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Corporate Climate Lobbying

Finance Working Paper N° 960/2024
February 2024

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A common concern is that ambitious climate policy is—at least in parts—obstructed by corporate lobbying activities. We quantify corporate anti- and pro-climate lobbying expenses, identify the largest corporate lobbyists and their motives, establish how climate lobbying relates to corporate business models, and document whether and how climate lobbying is priced in financial markets. Firms spend on average $295,921 per year on anti-climate lobbying ($164,991 on pro-climate lobbying). Recently, firms have tried to camouflage their climate lobbying activities. Large anti-climate lobbyists have more carbon-intensive business models and face more climate-related incidents in the future. Firms that spend more on anti-climate lobbying earn higher returns, probably because of a risk premium. Their stock prices went up when the Waxman-Markey Cap-and-Trade Bill failed, and down when the Inflation Reduction Act was announced.

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1 Introduction

Climate change requires regulatory action to limit the increase in global temperature to internally agreed levels. Despite this necessity, most countries' climate efforts are insufficient, with significantly more action needed to cut greenhouse gas emissions, transition to renewable energy sources, or stimulate green innovation. A common concern is that more ambitious climate action, at least in parts, is obstructed by firms' lobbying activities. Such activities aim to influence politicians or policymakers to undermine, delay, or avoid pro-climate regulations or policies. For that reason, some argue that anti-climate lobbying should be labeled as Scope 4 emissions to reflect that firms that lobby against stricter climate policies impact climate change more negatively than their Scope 1, 2, or 3 emissions would indicate.

Typically, corporate lobbying occurs behind the scenes, sometimes colliding with a firm's public statements on how it plans to fight climate change. This can lead to a misalignment between climate talk and climate lobbying.[1] In the 2022 proxy season, manifestations of such misalignment were a key issue raised by activist investors, and climate lobbying has in turn also become a major topic of concern in shareholder engagement (Ceres, 2022; Climate-Action100+, 2022). As a result, individual investors and investor groups started publishing expectations on corporate climate lobbying activities for their portfolio firms, including guidance on the goals, scope, and transparency of such activities (e.g., PRI, 2022).

Corporate lobbying against climate action is not a sideshow but has been shown to have real effects on climate action by countries (Meng and Rode, 2019; Brulle, 2018). For example, corporate lobbying and various lawsuits in 2015 and 2016 had a major impact on the failure of the U.S. Clean Power Plan, which contained standards to reduce emissions. Further, auto industry lobbying arguably compromised climate rules on vehicles in the U.S. and EU. There is also evidence on video of how an ExxonMobil lobbyist said that the firm had

[1]For example, ExxonMobil, Glencore, and Stellantis, among others, made public statements to become greener (e.g., through net-zero pledges), but in silence conducted lobbying against climate action (InfluenceMap, 2023). Similarly, the Business Roundtable, a major U.S. corporate lobbying group, publicly supported the fight against climate change while silently lobbying against stricter regulation (Lowenstein, 2022).

fought climate science through "shadow groups" and targeted influential senators to weaken President Biden's climate proposals (Tabuchi, 2021). Gao and Huang (2024) show that U.S. Congress members that receiving large campaign contributions from carbon-emitting firms are more likely to cast climate-skeptic votes. The social costs associated with climate lobbying are potentially large. Meng and Rode (2019) calculate that such lobbying lowered the probability of enacting the (eventually failed) Waxman-Markey Cap-and-Trade Bill by 13 percentage points, representing a social cost of $60 billion. That said, climate lobbying is not necessarily only anti-climate, and pro-climate lobbying may counter attempts to obstruct, or even encourage, stricter legislation.

Understanding corporate climate lobbying is important, given its significant role in the ultimate success of tackling the global climate crisis. In this paper, we conduct a comprehensive analysis of the climate lobbying activities of publicly listed U.S. firms from 2001 to 2022. We quantify corporate anti- and pro-climate lobbying expenses, identify the largest corporate lobbyists and their motives, establish how climate lobbying relates to corporate business models, and document whether and how climate lobbying is priced in financial markets.

We construct lobbying measures from quarterly lobbying reports, which are required by law and filed by external lobbying firms or in-house corporate lobbyists. The construction of the measures comprises two steps. In step one, we identify those lobbying reports that address climate-related topics and measure the associated lobbying amounts. Climate-related lobbying is identified based on a classification of the lobbying "issues" listed in a report (one report may contain multiple issues). An issue is classified as "climate-related" if its description contains a climate-related keyword or relates to a climate-related bill. Climate-related issues feature in 26,714 (or 10.4%) of the 257,691 lobby reports filed by firms in our sample. We quantify the associated dollar amounts of climate lobbying by proportionally allocating the total lobbying expenditures listed in a report across the issues included in the report (data on the money spent on individual issues is unavailable). We aggregate these numbers across all quarterly lobby reports of a firm, incorporating that some firms work with multiple lobbyists.

In step two, we differentiate between pro- and anti-climate lobbying, leveraging data from the Federal Election Commission (FEC) on campaign contributions by a firm's executives and its hired lobbyists. We calculate whether these individuals' contributions go primarily to the Republican or Democratic Party, maintaining that a firm's lobbying is anti-climate (pro-climate) if its executives or lobbyists donate primarily to Republicans (Democrats). This approach to identify the direction of lobbying follows Kwon et al. (2023), discussed in more detail below, who use contributions by corporate lobbyists to identify pro- and anti-environmental lobbying (our approach differs in that we also consider contributions by executives).[2] Our inference is based on two plausible assumptions: (i) the climate stance of executives is informative about the climate stance of their employers (and likewise for the lobbyists servicing a firm); and (ii) firms with executives (or lobbyists) donating predominantly to the Republican Party—characterized by its more conservative climate actions and regulations—undertake more anti-climate lobbying; conversely, firms with associated individuals supporting the Democratic Party—recognized for a more pro-climate leaning agenda—engage in more pro-climate lobbying. We provide evidence supporting each of these assumptions. Having applied these two steps, we aggregate the lobbying measures at the firm-year level to smooth seasonal variation. Some firms undertake pro- and anti-climate lobbying, so we also create a net measure.

Building on our newly created metrics, we provide a detailed anatomy of corporate climate lobbying in the United States. We observe anti-climate lobbying in 10% of firm-years, and pro-climate lobbying in 7.4% of firm-years. On average, spending on anti-climate lobbying amounts to $295,921 per year, and pro-climate lobbying to $164,991 (at the intensive margin, for firms that climate lobby).[3] As would be expected, climate lobbying expenses were minimal before 2006, reflecting limited corporate and societal awareness of climate change issues,

[2] As firms are not required to disclose their climate stances in the lobbying reports, we need to infer it. We use contributions by executives and lobbyists because *corporate* political donations are much less informative about a firm's climate stance (they rarely donate to just one party).

[3] For comparison, average annual lobbying expenses by firms that exclusively contribute to the Republican (Democratic) Party, irrespective of whether the expenses are climate-motivated, amount to $528,819 ($356,994).

and few related bills or regulations. From 2008 to 2010, both lobbying types increased considerably, coinciding with a significant surge in climate legislation (e.g., the American Clean Energy and Security Act). Expenditures dropped after 2010, though anti-lobbying consistently exceeded pro-lobbying, and peaked again in 2014. The years from 2017 to 2019, under President Trump, saw the least climate-related lobbying activity, likely due to his explicit opposition to climate action. In 2022, however, climate lobbying accelerated again and reached a sudden new peak, largely related to President Biden's administration, which increased the likelihood of stringent climate regulations and stimulated efforts to support climate action.

From inspecting lobbying reports, we observe a notable recent trend to camouflage climate lobbying, particularly among firms engaging heavily in climate lobbying. Instead of explicitly mentioning the climate issues of concern, these firms increasingly refer in the description of their activities to abstract bill codes. These codes are not immediately identifiable as climate-related, which highlights the importance of identifying lobbying not solely based on text descriptions. A case in point is ExxonMobil. In 2009, the year of the American Clean Energy and Security Act, the energy giant allocated $13 million to anti-climate lobbying, of which 63% can be detected explicitly in lobbying reports using keywords. By 2022, the year of the Inflation Reduction Act, this percentage dropped to just 18%; all remaining anti-climate lobbying expenses can only be detected using bill codes. Perhaps in response to this trend, investors increasingly worry about a lack of transparency in corporate climate lobbying.[4]

Anti-climate lobbying is highly concentrated, with firms in Utilities and Petroleum and Natural Gas spending the largest total amounts ($239 million and $229 million, respectively, across the sample period). Pro-lobbying is relatively more dispersed across sectors. Interestingly, the Utility sector also ranks highest based on the aggregate amount of pro-climate lobbying, followed by Machinery, Automobiles and Trucks, and Electronic Equipment. The top five corporate anti-climate lobbyists are Southern Company, ExxonMobil, Chevron, BP, and

[4]For example, in its climate change expectations, Norges Bank Investment Management states that "companies should be transparent about where they advocate for specific policy and legislative support" (Norges Bank Investment Management, 2023).

American Electric Power, and the largest pro-climate lobby firms are Pacific Gas and Electric Company (PG&E), General Motors, Calpine, Coventa Energy, and Microsoft. The aggregate spending by the largest corporate anti-climate lobbyist, Southern Company, amounts to about $88 million, 60% more than the pro-lobbying amount of PG&E.

To understand the motives behind climate lobbying, we evaluate whether lobbying activities relate to firm-specifics deemed important for the net-zero transition. We start with proxies for the risks and opportunities posed by climate change. As climate lobbying varies with firm size, we employ a firm's climate lobbying intensity (lobbying expenses scaled by assets). First, we evaluate the role of carbon emissions, a measure of climate transition risk and determinant of investor ESG engagement, and second, we consider measures of green innovation, to proxy for climate-related business opportunities. Firms with more carbon-intense business models spend significantly more on anti-climate lobbying. On the contrary, higher pro-climate expenses are associated with more green innovation, captured using green patent intensity (green patents over all patents) as well as green innovation discussions in earnings calls.

The Utility sector stands out as it ranks highest for both anti- and pro-climate lobbying, reflecting large variation in business models within this sector. Notably, the competing role of different electricity generation fuels affect firms heterogeneously in terms of their exposures to transition risk as the economy moves away from fossil fuels and towards renewable energy. To understand how this heterogeneity affects corporate lobbying, we analyze granular power-plant-level data on the electricity generation sources of firms. We establish that firms that primarily use coal and gas as a fuel source conduct significantly more anti-climate lobbying. On the contrary, heavy reliance on nuclear energy correlates with increased pro-climate lobbying. Somewhat unexpectedly, firms using renewable energy heavily do not spend more on pro-lobbying. Overall, these differences highlight the importance of dissecting lobbying activities within a sector, rather than using sectoral-level metrics.

Anti-climate lobbying may be undertaken by firms to prevent future climate regulation or to avoid regulatory costs associated with climate-related incidents. By contrast, firms

with relatively lower emissions may see this as a competitive advantage, lobbying in favor of regulation (or in support of rules favoring low-carbon, renewable energy technology). To examine these possibilities, we relate firms' environmental performance in the next year to climate lobbying in the current year. More anti-climate (pro-climate) spending is associated with more (fewer) climate-related incidents, with results being stronger if we account for the severity of the incidents. An interpretation is that some anti-lobbying occurs in anticipation of climate-related incidents, with lobbying firms trying to create political capital to reduce any regulatory backlash. Further, anti-climate spending positively correlates with higher future carbon emissions, after accounting for current emissions.

Having documented key determinants and the associated motives of corporate climate lobbying, we address whether investors care about such activities when pricing stocks. This is plausible, especially during the more recent years, given the attention paid by major investors to the topic (PRI, 2022). As stressed by Sustainalytics, a major ESG rating agency, anti-climate lobbying can constitute an investment risk by damaging trust in firms or leading to "name and shame" actions (reputation risk), and by leading firms to not adjust business models fast enough in the hope that lobbying succeeds (transition risk) (Sustainalytics, 2023). We find that firms with more anti-climate lobbying earn higher future returns, while pro-climate lobbying is unrelated to returns.[5] These effects arise only in the second part of our sample (2010-2022), and not in earlier years (2001-2009). A one-standard-deviation increase in anti-climate lobbying is associated with 0.36% higher monthly returns, or 4.33% annually (t-statistic of 4.09). These effects do not simply reflect a carbon risk premium, as we show by directly controlling for carbon emissions (or intensities) in the estimation. We do not find that anti- or pro climate lobbying is related to earnings surprises.

