & Beverage	Monsanto Co.	$6,544,000

Table A. 2 Highest 10 lobbying firms in 2008

	ICB Super Sector	Company	Amount
1	Utilities	PG&E Corp.	$27,770,000
2	Oil & Gas	Exxon Mobil Corp.	$26,610,000
3	Industrial Goods & Services	General Electric Co.	$19,100,000
4	Utilities	Southern Co.	$15,030,000
5	Oil & Gas	Chevron Corp.	$14,889,000
6	Automobiles & Parts	General Motors Co.	$13,471,000
7	Utilities	American Electric Power Co.	$12,248,938
8	Industrial Goods & Services	FedEx Corp.	$8,895,000
9	Insurance	American International Group	$8,460,000
10	Automobiles & Parts	Ford Motor Co.	$8,355,000

Figure A. 1 Total and climate change-specific lobbying expenditures by sector



Supplemental Information

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3) Author(s) name and affiliation:

Magali Delmas
Institute of the Environment and Sustainability and
Anderson School of Management
UCLA

Nicholas Nairn-Birch
Institute of the Environment and Sustainability
UCLA

4) Presenter name:

Magali Delmas

5) Primary contact name and e-mail (One person only):

Magali Delmas
Delmas@ucla.edu

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