Two channels may explain why climate lobbying and returns relate positively. The first channel, in line with previously-mentioned investor views, holds that firms with large anti-

[5]We follow Bolton and Kacperczyk (2023) and employ cross-sectional regressions using a characteristic-based approach by relating individual firms' returns to their climate lobbying expenses.

lobbying expenses are perceived as more risky. Investors may regard lobbying activities as indicators of high reputation or transition risks, leading them to demand a risk premium. A second channel holds that firms with large anti-lobbying expenses generate unexpectedly higher earnings, which leads to earnings surprises and higher future returns. Unexpectedly higher earnings may arise if the anti-climate lobbying successfully and unexpectedly leads to less stringent regulation or lower regulatory costs.[6] However, this channel is inconsistent with evidence that firms with larger anti-lobbying expenses did not experience higher earnings surprises. It is also inconsistent our evidence that the higher returns originate from more recent years only (as it is conceptually unclear why unexpectedly higher earnings would only materialize since 2010).

To corroborate the risk-premium channel further, we analyze the returns of lobbying firms around two important and surprising climate-related policy events. If the return dynamics reflect a risk premium, then—from an equilibrium perspective—the prices of anti-climate lobbying firms should be bid down (bid up) around major events that increased (decreased) investor beliefs about climate-related regulation (Bolton and Kacperczyk, 2021). Lobbying-related risks would, in turn, be impounded into stock prices, as lower (higher) prices imply higher (lower) expected returns. Identifying all of these events is difficult, but the repricing dynamics—if they exist—should be present around two major climate-related events that unexpectedly shifted investor beliefs.

The first event was when Republican Senator Lindsey Graham dropped support for the Waxman-Markey Cap-and-Trade Bill on April 23, 2010, which would have significantly changed U.S. climate policy by establishing a national cap-and-trade system.[7] The second event is the announcement of the Inflation Reduction Act (IRA) on July 27, 2022. The IRA constitutes the most ambitious and comprehensive U.S. climate change legislation, aiming for a 41% reduction in U.S. emissions by 2030. This goal substantially heightened uncertainty

[6] This channel requires *unexpectedly* higher earnings, as higher earnings as such should be capitalized in a stock's market value and not be associated with higher returns.

[7] The failed bill is also used as an exogenous shock in Meng (2017).

about costly regulatory changes for some firms, especially those reliant on fossil fuels. At the same time, the IRA also allocated $370 billion towards climate-related expenditures and tax credits, favoring firms that benefit from the green transformation.

For the Waxman-Markey Bill, event study returns show that firms with higher anti-climate lobbying expenses outperformed other firms, while pro-climate lobbying correlates with a decrease in stock prices. Estimates for the IRA contrast sharply. An increase in anti-lobbying expenses correlates with a decrease in stock prices, while for pro-climate lobbying, we find opposite effects. Overall, these return dynamics are consistent with a risk-premium channel: The prices of anti-climate lobbying firms are bid down (bid up) around major events that increase (decrease) investor beliefs about climate-related regulatory uncertainty.

Our research is connected to the literature on ESG/CSR and political leanings. Most related to us is recent work by Kwon et al. (2023), who study corporate environmental lobbying. They examine how this lobbying interacts with firms' green innovation, current business operations and market power, and they investigate how it relates to firms' environmental incidents and ESG ratings. We complement their approach to measuring lobbying and examining its effects. For example, while they focus on contributions by lobbyists to identify the political stance, we consider also executives. Further, we identify only climate lobbying, while they instead focus on broader environmental lobbying. In terms of content, Kwon et al. (2023) provide a detailed examination of the green innovation-lobbying nexus, while we consider (also) other lobbying motives and examine financial market effects. In the broader ESG/CSR context, Di Giuli and Kostovetsky (2014), Eichholtz et al. (2009), and Gupta et al. (2016) show that Democratic-leaning corporate stakeholders are more inclined towards CSR practices.[8] Fich and Xu (2023) demonstrate that "involuntarily" green firms increase political donations to traditionalist politicians, affecting stock returns.

With regards to the influence and impact of lobbying on climate legislation and policies,

[8] Bansal and Roth (2000) and Rubin (2008) discuss motivations for CSR, including competitiveness and ecological responsibility, and correlate political beliefs with CSR ratings.

Heitz et al. (2023) find less environmental enforcement and lower penalties for politically connected firms. Lantushenko and Schellhorn (2023) document intensified lobbying by fossil fuel firms in response to climate risks since 2013. Paul et al. (2017) and Brulle (2018) discuss the significant influence of lobbying on climate change legislation.[9] Meng and Rode (2019) and Delmas et al. (2016) also examine the impact of lobbying on climate policies, highlighting the reduced likelihood of policy enactment and a U-shaped relationship between emissions and lobbying expenditures. However, they do not separate the role of pro- and anti-climate lobbying. Kang (2016) quantifies the impact of energy firms' lobbying on policy enactment. Rendina et al. (2023) examine how firms respond to environmental concerns through clean innovation and environmental lobbying, suggesting these strategies are complementary. Instead of assessing the role of lobbying on policy outcomes, we quantify and characterize corporate anti- and pro-climate lobbying and examine how such lobbying is priced in financial markets.

2 Data Sources and Sample Construction

2.1 Data on Lobbying Reports

Our analysis of corporate lobbying expenses builds on all 1,235,401 quarterly U.S. lobbying reports from 2001Q1 to 2023Q1. We download these reports from OpenSecrets, a nonprofit that publishes data on lobbying and campaign finance. OpenSecrets can collect these data as external lobbying firms, who lobby on behalf of a client, and in-house lobbyists are required to file lobbying reports. These reports have to contain the client names (if lobbying firms do the lobbying), the issues lobbied on, the houses of Congress and federal agencies contacted, the

[9] Gullberg (2008) and Vesa et al. (2020) delve into the strategies of environmental and business organizations, noting the economic competitiveness prioritization by business organizations. Clark and Crawford (2011) and Johnston (2010) add a corporate perspective, linking firms' environmental performance to political engagement and to questioning the prevailing climate narrative. The identification of anti- and pro-climate lobbying differentiates our approach from this body of work (e.g., Brulle, 2018).

individual lobbyists involved, and the lobbying amounts.[10] For lobbying firms, the reported lobbying amounts include the income received by lobbying firms from their clients. This encompasses fees paid by clients specifically for lobbying efforts, and it may include also services such as research and communication with government officials. For firms with in-house lobbyists, the reported amounts include the portion of salaries for staff engaged in lobbying, along with other costs directly related to lobbying. Q1 reports are due on April 20, covering January 1 to March 31. Similarly, Q2, Q3, and Q4 reports are due on July 20, October 20, and January 22, respectively. Typically, the reports are available for public viewing within a few days of submission. Clients of lobbying firms include firms but also labor unions or trade associations.

Our initial sample covers 59,979 clients of which 53,242 clients submitted 1,046,506 reports through 7,634 external lobbying firms; the remaining 6,858 clients filed 188,895 reports via in-house lobbyists. Some clients simultaneously hire in-house lobbyists and external lobbying firms, and some file several reports at the same time as they work with multiple lobbying firms (for instance, AT&T regularly files over 20 reports per quarter).

We match client names with Compustat North America using exact name matches or, if unsuccessful, with fuzzy matching (FuzzyWuzzy) plus a manual verification. As detailed in Table IA1, Panel A, of the 59,979 clients in OpenSecrets' lobbying reports, 5,586 are listed firms, of which 4,055 are U.S.-listed firms. Table IA1, Panel B, shows that among the 1,235,401 lobbying reports in our initial sample, 257,691 are from U.S.-listed Compustat firms.

2.2 Data on Campaign Contributions

To differentiate between pro- and anti-climate lobbying, we complement the lobbying reports data with data on individual campaign contributions by corporate executives and lobbyists

[10]The Lobbying Disclosure Act (LDA) of 1995 mandates that lobbying firms register with the Clerk of the House Representatives and the Secretary of the Senate if they aim to influence federal legislative decision-making. Firms were required to submit semi-annual reports before 2008. For simplicity, we refer to a quarterly frequency throughout (most of our tests aggregate data at the annual frequency; we explain below how we account for the semi-annual frequency when using quarterly data).

from the FEC website. Federal U.S. law requires all political committees, including candidates' campaign committees, Political Action Committees (PACs), and party committees, to report to the FEC the contributions they receive.[11] The FEC data include information on the donors' employers and their occupations (e.g., CEO or lobbyist), which allows us to link the names of the individuals to Compustat firms. We use the matching approach from above to link individual and employer names to Compustat firms and lobbying reports.

2.3 Other Data Sources

Carbon emission data is obtained from Trucost (2005-2020), data on measures for green innovation are from Leippold and Yu (2023) (2011-2022), data on firms' electricity generation sources come from the U.S. Energy Information Administration (EIA) (2002-2022), and data on negative climate incidents are from RepRisk (2007-2022). We utilize monthly stock returns from the CRSP for firms traded on NYSE, AMEX, and NASDAQ. Firm-level accounting data come from Compustat Fundamentals Annually (2001-2022).

3 Quantifying Corporate Climate Lobbying

The construction of our measures of corporate climate lobbying comprises two steps: first, identifying climate-related lobbying reports and measuring the associated lobbying amounts; and second, differentiating between pro- and anti-climate lobbying activities, leveraging information on campaign contributions from corporate executives and lobbyists.

[11] Our analysis focuses on direct contributions to candidates and parties. Direct campaign contributions originate from committees and individuals, with individuals typically being the major contributors. For example, about 85% of Donald Trump's presidential campaign funding from November 2022 to September 2023 came from individuals. Firms can also form affiliated PACs to collect voluntary contributions and then donate those funds to support or oppose candidates or political parties. Unlike individuals who often make most of their contributions to one party, PACs commonly distribute their contributions strategically across both parties as a hedging tactic. We exclude Super PACs as they follow different rules and represent a more recent development in campaign finance after the 2010 U.S. Supreme Court decision. Fich and Xu (2023) and Akey (2015) also exclude Super PACs because of their higher complexity and lower transparency.

3.1 Measuring Climate Lobbying Amounts

We develop several measures quantifying corporate climate lobbying. In step one, we identify climate-related lobbying by classifying the specific "issues" addressed in a lobbying report. Each lobbying report contains a description of the lobbying activities at the issue level.[12] To classify an issue as "climate-related," we analyze the text of the issue description and the bills mentioned therein. An issue is climate-related if its description contains at least one climate-related keyword, or if the issue relates to a climate-related bill.[13] Climate-related issues feature in 26,714 or 10.4% of the 257,691 reports of U.S.-listed sample firms (Table IA1, Panel B). Of the 2.3 lobbying issues addressed in the average report, 0.17 (7.3%) are climate-related.

Having identified climate-related issues, we quantify the associated amounts of lobbying expenses. Data on the money spent on *individual* lobbying issues is unavailable. Therefore, to calculate the quarterly climate lobbying expenses of a firm, we proportionally allocate the total lobbying expenditures mentioned in a report based on the number of climate issues relative to all issues in the report. We sum these amounts across all reports r filed by lobbying firms or in-house lobbyists for firm i in quarter q of year t:

$$ClimateLobby_{i,q,t} = \sum_{r} \frac{N_{i,q,t,r}^{Climate\ Issue}}{N_{i,q,t,r}^{Issue}} \times LobbyAmount_{i,q,t,r}$$

where $LobbyAmount_{i,q,t,r}$ is the lobbying expense of report r related to firm i in quarter q of year t, $N_{i,q,t,r}^{Climate\ Issue}$ is the number of issues containing climate keywords or bills in the report r filed for quarter q, and $N_{i,q,t,r}^{Issue}$ is the total number of issues in the report r for quarter q.

For comparison, we construct an alternative measure, $ClimateLobby_{i,q,t}^{Text}$ for which classify

[12] OpenSecrets lists each issue with an issue ID, an issue description, and the associated bills.

[13] Bills are proposals to create new law or substantially modify existing law and introduced by a member of Congress. Climate-related bills are identified based on whether a bill's title or sub-titles feature any pre-defined climate keywords. Our list of climate keywords encompasses the following terms: climate change, global warming, greenhouse gas, carbon emission, cap and trade, low carbon, carbon pricing, carbon capture, carbon tax, methane emission, renewable energy, clean energy, renewable electricity, climate mitigation, climate adaptation. We identify these keywords from those climate-related keywords in Sautner et al. (2023) that are most related to climate lobbying. We identify a total of 2,802 climate bills from 2001 to 2023 (out of 221,861 bills). Our data source for bills is Congress.gov.

an issue as "climate-related" if the associated text description includes any of the predefined climate keywords, that is, we ignore the bill types mentioned. This measure allows us to illustrate that a prose-based measure underestimates the actual extent of climate lobbying.

3.2 Measuring Political Stance of Climate Lobbying

In step two, we distinguish between pro- and anti-climate lobbying, following a similar approach in Kwon et al. (2023). Firms are not required to disclose their climate stances in the reports (i.e., whether they lobby for or against a bill). Hence, we need to somehow infer their climate stances, which we do from the campaign contributions by a firm's executives or hired lobbyists to the Republican or Democratic Party. We use these individuals' contributions because political donations through corporate-affiliated PACs are comparatively less informative about a firm's climate stance as they rarely donate to just one party.[14] As we show below, this is very different for executives—even after aggregating donations across executives within the firm—and also for lobbyists.

We need to make two assumptions. First, the climate stance of executives is informative about the climate stance of their employers (and likewise for lobbyists who service a firm). Second, firms with executives or lobbyists donating predominantly to the Democratic Party, recognized for its pro-climate leaning agenda, do more pro-climate lobbying. Conversely, those firms with associated individuals supporting the Republican Party engage in more anti-climate lobbying, as the Republican Party is characterized by relatively more conservative climate actions and regulations.

Both assumptions are plausible. In support of the first assumption, Kempf et al. (2023) shows that executive teams are increasingly partisan, and executives who are misaligned with the political majority of their teams are more likely to leave (because of disagreement on how the firm is run). The second assumption can be illustrated with a comparison between

[14] We calculate that less than 20% of the 1,384 U.S.-listed firms and 1,053 trade associations that both lobby and donate to parties directed their donations (over the past three years) exclusively to a single party.

ExxonMobil and General Motors (GM). ExxonMobil executives, leading a firm known for its rather questionable climate stance and limited climate action, donated $8,96,850 (97%) to Republican candidates since 2010, and only $30,300 to Democrats (3%), while GM executive contributed $27,766 (23%) to Republicans and $95,445 (77%) to Democrats. This contrast in contributions validates our hypothesis.[15] Further supporting our assumption, Di Giuli and Kostovetsky (2014) show that firms headed by Democratic CEOs (they donated all past campaign contributions to Democrats) exhibit higher CSR performance, of which climate performance is a part, relative to firms led by Republican CEOs. The Republicans (Democrats) are anti-climate (pro-climate) leaning—part of the second assumption—is also plausible, as we can demonstrate in Figure IA1. In the figure, we analyze League of Conservation Voters (LCV) scores for politicians from both parties. LCV scores range from zero to one, and higher scores reflect a stronger pro-environmental stance.[16] Figure IA1 shows for House Representatives (Panel A) and Senators (Panel B) a stark contrast between the two parties' LCV scores: while the average scores for Democrats are always higher than 0.8, almost all the values for Republicans are below 0.2.

Bolstered by this evidence, we determine the stances of the lobbying reports based on the campaign contributions from executives or lobbyists to either the Democratic or Republican Party. We primarily focus on donations by executives, but in cases where executive contribution data is unavailable or inconclusive, we rely on donations by a firm's lobbyists. Out of the 11,868,258 individual contributions from employees of US-listed firms, 703,415 are from executives, and 178,696 clearly indicate the recipient's party (we use this subset only as it

[15]Indeed, there is evidence that ExxonMobil engages negatively in several climate policy streams, declines to participate in the CDP Climate Change Survey since 2018, and advocates for the continued role of fossil fuels in regulations. Its CEO, Darren Woods, supported policies to encourage investment in oil and gas in a testimony to the U.S. House Committee on Energy and Commerce in April 2022. Their lobbyists also conceded that the firm has targeted influential senators to weaken President Biden's climate proposals in 2021. In comparison, GM has an increasingly positive climate positioning, actively supporting measures to accelerate the electrification of road transport. Mary Barra, GM's CEO, stated in 2020 that "climate change is real. That is indisputable, and we take the challenges it presents seriously."

[16]The scores are constructed by tracking the voting records of all Congress members on critical environmental, climate, or environmental justice legislation. See www.lcv.org/work/congressional-scorecard/0.

allows us to obtain a clear and robust measure).[17]

Figure 1, Panel A, displays the contribution percentages to the Democratic Party, after aggregating donations from executives of the same firm in the given year. We display the proportion of contributions to the Democratic Party relative to all contributions (based on the total donations over the previous three years). As a result, the distributions ranges between 0 and 1. As is visible from the figure, the vast majority of executives (68.8%) support only one party: specifically, 37.2% donate only to the Republican Party, and 31.6% exclusively to the Democratic Party. Based on this striking feature, we attribute a stance to the lobbying reports by assuming that the report is anti-climate if the executives associated with the firm primarily donate to the Republican party, and pro-climate if they donate primarily to the Democratic Party. To have a robust measure, we require that the executives as a team allocate at least 75% of their donations over the past three years to a single party only.[18]

If executives do not contribute to political parties or if they do not donate more than 75% of their contribution to a single party, then we assign a stance to a report based on the firm's lobbyists. In Figure 1, Panel B, we depict the distribution of donations by 3,947 lobbyists. Similar to executives, the vast majority, 3,524 or 89.3% of lobbyists, exclusively support one party, roughly equally splitting between the Democratic and Republican parties. We require that lobbyists donate more than 80% of their historical contributions to a single party, which is the case for 3,692 lobbyists. Further, at the report level, we require that over 50% of a report's lobbyists make contributions and all of them donate to the same party (the average lobbying report lists 2.65 lobbyists).

Across the 257,691 lobbying reports in the sample, we can then identify the political stance for 150,682 lobbying reports (Table IA1, Panel B). Out of those, 81,950 reports are associated with the Republican Party and 68,732 with the Democratic Party. We determine

[17]Figure IA2, Panel A, plots the total contributions from these executives to the Democratic and Republican parties over the last 20 years. Figure IA2, Panel B, reports the corresponding numbers for lobbyists.

[18]We further require that they donate over $1,000 as a team. We exclude from the analysis the remaining firm-years where contributions to a single party are lower than 75% (even if the firms have lobbying expenditures).

the political stance from executive contributions in 70.2% of our lobby reports, covering 84.6% of the total reported expenditures; hence, the inclusion of data on executive contributions is important in our setting. Most importantly, for the subset of 26,714 reports with climate lobbying, we can link 15,719 reports to a political leaning: 8,161 reports are linked to the Republican Party ("anti-climate" lobbying), and 7,558 reports to the Democratic Party ("pro-climate" lobbying).

In terms of the amounts associated with anti- and pro-climate lobbying, we can then calculate the following two measures for firm i in quarter q of year t:

$$ClimateLobby^{Anti}_{i,q,t} = ClimateLobby_{i,q,t} \times \mathbb{1}_{[RepParty_{i,t}]}$$
$$ClimateLobby^{Pro}_{i,q,t} = ClimateLobby_{i,q,t} \times \mathbb{1}_{[DemParty_{i,t}]},$$

where $ClimateLobby^{Anti}_{i,q,t}$ and $ClimateLobby^{Pro}_{i,q,t}$ are the anti- and pro-climate lobbying expenses of firm i in quarter t, respectively, $ClimateLobby_{i,q,t}$ is the quarterly total climate lobbying expense of firm i in quarter q, and $\mathbb{1}_{[RepParty_{i,t}]}$ ($\mathbb{1}_{[DemParty_{i,q}]}$) is an indicator for whether the lobbying is related to the Republican (Democratic) Party based on the political contribution of firm i's executives (or lobbyists) as of t. We calculate corresponding measures using the text-based classification of the reports ($ClimateLobby^{Anti\,(Text)}_{i,q,t}$ and $ClimateLobby^{Pro\,(Text)}_{i,q,t}$).

As some firms have pro- and anti-climate lobbying expenses, we create a net measure, which takes positive values (negative values) if a firm does more (less) anti- than pro-lobbying:

$$ClimateLobby^{Anti-Pro}_{i,q,t} = ClimateLobby^{Anti}_{i,q,t} - ClimateLobby^{Pro}_{i,q,t}.$$

3.3 Creating Firm-Year Level Intensity Measures

We make two final adjustments to the measures. First, we create annual versions by summing up the quarterly lobbying amounts across the four calendar quarters of year t; this allows us

to smooth variation in expenses within the year.

$$ClimateLobby_{i,t}^{Anti} = \sum_{q=1}^{4} ClimateLobby_{i,q,t}^{Anti}$$
$$ClimateLobby_{i,t}^{Pro} = \sum_{q=1}^{4} ClimateLobby_{i,q,t}^{Pro}.$$

Second, we account for size effects by scaling the lobbying expenses by firm i's assets:

$$ClimateLobbyIntensity_{i,t}^{Anti} = ClimateLobby_{i,t}^{Anti}/Assets_{i,t}$$
$$ClimateLobbyIntensity_{i,t}^{Pro} = ClimateLobby_{i,t}^{Pro}/Assets_{i,t}.$$

We accordingly calculate an annual version of net climate lobbying for firm i in year t:

$$ClimateLobbyIntensity_{i,t}^{Anti-Pro} = (\sum_{q=1}^{4} ClimateLobby_{i,q,t}^{Anti-Pro})/Assets_{i,t}.$$

We also create indicators at the firm-year level that each equal one if the respective climate lobbying expense is positive (e.g., $\mathbb{1}(ClimateLobby)_{i,t}^{Anti}$ equals one if $ClimateLobby_{i,t}^{Anti}$ is positive, and zero otherwise).

3.4 Measuring General Political Lobbying

As control variables, we calculate corporate expenditures for broader political lobbying. $LobbyIntensity_{i,t}^{Dem}$ quantifies lobbying expenses—irrespective of whether they are climate-related—by firms that exclusively contribute to the Democratic party; we scale again by assets to obtain an intensity measure. $LobbyIntensity_{i,t}^{Rep}$ is defined accordingly but for firms that exclusively contribute to the Republican party. Similar to our approach for the climate measures, we assign corporate lobbying expenses to a political party based on whether firm executives donate more than 75% of its donations according to FEC data to a single party (over the past three years), and do likewise using data on lobbyists if executive data is missing.

4 Anatomy of Corporate Climate Lobbying

4.1 Descriptive Evidence on Climate Lobbying

Table 1 presents summary statistics of the measures of corporate climate lobbying at the firm-year level. in Panel A, the sample includes U.S.-listed firms with data on lobbying reports, independent of whether the lobbying is climate-related, and in Panel B we focus only on those firms that undertake climate lobbying.[19] In Panel A, across the full sample, the average firm spends $76,661 annually on climate-related lobbying. Expenses on anti-climate lobbying are about 79% larger than those on pro-climate lobbying, with yearly averages of $49,219 and $27,442, respectively. As a result, $ClimateLobby^{Anti-Pro}$ is positive at the average firm ($21,777). The median values are zero as most sample firms do not lobby on climate topics. Climate lobbying occurs in 16.6% of firm-years, as reflected by the indicator $\mathbb{1}(ClimateLobby)$ (extensive margin). In terms of the lobbying stance, we observe anti-climate lobbying in 10% of firm-years, and pro-climate lobbying in 7.4%.

For comparison, $Lobby^{Rep}$ quantifies general lobbying expenses by firms that exclusively contribute to the Republican Party. Such spending amounts on average to $528,819 per year; the corresponding average for $Lobby^{Dem}$ equals $356,994. Hence, pro- and anti-climate lobbying each amount to slightly less than 10% of the aggregate lobbying expenses of firms that donate only to the Republication or Democratic Party. The table also reports summary statistics on other firm-level variables that we use to explain climate lobbying; these data are typically available for a subset of firm-years only.

In Table 1, Panel B, we report figures for firms that undertake climate lobbying (i.e., $\mathbb{1}(ClimateLobby)$=1). After conditioning on firm-years with climate lobbying, it is clear that the full sample averages mask the actual amounts spent: $ClimateLobby^{Anti}$ is on average $295,921 and $ClimateLobby^{Pro}$ is $164,991 at the intensive margin. The panel further reports

[19] The sample stops in 2022 as we do not have full-year data for 2023, neither on lobbying expenses nor on Compustat variables.

the asset-scaled intensity measures of climate lobbying. $ClimateLobbyIntensity^{Anti-Pro}$, for example, has a mean value of 1.36 after scaling by firm assets (in $ million). All variables come with very large standard deviations, reflecting significant cross-sectional variation in climate lobbying expenses across firms. Notably, when identified solely based on verbal text-based descriptions in the lobbying reports, climate lobbying is substantially smaller: for anti-climate lobbying, we then observe average lobbying expenses of only $217,098 (about 27% less), and for pro-climate lobbying expenses of $103,588 (about 38% less). We demonstrate below that the wedge originates primarily from the more recent sample years.

Table IA2 reports interesting correlations. First, the anti-lobbying intensity correlates much more strongly with *CarbonEmissions* and *CarbonIntensity* than the pro-lobbying counterpart. Second, the correlations between the main measures and those that are text-based only are high but not equal to 1 (0.89 and 0.75, respectively).

4.2 Time-Series Evolution of Climate Lobbying

Figure 2 plots in Panel A the quarterly trend in climate lobbying over time (pro-climate lobbying depicted in blue, anti-climate lobbying in red), and in Panel B the number of pro- or anti-climate lobbying firms. In Panel A, spending on climate lobbying was low before 2006, reflecting limited corporate and societal awareness of climate change issues, and few related bills or regulations.[20] From 2008 to 2010, climate lobbying increased considerably (both types), coinciding with a significant surge in climate legislation, such as the American Clean Energy and Security Act. During this period, up to 134 publicly listed sample firms allocated around $32 million per quarter on anti-climate lobbying, while a similar number of firms spent up to $24 million on pro-climate efforts.

Expenditures dropped across the board after 2010, though anti-climate lobbying consistently exceeded pro-climate lobbying. Another peak occurred in 2014, with around 120

[20] As mentioned above, lobbying reports were semi-annual before 2008. In the figure, we divide pre-2008 semi-annual expenditures by two to approximate quarterly amounts.

sample firms engaging in anti-climate lobbying, albeit with reduced spending of about $16 million in total. The period from 2017 to 2019, under President Trump's administration, saw the least climate-related lobbying activity, likely due to his explicit opposition to climate action. This largely muted climate lobbying efforts by both sides, probably as his categorical anti-climate stance made any pro-climate regulation highly unlikely (e.g., in 2017, he appointed climate-change denier Scott Pruitt to head the EPA).

In 2022, climate lobbying reached a sudden new peak, with over 230 firms lobbying for and 150 against climate actions. Pro-climate lobbying saw significantly higher expenditures, exceeding $43 million per quarter, compared to less than $18 million for anti-climate efforts. The surge in pro-lobbying seems largely related to President Biden's administration, which proposed more stringent climate regulation and efforts supporting climate action. Meanwhile, despite continued opposition, firms lobbying against climate action largely reduced their spending, possibly recognizing the lower potential payoff of such expenditures.

4.3 Camouflaging Climate Lobbying

From inspecting lobbying reports in our sample, we observe an emerging trend by firms to avoid explicitly mentioning climate issues; this development started around 2021. Instead, firms increasingly refer to bills using bill codes, which are not immediately identifiable as climate-related based on their descriptions alone. This, in turn, requires external information for context. For example, bill code "H.R.5376" refers to the Inflation Reduction Act of 2022.

This change can be illustrated using examples from ExxonMobil and BP. For each of the two oil giants, we compare lobbying reports between 2009 and 2022. We select these years as they contain the two most heavily lobbied bills, the American Clean Energy and Security Act (2009), and the Inflation Reduction Act (2022). In 2009, ExxonMobil allocated $13,034,816 to anti-climate lobbying according to our measure or 43% of its total lobbying expense of $30,026,820. Of the entire anti-climate expense, 63% can be detected explicitly

in the lobbying reports using our climate keywords. To the contrary, in 2022, this percentage dropped to only 18% (anti-climate spending also fell to $3,451,833 or 27% of the 2009 amount). As a result, all remaining anti-climate lobbying expenses can only be detected using bill codes. Similarly, in 2009, BP directed $10,489,666 of its $17,270,000 lobbying expenses towards anti-climate efforts, with 66% identified via climate-related keywords in the issue descriptions. This proportion dropped to zero by 2022—all anti-climate expenditures by then had to be solely inferred from related bills.

Figure 3 illustrate this change beyond the two cases, depicting the timer-series of lobbying expenses (Panel A) and lobbying firms (Panel B) as identified solely based on climate-related keywords. While the panels largely mirror those in Figure 2 until about 2021 (with some small exceptions), a wide gap emerges in the later years. In terms of numbers, we calculate that before 2010, over 80% of lobbying reports openly included climate keywords in text relating to climate lobbying. This proportion fell to below 35% by the end of 2022. Accordingly, the number of firms explicitly mentioning climate issues also decreased by about 50% in Panel B over the past two to three years. That lobbying amounts fell by more than the number of firms implies that it is especially firms with large lobbying expenses that avoid direct mentions of climate keywords.

4.4 Climate Bills and Climate Lobbying

To understand the nature of climate lobbying, we present in Figure 4 the most heavily lobbied climate bills. We identify these bills based on the descriptions and bill codes in the lobbying reports. In the figure, we aggregate pro- and anti-lobbying amounts associated with specific bills across the sample. In Panel A, we rank bills based on total anti-climate lobbying expenses. The American Clean Energy and Security Act in the 111$^{\text{th}}$ election cycle from 2009 to 2010 received the highest anti-lobbying amounts (approximately $135 million). The Energy Independence and Security Act, the Clean Energy Jobs and American Power Act, or

the American Clean Energy Leadership Act each attracted over $75 million in lobbying. In Panel B, we rank bills based on pro-climate lobbying expenses. Consistent with the time-series variation in Figure 2, the Inflation Reduction Act in the 117th election cycle drew the most pronounced pro-lobbying (about $170 million), with the Infrastructure Investment and Jobs Act, also from the 117th cycle, ranking second. The American Clean Energy and Security Act led in anti-climate lobbying, but it also attracted substantial pro-climate lobbying efforts, with around $75 million in total (or 55% of the associated anti-climate lobbying expenses).

4.5 Industry and Firm Distribution of Climate Lobbying

Figure 5 reports the distribution of climate lobbying expenses by the industrial sector. Panel A reports the total expenses, and Panel B displays firm-level quarterly averages. In both panels, we report anti- and pro-climate expenses, but rank sectors based on the amount of anti-climate lobbying. In Panel A, anti-climate lobbying is highly concentrated, with firms in Utilities and Petroleum and Natural Gas spending the largest total amounts ($239 million and $229 million across sample years, respectively). When considering firm-level averages in Panel B, Coal emerges as a further sector with constituent firms spending large resources on anti-climate lobbying (the difference to Panel A arises as the number of coal firms is much smaller compared to the Utility sector).[21] Pro-climate lobbying is more dispersed across sectors. The Utility sector also ranks highest based on the aggregate amount of pro-climate lobbying, and it also ranks first on a per-firm basis. Other sectors with high aggregate pro-climate expenses include Machinery, Automobiles and Trucks, and Electronic Equipment.

Figure 6, Panel A, lists the sample firms with the largest aggregate anti-climate spending. The top-5 firms include utility Southern Company, which tops the ranking by a margin with

[21] Across all firm-quarters for the Coal sector, 128 out of 392 firm-quarters (or 33%) contain lobbying against climate actions (untabulated). Similarly, in the Petroleum and Natural Gas industry, 541 (26%) out of all 2,049 firm-quarters involve anti-climate lobbying. Focusing solely on active lobbying firm-quarters, average spending rises to $0.42 million and $0.21 million per firm per quarter in the Petroleum and Coal industries, respectively (untabulated).

$88 million in aggregate spending across all sample years, followed by the oil majors ExxonMobil, Chevron, and BP, and utility American Electric Power. Though the vast majority of these firm's lobbying expenses are anti-climate, Southern Company and American Electric Power also spend some money on pro-climate lobbying. Figure 6, Panel B, displays a ranking based on the largest spenders on pro-climate lobbying, which is topped by PG&E, GM, utilities Calpine and Coventa Energy, and Microsoft. The pro-climate spending by the largest corporate lobbyist, PG&E amounts to $54 million, which equals 62% of the anti-lobbying amount of Southern Company that was ranked first in Panel A.

Figure 7 presents the geographical distribution of corporate climate lobbying activities. States where anti-climate lobbying amounts constitute over 50% of total climate lobbying are marked in red (the remainder states are shaded in blue). We allocate firms to states based on the location of the headquarters. States with pro-climate firms include California, Washington, and the New England states, whereas states with anti-climate lobbying firms include Texas or Florida, among others.

5 Climate Lobbying and the Net-Zero Transition

5.1 Climate Lobbying, Carbon Emissions, and Green Innovation

To understand the motives behind climate lobbying, we evaluate whether the lobbying relates to business model characteristics deemed important for a firm's climate transition. Building on prior climate finance work, we start with features that proxy for risks and opportunities related to climate change. First, we evaluate the role of carbon emissions, a firm-level measure of climate transition risk (Bolton and Kacperczyk, 2021, 2023; Ilhan et al., 2021) and determinant of investors' ESG engagement decisions (Hoepner et al., 2023), and, second, we consider measures of green innovation, which act as proxies for business opportunities related to the net-zero transition (Sautner et al., 2023; Leippold and Yu, 2023; Cohen et al., 2021).

We estimate the following firm-year regressions for firm i and year t:

$$Climate\,LobbyIntensity^{X}_{i,t} = \beta_0 + \beta_1 Transition\,Variable_{i,t} + \beta_2 \mathbf{X}_{i,t} + \gamma_t + \delta_j + \epsilon_{i,t}, \quad (1)$$

where $ClimateLobbyIntensity^{X}_{i,t}$ is one of three measures of firm i's scaled expenditures on climate lobbying in year t (i.e., $ClimateLobbyIntensity^{Anti}_{i,t}$, $ClimateLobbyIntensity^{Pro}_{i,t}$, or $ClimateLobbyIntensity^{Anti-Pro}_{i,t}$). When considering the role of risks, $Transition\,Variable_{i,t}$ is $Carbon\,Emissions_{i,t}$, a firm's Scope 1 carbon emissions, or $CarbonIntensity_{i,t}$, its Scope 1 emissions scaled by revenues. When focusing on opportunities, $Transition\,Variable_{i,t}$ is replaced by $GreenPatents_{i,t}$ or $GreenInnovation_{i,t}$, whereby $GreenPatents_{i,t}$ is the number of green patents filed scaled by all patents, and $GreenInnovation_{i,t}$ is the fraction of the earnings call that discusses green innovation (Leippold and Yu, 2023). The vector $\mathbf{X}_{i,t}$ includes various firm characteristics ($log(Asset)$, B/M, ROA, $Capex/Assets$, $Leverage$, $Tangibility$, and $Sale\,Growth$). We include year fixed effects (γ_t) to identify effects from the cross-section of firms and further add industry fixed effects (δ_j) to compare firms with their industry peers. Independent variables are normalized to have a mean of zero and a standard deviation of one. Standard errors are clustered at the industry level. The sample includes all firms with lobbying expenses.

Table 2 provides regression estimations of Equation (1). In Panel A, we explore the role of carbon emissions. In Columns 1–2, firms with more carbon-intense business models, measured using Log($CarbonEmissions$) or $CarbonIntensity$, spend significantly more on anti-climate lobbying. In Column 1, for example, a doubling of carbon emissions (100% increase) is associated with an additional \$790,000 spending on anti-climate lobbying (for a median sample firm with assets worth \$10 billion). These figures contrast sharply with opposing effects in Columns 3–4, in which we explain pro-climate lobbying. For example, in Column 3, a doubling of carbon emissions is associated with \$670,000 lower spending on pro-climate lobbying. The effects in Columns 1–4 lead to positive and significant coefficients

for regressions explaining $ClimateLobbyIntensity^{Anti-Pro}$ in Columns 5–6.

Table 2, Panel B, focuses on green innovation and demonstrates in Columns 1–2 no link between $GreenPatents$ ($GreenInnovation$) and anti-climate lobbying. However, significant and positive correlations emerge with pro-climate lobbying in Columns 3–4, with point estimates also being much larger. A one-standard-deviation increase in the green patents (green innovation) measure is associated with \$43,900 (\$52,900) higher pro-climate lobbying expenses for the median firm; the estimates are sizable as they correspond to 14% (13%) of the variables' standard deviations in the regression sample. Consequently, the correlations for $ClimateLobbyIntensity^{Anti-Pro}$ in Columns 5–6 are negative and statistically significant.

5.2 Climate Lobbying and Electricity Generation Sources

In Figure 5, the Utility sector ranks highest for both anti- and pro-climate lobbying, suggesting that within-industry variation in business models in this sector leads to diverging lobbying policies. To understand this heterogeneity, we analyze the role of different electricity generation sources in explaining climate lobbying. Electricity generators vary greatly in their fuel sources, and these differences affect firms heterogeneously in terms of exposure to transition risk as the economy moves away from fossil fuels and towards renewable energy.

To explore this heterogeneity, we make use of granular power-plant-level data provided by the EIA, which we aggregate at the firm level to evaluate the importance of different fuel sources. By construction, these data are available only for a subset of the sample, the majority of which are utilities (68%); other sample firms operating electricity plants are from Oil, Chemicals, and Steel. The EIA data are differentiated by fuel types and we classify energy generation sources into six categories using Annual Energy Review fuel type codes: i) coal; ii) oil (e.g., distillate petroleum or petroleum coke); iii) natural gas; iv) nuclear; v) renewable (e.g., solar PV and thermal, or wind); and vi) others.[22] To measure the importance

[22]The Form EIA-923 survey provides detailed electricity generation data for 9,108 electricity plants (in Megawatt hours). By matching plant operators with Compustat firms, we aggregate data on all electricity

of a specific fuel source for a firm, we scale the Megawatt hours associated with a fuel type by assets (in $ millions). We then estimate a variant of Equation (1) in which we replace $Transition\,Variable_{i,t}$ with a vector containing each of the six fuel sources:

$$Climate\,LobbyIntensity^{X}_{i,t} = \beta_0 + \beta_1 \textbf{Fuel Sources}_{i,t} + \beta_2 \mathbf{X}_{i,t} + \gamma_t + \delta_j + \epsilon_{i,t}, \qquad (2)$$

where $ClimateLobbyIntensity^{X}_{i,t}$ is defined as above and the vector $\textbf{Fuel Sources}_{\mathbf{i,t}}$ includes six different scaled fuel sources for firm i and year t ($Coal/Assets_{i,t}$, $NaturalGas/Assets_{i,t}$, etc.); the remaining variables and fixed effects are defined as before.

Estimations of Equation (2) are reported in Table 3. In Column 1, firms that primarily use coal as an energy source are significantly more likely to conduct anti-climate lobbying. The effect is similar for gas but with a larger magnitude. At the same time, as documented in Column 2, firms that rely on these two types of fuels also spend significantly less on pro-climate lobbying: a one-standard-deviation increase in coal usage (scaled by assets) corresponds to $17,200 less in pro-climate lobbying for firms with median assets, which equals 2.3% of the variable's standard deviation in the regression sample. The same holds for firms relying heavily on natural gas. Oil-reliant firms show lower pro-climate lobbying expenses, with a coefficient that is 50% higher than for coal. On the contrary, in Column 2, nuclear energy usage correlates with significantly increased pro-climate lobbying expenses. Somewhat unexpectedly, firms relying on renewable energy do not spend more on pro-climate lobbying.

5.3 Climate Lobbying and Future Climate-related Performance

Anti-climate lobbying may be undertaken by firms trying to prevent future climate regulation, including carbon taxes, emission limits, or cap-and-trade schemes. It may also be motivated by attempts to prevent regulatory costs associated with current or future climate-related incidents. By contrast, firms with relatively lower carbon emissions may lobby in favor of climate-

plants of an operator to the firm-year level.

related regulation (or in support of rules supporting low-carbon renewable energy sources or low-carbon technology). To examine these possibilities, we estimate regressions of firm i's environmental performance in the next year (t+1) on climate lobbying in the current year (t):

$$\begin{aligned} Climate\,Perf_{i,t+1} &= \beta_0 + \beta_1 Climate\,LobbyIntensity_{i,t}^{Anti} \\ &+\beta_2 Climate\,LobbyIntensity_{i,t}^{Anti} + \beta_3 \mathbf{X}_{i,t} + \gamma_t + \delta_j + \epsilon_{i,t+1}, \end{aligned} \tag{3}$$

where $Climate\,Perf_{i,t+1}$ is a measure of climate-related incidents or carbon emissions. The incidents variables, Log($Climate\,Incidents_{i,t+1}^{Number}$) and Log($Climate\,Incidents_{i,t+1}^{Severity}$), measure the number or severity of negative climate incidents as sourced from RepRisk, and the emissions variables, Log($CarbonEmissions_{i,t+1}$) and $CarbonIntensity_{i,t+1}$, are defined as above.[23] $ClimateLobbyIntensity^{Anti}$ and $ClimateLobbyIntensity^{Pro}$ are defined as before. We also estimate a variant of Equation (3) which replaces the two climate lobbying variables with $ClimateLobbyIntensity^{Anti-Pro}$. The vector $\mathbf{X}_{i,t}$ includes the same firm characteristics as before, and we additionally control for contemporaneous levels in $Climate\,Perf_{i,t}$ (e.g., emissions exhibit a high level of autocorrelation, so controlling for current levels is important).

Table 4 reports estimations of Equation (3). In Panel A, more anti-climate (pro-climate) spending is associated with more (fewer) future climate-related incidents, with results being stronger if we account for the severity of the incidents. In Column 1, a one-standard-deviation increase in $ClimateLobbyIntensity^{Anti}$ comes with a 4% rise in incidents, whereas $ClimateLobby^{Pro}$ is not linked to such incidents. When considering incident severity, the number for $ClimateLobbyIntensity^{Anti}$ adjusts to a 5% increase. This implies that incident severity influences firms' lobbying against stricter climate regulations, while there is no

[23]The incidents variables focus on negative events related to climate change, greenhouse gas emissions, and global pollution. With daily-updated data from various online sources like newsletters and social media including Twitter and blogs, RepRisk flags and monitors material ESG risks and violations of international standards for more than 200,000 public and private companies. The incidents we use encompass, for example, atmospheric pollution and criticisms of coal-fired power plant operations or gas flaring. It also covers some incidents pertinent to climate lobbying. For instance, a notable 2020 incident involved oil firms funding a special group of scientists to cast doubt on climate science. Such incidents can have reputational and financial impacts on a firm.

impact from pro-climate lobbying. Similar results are obtained if we use the net lobbying measure in Columns 2 and 4, with a 3% increase in incident occurrence and severity for a one-standard-deviation increase in the variable. An interpretation of these results is that some anti-lobbying occurs in anticipation of climate-related incidents, with lobbying firms trying to create political capital to reduce any regulatory backlash.

In Panel B, anti-climate spending positively correlates with higher future carbon emissions in Columns 1 and 3. A one-stand-deviation increase in $ClimateLobbyIntensity^{Anti}$ in Column 1 is associated with 1% higher carbon emissions in the next year; this is a reasonably large number given the stickiness of emissions. An interpretation is that firms that expect higher future carbon emissions lobby more to avoid strict climate regulation. In Column 3, a one-standard-deviation rise in anti-climate lobbying expenditures is significantly correlated with a notable increase of 4.55 tonnes in CO_2-equivalents per million in revenues.

6 Stock Returns and Corporate Climate Lobbying

6.1 Baseline Estimates

Having documented key determinants and associated motives of climate lobbying, we address whether investors care about a firm's lobbying activities when pricing stocks. Therefore, we relate firms' stock returns to their corporate climate lobbying expenses. As in Bolton and Kacperczyk (2023), we employ cross-sectional regressions using a characteristic-based approach, which is well suited given our sample's rich cross-sectional variation in lobbying activities and firm characteristics. Further, with a characteristics-based approach, there is no need to make assumptions about the underlying asset pricing model.[24] We link excess returns of firm i in each month of year t+1 (from February of t+1 to January of t+2) to

[24] As explained in Bolton and Kacperczyk (2023), a conceptual difficulty with the choice of asset pricing model, in the context of a complex pricing problem such as climate-related risks, is that no such model has yet been formulated.

climate lobbying at the end of year t. Lobbying reports are available within one month after the calendar-quarter end, so our estimation includes one month's lag to ensure the information is available to investors. As before, we use annual expenses to smooth variation in lobbying activities within the calendar year. Further, we split the sample into return observations for the years 2002 to 2009 and 2010 to 2022, as we expect stronger effects for the second period—this is because climate lobbying-related concerns by investors have become more relevant over the past few years. The sample includes all firms with lobbying expenses. We estimate the following regressions at the firm-month level for firm i in year t:

$$\begin{aligned} Excess\ Return_{i,t+1} = \beta_0 + \beta_1 ClimateLobbyIntensity^{Anti}{}_{i,t} + \\ \beta_2 ClimateLobbyIntensity^{Pro}{}_{i,t} + \beta_3 \mathbf{X}_{i,t} + \gamma_t + \delta_j + \epsilon_{i,t+1}, \end{aligned} \tag{4}$$

where $Excess\ Return_{i,t+1}$ is firm i's excess return (raw return minus the risk-free rate) during each month of year t+1, and $ClimateLobbyIntensity^{Anti}_{i,t}$ and $ClimateLobbyIntensity^{Pro}_{i,t}$ are firm i's anti- or pro-climate lobbying expenses in t. As before, we estimate a variant of Equation (4) with $ClimateLobbyIntensity^{Anti-Pro}_{i,t}$. We always control for total lobbying expenses related to the Republication and Democratic Party ($LobbyIntensity^{Rep}$ and $LobbyIntensity^{Dem}$), and we additionally add the firm characteristics from before. Following Bolton and Kacperczyk (2021), we include year-month (γ_t) and industry (δ_j) fixed effects, and double cluster standard errors at the firm and year level. Following Zhang (2023), we use weighted least squares regression to avoid small stocks influencing our estimates.

Table 5 reports estimations of Equation (4). Results for the 2002-2009 return period are reported in Columns 1–4, and those for the 2010-2022 return period in Columns 5–8. In Columns 1-4, we find no evidence that climate lobbying is related to returns between 2002 and 2009. Coefficients are small and always insignificant. This is sharply different in Columns 5–6, in which we focus on the second part of the sample period. In Column 5, firms with more anti-climate lobbying earn higher future returns (pro-climate lobbying is not related to returns). A one-standard-deviation increase in $ClimateLobbyIntensity^{Anti}$ is

associated with 0.36% (=0.43×84/100) higher monthly returns (or 4.33% annually), with a t-statistic of 4.09. When adding control variables in Column 6, the estimates are similar, and the significance levels are largely unchanged. In Columns 7–8, we replace the two climate lobbying variables with the net measure. In Column 8, which includes the full set of controls, a one-standard-deviation increase in $ClimateLobbyIntensity^{Anti-Pro}$, that is, more net anti-climate lobbying, is associated with a return increase of 4.90% p.a (t-statistic of 2.65).

6.2 Controlling for Carbon Emissions

A question that arises is whether the estimated return effects simply reflect a carbon risk premium. Bolton and Kacperczyk (2021, 2023) demonstrate that firms with higher carbon emissions earn higher returns, attributing this effect to investors seeking compensation for carbon risk exposure. This concern is valid, as Section 4 indicates a positive correlation between climate lobbying—particularly if it is anti-climate—and the current as well as future corporate carbon footprint. This raises the possibility that the return effect may, at least in parts, reflect a carbon risk premium.

Table 6 investigates this possibility by adding carbon emissions as a control variable into Equation (4); we alternatively add Log($CarbonEmissions$) and $CarbonIntensity$. To address concerns regarding the delayed availability of emission data to investors, we account for a six-month lag in carbon emissions when matching with stock returns (Zhang, 2023). Hence, we relate returns from July of year t+1 to June of the following year to emissions from year t. After controlling for emissions, we continue to find no statistically significant association between climate lobbying and returns in Columns 1–4 (the sample period spans now the years 2006 to 2009 due to limited data on emissions). In Columns 5–6, the coefficients of $ClimateLobbyIntensity^{Anti}$ remain positively and significantly related to returns, as in Table 5. According to the estimate in Column 5, a one-standard-deviation increase in anti-climate lobbying is associated with an annual 5.24% return increase (t-statistic

of 3.71). Results are obtained regardless of whether we control for emission levels or intensities. In Columns 7–8, $ClimateLobbyIntensity^{Anti-Pro}$ remains positively and significantly related to returns (t-statistics of 2.99 and 2.85, respectively). The coefficients for Log($Carbon\,Emissions$) and $Carbon\,Intensity$ in Table 6 are insignificant.

6.3 Further Robustness Checks

We conduct multiple further robustness tests for the results in Table 5, in each of them focusing on 2010-2022 period. In Table IA3, we re-estimate a variant of Equation (4) with climate lobbying measures detected from text descriptions only. Anti-climate lobbying keeps predicting returns positively. A concern with the estimation of Equation (4) is that the baseline effects are distorted because the sample includes firms that do not lobby on climate topics, thereby not allowing for an apples-for-apples comparison. To address this concern, in Table IA4, we retain our results if we re-estimate the regressions for the subset of firms with climate lobbying expenses. Table IA5 conducts further checks that address other concerns with Table 5. First, in Columns 1–2, we replace the measures of the lobbying expenses with simple indicators for whether a firm does anti- or pro-climate lobbying. Second, in Columns 3–4, we alternatively cluster standard errors by industry and year. Third, in Columns 5–6, we address potential look-ahead bias by delaying the lobbying variables by six months post year-end (i.e., we link lobbying expenses from year t to monthly returns from July of year t+1 to June of t+2). In all three robustness tests, we find results consistent with Table 5.

6.4 Earnings Surprises and Corporate Climate Lobbying

As we use realized returns as proxies for expected returns, a concern is that the return effect we document may stem, in parts, from unexpected changes in corporate earnings. For example, firms engaging in anti-climate lobbying, which typically operate carbon-intensive business model, might choose not to invest in emission reduction technology if they perceive strict

climate regulations as unlikely. This inaction can lead to higher-than-anticipated earnings, as it saves on costs, at least in the short-run, prompting investors to adjust their valuations upwards. This in turn can drive up realized returns of these firms, implying a positive link between anti-climate lobbying expenses and returns that is due mispricing rather than a risk channel. To evaluate the importance of the mispricing channel, we investigate the impact of climate lobbying on earnings surprises by estimating the following equation:

$$\begin{aligned} SUE_{i,t} =& \beta_0 + \beta_1 ClimateLobbyIntensity_{i,t}^{Anti} + \beta_2 ClimateLobbyIntensity_{i,t}^{Pro} \\ &+ \beta_3 \mathbf{X}_{i,t} + \gamma_t + \delta_j + \epsilon_{i,t}, \end{aligned} \tag{5}$$

where SUE is one of two measures of earnings surprises (SUE), constructed using I/B/E/S data and applying the methods from Atilgan et al. (2023). The first measure, $SUE1$, is calculated as the actual earnings per share (EPS) for fiscal year t minus the analyst consensus forecast, divided by the fiscal year-end stock price. We measure the analyst consensus as the median analyst forecast constructed eight months before the end of the forecast period (if analysts provide estimate for the upcoming fiscal year, then the forecast period spans the 12 months of the fiscal year). The second measure, $SUE2$, is calculated accordingly but based on analyst consensus forecasts made twenty months before the end of the forecast period. We exclude observations where actual-forecast EPS deviation exceeds 10% of the stock price. The lobbying variables are constructed as before. The regression incorporates year (γ_t) and industry (δ_j) fixed effects. Standard errors are clustered by firm and year.

Table IA6 reports the estimation results for Equation (5). The estimation period is from 2010 onwards, that is, the years for which we documented higher returns at firms with high anti-lobbying expenses. Across all columns, none of the climate lobbying measures significantly correlate with the measures for earnings surprises. This suggests that the observed positive return effects of anti-climate lobbying are unlikely to be driven by a mispricing related to earnings surprises.

6.5 Interpretation of Results

Two channels may explain why climate lobbying and returns relate positively. The first channel holds that firms with large anti-climate lobbying expenses are perceived as more risky, because of the reputation and transition risks associated with the lobbying. As indicated before, anti-climate lobbying can constitute an investment risk by damaging trust in firms and leading to "name and shame" actions (reputation risks). It can lead to firms not adjusting business models fast enough, hoping the lobbying will be successful (transition risk). These arguments should be particularly relevant when comparing firms within an industry, as we do by including industry-fixed effects in the estimation. This channel aligns with the pricing of carbon transition risk, proxied using the carbon emissions (Bolton and Kacperczyk, 2021, 2023).

According to a second channel, firms with large anti-lobbying expenses generate unexpectedly higher earnings. This mispricing channel should, in turn, lead to positive earnings surprises and future returns. Unexpectedly higher earnings may arise if the anti-climate lobbying successfully and unexpectedly leads to less stringent or no regulation or lower regulatory costs. An important element of this channel is that it requires unexpectedly higher earnings, as higher earnings per se should be capitalized in a stock's market value and not be associated with higher returns. However, this channel is inconsistent with our evidence that firms with large anti-lobbying expenses did not exhibit higher earnings surprises. Further, it is conceptually unclear why unexpectedly higher earnings would only materialize since 2010.

7 Event Study Evidence

If the return results reflect a risk-premium channel, then—from an equilibrium perspective—the prices of anti-climate lobbying firms should be bid down (bid up) around major events that increased (decreased) investor beliefs about climate-related regulation (Bolton and Kacperczyk, 2021). Lobbying-related risks would, in turn, be impounded into stock prices, as

lower (higher) prices imply higher (lower) expected returns. Identifying all of these events is difficult, but these repricing dynamics, if they exist, should be present around two major climate-related policy events that unexpectedly shifted investor beliefs.

7.1 Description of Events

For the first event, we examine return reactions when Senator Lindsey Graham, Republican of South Carolina, dropped support for the Waxman-Markey Cap-and-Trade Bill. This bill, officially known as the American Clean Energy and Security Act, was a critical proposal in U.S. climate policy as its goal was to establish a national cap-and-trade system.[25] It was marked by political contention and complex negotiations, and it attracted intense interest across various sectors, leading firms to hire lobbyists on a large scale.[26] The bill passed the House by a narrow margin (219 to 212) on June 26, 2009, but was never brought to the Senate. Critical for this outcome was that Senator Lindsey Graham, an initial supporter of the bill, withdrew his support on April 23, 2010, which signaled its eventual failure.

Under the risk channel, for firms lobbying against the bill, its failure should have increased stock prices, as uncertainty about the immediate regulatory and financial burdens they were facing no longer existed. On the contrary, for pro-climate firms lobbying in favor of the bill, the event should have led to declines in stock price because of higher uncertainty about the prospects for a green economy that these firms otherwise would have benefited from.

For the second event, we explore the announcement of the Inflation Reduction Act (IRA) on July 28, 2022. The IRA constitutes the most ambitious and comprehensive climate change legislation in the U.S. to date, by aiming for a 41% reduction in U.S. GHG emissions by 2030 (compared to 2020). This goal substantially heightened uncertainty about costly regulatory changes for some firms, especially those reliant on fossil fuels, potentially altering adversely

[25]The bill aimed at reducing GHG emissions by 2050 to 83% below 2005-levels, and thereby had the potential to dramatically affect multiple sectors in the U.S., particularly those reliant on fossil fuels.

[26]Media reports suggested an average of four lobbyists per Congress member, with many aiming to thwart the bill due to concerns over increased operating costs and competitive challenges.

their operational and profitability landscape. At the same time, the IRA also allocated an unprecedented $370 billion towards climate-related expenditures and tax credits, favoring firms that benefit from the green transformation. The IRA also attracted substantial lobbying.[27] The IRA's unexpected announcement came on the afternoon of July 27, 2022, when Senator Joe Manchin and Senate Majority Leader Chuck Schumer released a statement supporting it; this came as a surprise due to Manchin's previous pessimistic attitude about a climate bill. Following Deng et al. (2023), we use July 28 as our event date because the announcement became widely known after the market closed on July 27.

Under the risk channel, firms engaged in anti-lobbying should experience a decline in valuations, as investors expect a negative impact on future earnings. Firms lobbying for the bill should be better positioned to capitalize on opportunities arising from the associated regulation, leading to increased investor optimism and higher valuations.

7.2 Event Study Cumulative Abnormal Returns

We estimate the following regression for firm i around each of the two events e:

$$\begin{aligned} CAR_i^e = \beta_0 + \beta_1 ClimateLobbyIntensity_i^{Anti} + \beta_2 ClimateLobbyIntensity_i^{Pro} \\ + \beta_3 \mathbf{X}_i + \delta_j + \epsilon_i, \end{aligned} \tag{6}$$

where CAR_i^e is the cumulative market-adjusted abnormal stock returns (CAR) of firm i over the one-day ([0,1]), two-day ([0,2]) or three-day ([0,3]) window after the event date.[28] $ClimateLobbyIntensity_i^{Anti}$ and $ClimateLobbyIntensity_i^{Pro}$ are firm i's expenditures on anti- or pro-climate lobbying. To accurately reflect expenditures on the specific climate bills, we include only those lobbying reports that explicitly reference the full names or bill codes of the

[27] Different from the intense lobbying from both sides for the Waxman-Markey Bill, the IRA emerged at a time when the urgency of climate action had become more widely accepted.

[28] We use a 250-trading day estimation window that ends 25 days before the event date. We require a minimum of 40 non-missing observations within the estimation window and then calculate the market-adjusted CAR for each stock as its returns in excess of CRSP value-weighted market returns.

two targeted bills when constructing the lobbying measures. We measure these expenses over the one-year period before the event date until one quarter before the calendar quarter that contains the event date. We include industry (δ_j) fixed effects and cluster standard errors at the industry level. As before, we also report specifications using the net lobbying variable. We control for $LobbyIntensity^{Dem}$, $LobbyIntensity^{Rep}$, and the previous firm characteristics.

Table 7 presents the results from estimating Equation (6). In Panel A, we report CAR estimates for the Waxman-Markey Cap-and-Trade Bill. In Column 1, firms with higher anti-climate lobbying expenses outperform other firms. A one-standard-deviation increase in $ClimateLobbyIntensity_i^{Anti}$ is associated with 0.80% (=0.95×84/100) higher CARs in the one-day window; this effect rises to 0.87% over the three-day window in Column 3. In contrast, pro-climate lobbying correlates with a 0.37% (=0.63×58/100) decrease in stock prices over the three-day window for a one-standard-deviation increase in expenditures. In Columns 4–6, effects for the net anti-climate lobbying expenditures confirm that firms with large ant-climate lobbying expenses earned higher CARs around the bill's failure.

In Panel B, the CAR estimates for the IRA contrast sharply with those in Panel A. An increase in $ClimateLobbyIntensity^{Anti}$ by one standard deviation correlates with a 1.37% valuation decrease in the one-day window in Column 1. This effect increases over the two-day window and then gets smaller again (it stays negative and significant). For pro-climate lobbying, the coefficients are positive and large. A one-standard-deviation increase in pro-lobbying is associated with 0.97% higher CARs in the one-day window. As a result, the net anti-climate lobbying measure exhibits negative, statistically significant coefficients in Columns 4–6.

Overall, the return dynamics around the two climate policy events are consistent with the risk-premium channel: Stock prices of anti-climate lobbying firms are bid down (bid up) around events that increased (decreased) investor beliefs about climate regulation.

8 Conclusion

In this paper, we quantify corporate anti- and pro-climate lobbying expenses, identify the largest corporate lobbyists and their motives, establish how climate lobbying relates to corporate business models, and document how climate lobbying is priced in financial markets.

Firms spend, on average, $295,921 per year on anti-climate and $164,991 on pro-climate lobbying. Anti-climate lobbying is highly concentrated, with firms in Utilities and Petroleum and Natural Gas spending the largest total amounts. Pro-climate lobbying is more dispersed across sectors, but the Utility sector also ranks highest based on the aggregate amount of pro-climate lobbying. Recently, firms try to camouflage their lobbying activities by avoiding explicitly mentioning climate issues in lobbying reports, instead referring to abstract bill codes.

Firms with more carbon-intense business models spend significantly more on anti-climate lobbying. In contrast, there is a positive correlation between corporate green innovation and spending on pro-climate lobbying. More anti-climate (pro-climate) spending is associated with more (fewer) climate-related incidents. An interpretation is that some anti-lobbying occurs in anticipation of climate-related incidents, with lobbying firms trying to create political capital to reduce any regulatory backlash.

Firms with more anti-climate lobbying earn higher future returns, even after controlling for carbon emissions. The higher returns are not the effect of earnings surprises. Corporate lobbying explains how firms responded to two major climate-related shocks, as we show by analyzing stock returns of lobbying firms around two important events (the failed Waxman-Markey Cap-and-Trade Bill and the passage of the Inflation Reduction Act): the prices of anti-climate lobbying firms were bid down (bid up) when the events increased (decreased) investor beliefs about climate-related regulatory uncertainty.

Data Appendix

Variables	Definitions	Sources
$ClimateLobby_{i,t}$	Climate lobbying expenses identified from lobbying reports. A lobbying report is climate-related if it contains climate-related keywords or climate-related bills.	OpenSecrets, FEC
$ClimateLobby_{i,t}^{Anti}$	Anti-climate lobbying expenses identified from lobbying reports. A lobbying report is climate-related if it contains climate-related keywords or climate-related bills. When firm executives donate over 75% of their contributions in the past three years to Republican candidates, the firm's climate-lobbying expenditures are classified as anti-climate lobbying expenses. In cases where executive contribution data is unavailable, we label climate-lobbying expenditures as anti-climate if more than 50% of the report's lobbyists donated over 80% of their total contributions to Republican candidates.	OpenSecrets, FEC
$ClimateLobby_{i,t}^{Pro}$	Pro-climate lobbying expenses. A lobbying report is climate-related if it contains climate-related keywords or climate-related bills. When firm executives donate over 75% of their contributions in the past three years to Democratic candidates, the firm's climate-lobbying expenditures are classified as pro-climate lobbying expenses. In cases where executive contribution data is unavailable, we label climate-lobbying expenditures as pro-climate if more than 50% of the report's lobbyists donated over 80% of their total contributions to Democratic candidates.	OpenSecrets, FEC
$ClimateLobby_{i,t}^{Anti-Pro}$	Anti- minus pro-climate lobbying expenses. Takes positive (negative) values if anti-climate spending is higher (lower) than pro-climate spending. We identify lobbying reports as climate-related if they contain climate keywords or climate bills.	OpenSecrets, FEC
$ClimateLobby_{i,t}^{Anti\,(Text)}$	Defined as $ClimateLobby_{i,t}^{Anti}$ but with lobbying report identified as climate-related based on climate-related keywords only.	OpenSecrets, FEC
$ClimateLobby_{i,t}^{Pro\,(Text)}$	Defined as $ClimateLobby_{i,t}^{Pro}$ but with lobbying report identified as climate-related based on climate-related keywords only.	OpenSecrets, FEC
$ClimateLobby_{i,t}^{Anti-Pro\,(Text)}$	Defined as $ClimateLobby_{i,t}^{Anti-Pro}$ but with lobbying report identified as climate-related based on climate-related keywords only.	OpenSecrets, FEC
$\mathbb{1}(ClimateLobby_{i,t})$	Dummy variable that equals 1 if $ClimateLobby_{i,t}$ is positive.	OpenSecrets, FEC
$\mathbb{1}(ClimateLobby_{i,t}^{Anti})$	Dummy variable that equals 1 if $ClimateLobby_{i,t}^{Anti}$ is positive.	OpenSecrets, FEC

Variables	Definitions	Sources
$\mathbb{1}(ClimateLobby_{i,t}^{Pro})$	Dummy variable that equals 1 if $ClimateLobby_{i,t}^{Pro}$ is positive.	OpenSecrets, FEC
$\mathbb{1}(ClimateLobby_{i,t}^{Anti-Pro})$	Dummy variable that equals 1 if $ClimateLobby_{i,t}^{Anti-Pro}$ is positive.	OpenSecrets, FEC
$ClimateLobbyIntensity_{i,t}^{Anti}$	Anti-climate lobbying expenses (in \$) divided by total assets (in \$ million). Winsorized at the 1% and 99.9% levels. We winsorize at 99.9% as only 10% of the observations take positive values.	OpenSecrets, FEC
$ClimateLobbyIntensity_{i,t}^{Pro}$	Pro-climate lobbying expenses (in \$) divided by total assets (in \$ million). Winsorized at the 1% and 99.9% levels.	OpenSecrets, FEC
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$	Anti- minus pro-climate lobbying expenses (in \$) divided by total assets (in \$ million). Winsorized at the 1% and 99.9% levels.	OpenSecrets, FEC
$LobbyIntensity_{i,t}^{Rep}$	Republican-leaning lobbying expenses divided by total assets. Determined based on executive donations and lobbyist contributions. Lobbying expenditures are classified as Republican-leaning when firm executives have directed over 75% of their past three-year contributions to Republican candidates. In the absence of executive contribution data, we designate lobbying expenses as Republican-leaning if more than 50% of lobbyists in related reports have allocated over 80% of their total contributions to Republican candidates. Winsorized at the 1% and 99.9% levels.	OpenSecrets, FEC
$LobbyIntensity_{i,t}^{Dem}$	Democratic-leaning lobbying expenses divided by total assets, are determined based on executive donations and lobbyist contributions. Lobbying expenditures are classified as Democratic-leaning when firm executives have directed over 75% of their past three-year contributions to Democratic candidates. In the absence of executive contribution data, we designate lobbying expenses as Democratic-leaning if more than 50% of lobbyists in related reports have allocated over 80% of their total contributions to Democratic candidates. Winsorized at the 1% and 99.9% levels.	OpenSecrets, FEC
$CarbonEmission_{i,t}$	Scope 1 CO2 and CO2 equivalent emissions. (tonnes) Winsorized at the 1% and 98% levels.	Trucost
$CarbonIntensity_{i,t}$	Scope 1 carbon emissions (in tonnes CO2e) divided by revenues (in \$ million). Winsorized at the 1% and 98% levels.	Trucost
$Coal/Asset_{i,t}$	Electricity net generation from coal (in Megawatt hours) divided by total assets (in \$ million). Winsorized at the 1% and 99% levels.	EIA
$NaturalGas/Asset_{i,t}$	Electricity net generation from natural gas (in Megawatt hours) divided by total assets (in \$ million). Winsorized at the 1% and 99% levels.	EIA
$Nuclear/Asset_{i,t}$	Electricity net generation from nuclear energy (in Megawatt hours) divided by total assets (in \$ million). Winsorized at the 1% and 99% levels.	EIA

Variables	Definitions	Sources
$Oil/Asset_{i,t}$	Electricity net generation from oil (in Megawatt hours) divided by total assets (in $ million). Winsorized at the 1% and 99% levels.	EIA
$Renewable/Asset_{i,t}$	Electricity net generation from renewable energy (in Megawatt hours) divided by total assets (in $ million). Winsorized at the 1% and 99% levels.	EIA
$Other/Asset_{i,t}$	Electricity net generation from sources other than coal, natural gas, nuclear energy, oil, and renewable energy (in Megawatt hours) divided by total assets (in $ million). Winsorized at the 1% and 99% levels.	EIA
$GreenPatents_{i,t}$	The number of green patents scaled by the total number of patents. Winsorized at the 1% and 99% levels.	USPTO
$GreenInnovation_{i,t}$	Percentage of green innovation-focused discussions in earnings conference calls (including presentation and Q&A), aggregated across all four quarterly calls. Winsorized at the 1% and 99% levels.	Leippold and Yu (2023)
$ClimateIncidents_{i,t}^{Number}$	Number of risk incidents related to climate change and greenhouse gas emissions as identified across various news sources. Winsorized at the 1% and 99% levels.	RepRisk
$ClimateIncidents_{i,t}^{Severity}$	Number of risk incidents related to climate change and greenhouse gas emissions as identified across various news sources. The measures weights incidents by a severity score. This score ranges from 1 to 3 for each incident, where 3 denotes very severe. Winsorized at the 1% and 99% levels.	RepRisk
$Log(Assets)_{i,t}$	Logarithm of total assets. Winsorized at the 1% and 99% levels.	Compustat
$B/M_{i,t}$	Book equity divided by market capitalization. Winsorized at the 1% and 99% levels.	Compustat
$ROA_{i,t}$	Operating income before depreciation divided by total assets. Winsorized at the 1% and 99% levels.	Compustat
$Capex/Assets_{i,t}$	Capital expenditures divided by total assets. Winsorized at the 1% and 99% levels.	Compustat
$Leverage_{i,t}$	Total debt divided by total assets. Winsorized at the 1% and 99% levels.	Compustat
$Tangibility_{i,t}$	Net property, plant, and equipment divided by total assets. Winsorized at the 1% and 99% levels.	Compustat
$SalesGrowth_{i,t}$	Percentages change in sales. Winsorized at the 1% and 99% levels.	Compustat

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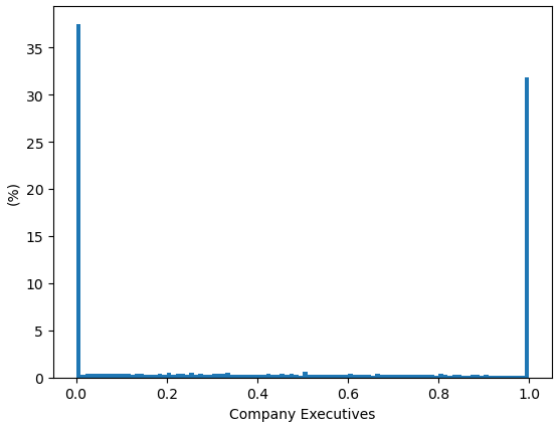
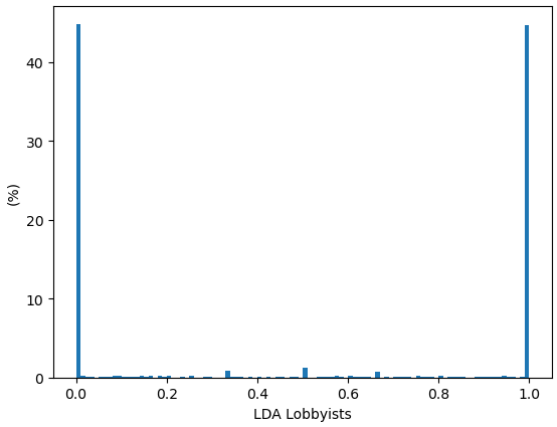
Figure 1: **Contribution to the Democratic and Republican Party**

This figure illustrates contributions by corporate executives or lobbyists to the Democratic or Republican Party. We aggregate contributions from executives or lobbyists of the same firm in the given year. We display the proportion of contributions to the Democratic Party relative to all contributions (based on the total donations over the previous three years). As a result, the distribution ranges between 0 (all contributions exclusively to the Republican Party) and 1 (all contributions exclusively to the Democratic Party). Panel A presents contributions by corporate executives (based on their contributions over the past three years). Panel B displays results for lobbyists (based on their total historical contributions).



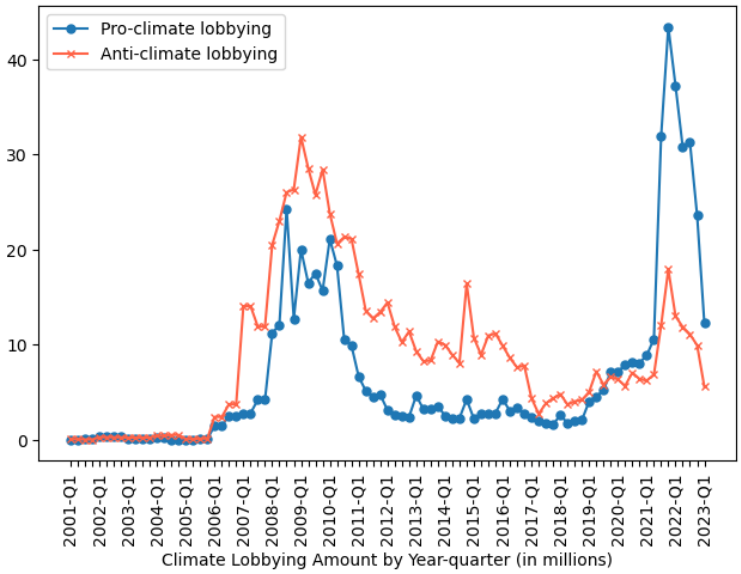
(a)



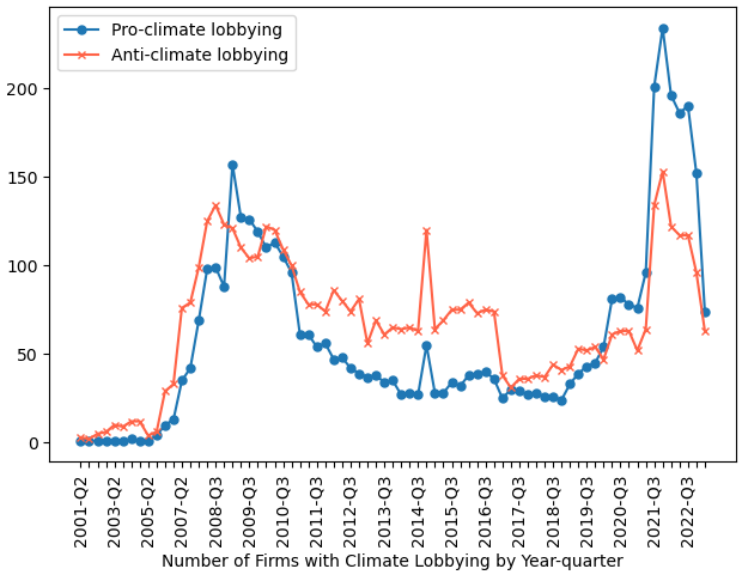
(b)

Figure 2: **Time-Series Variation of Corporate Climate Lobbying**

This figure illustrates the variation of spending on pro- and anti-climate lobbying activities across firms over time. Panel A displays the aggregate amounts of anti- and pro-climate lobbying for each quarter, while Panel B shows the count of distinct firms engaged in anti- or pro-climate climate lobbying in each quarter.



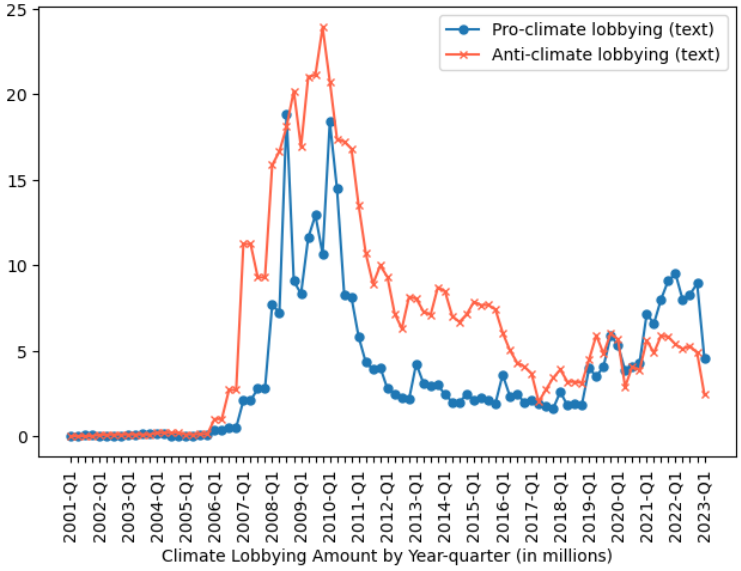
(a)



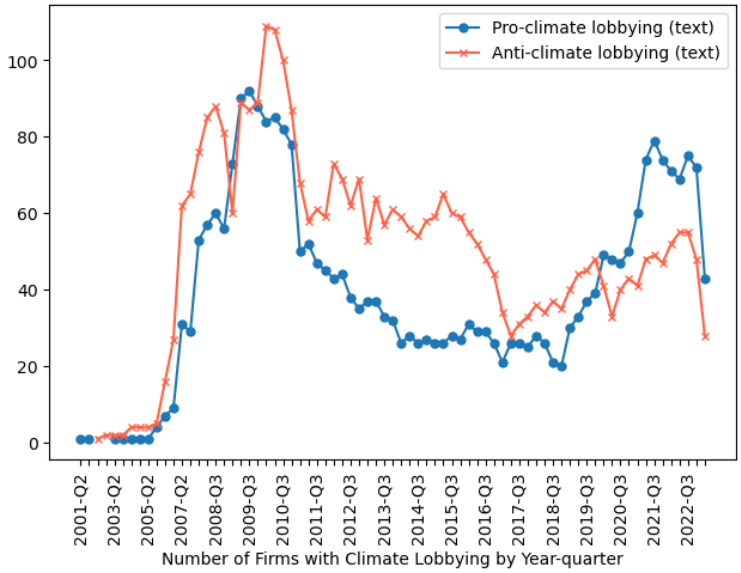
(b)

Figure 3: **Time-series Variation of Text-Based Corporate Lobbying**

This figure illustrates the variation of spending on pro- and anti-climate lobbying activities across firms over time. Panel A displays the aggregate amounts of anti- and pro-climate lobbying for each quarter, while Panel B shows the count of distinct firms engaged in anti- or pro-climate climate lobbying in each quarter. For this figure, we identify lobbying solely from climate-related keywords.



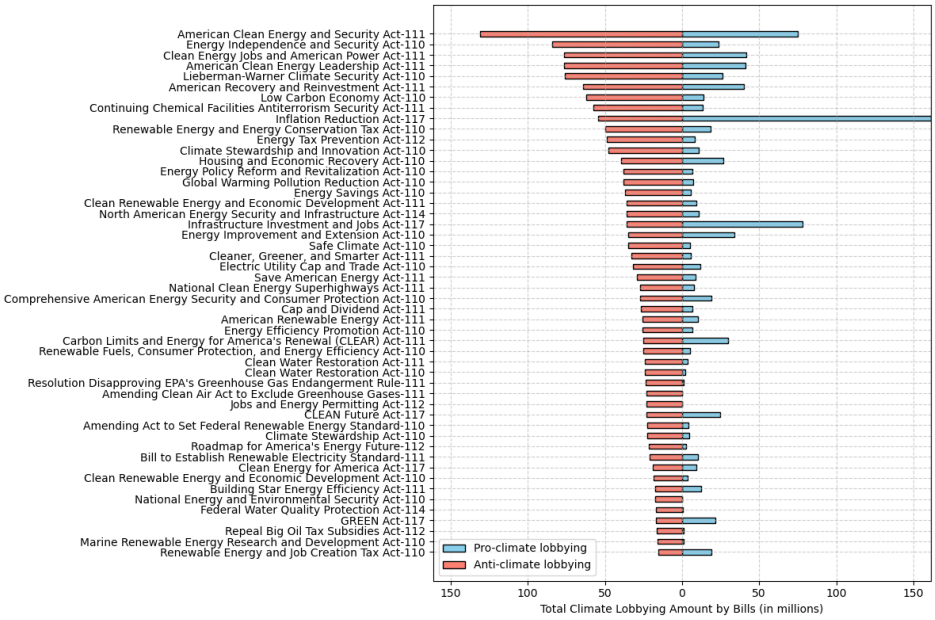
(a)



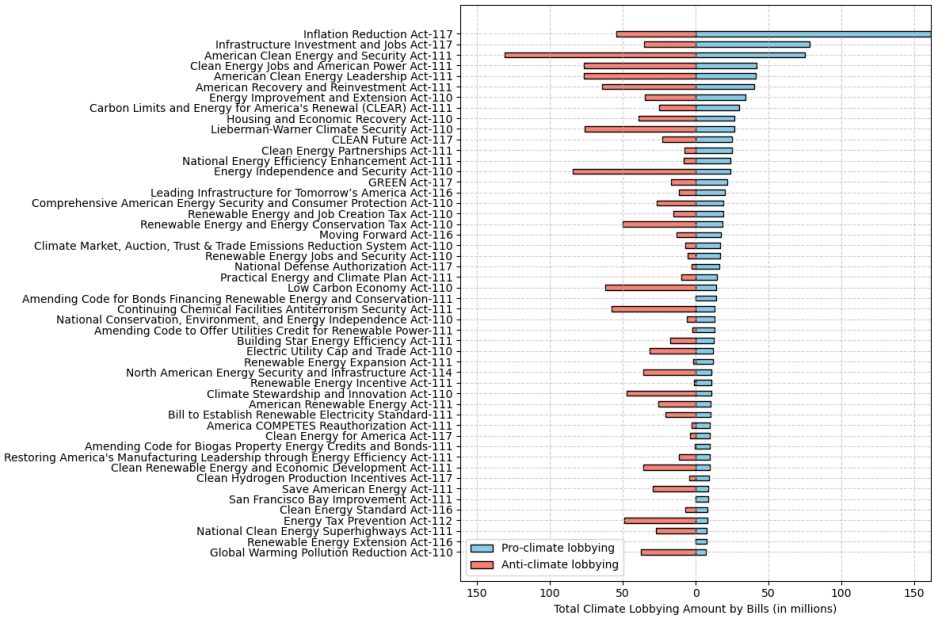
(b)

Figure 4: **Top Bills with Corporate Climate Lobbying**

This figure provides an overview of the primary climate bills targeted by corporate lobbying in our sample. Panel A lists the bills receiving the most anti-climate lobbying expenses, while Panel B lists those receiving the most pro-climate lobbying expenses.



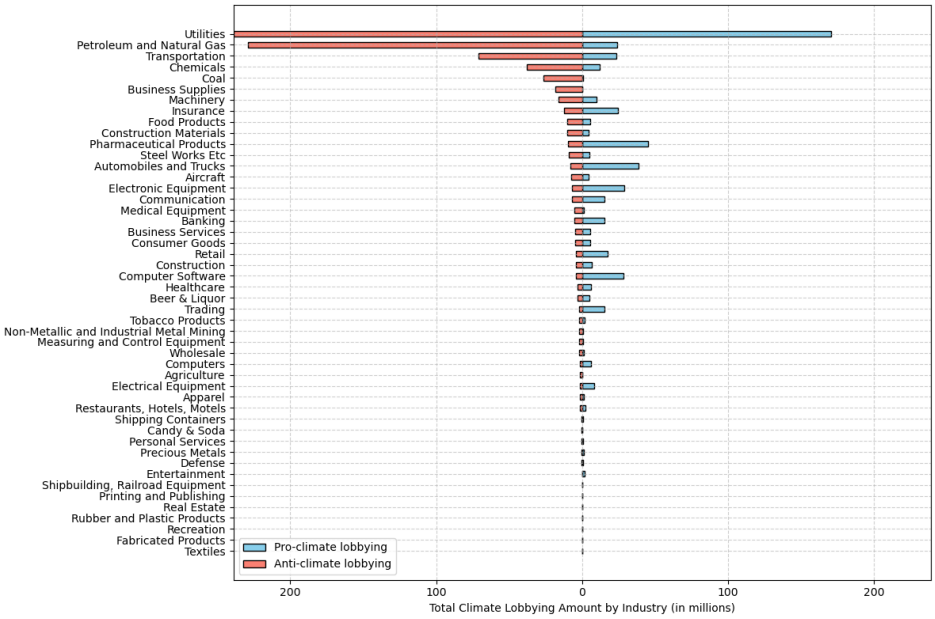
(a)



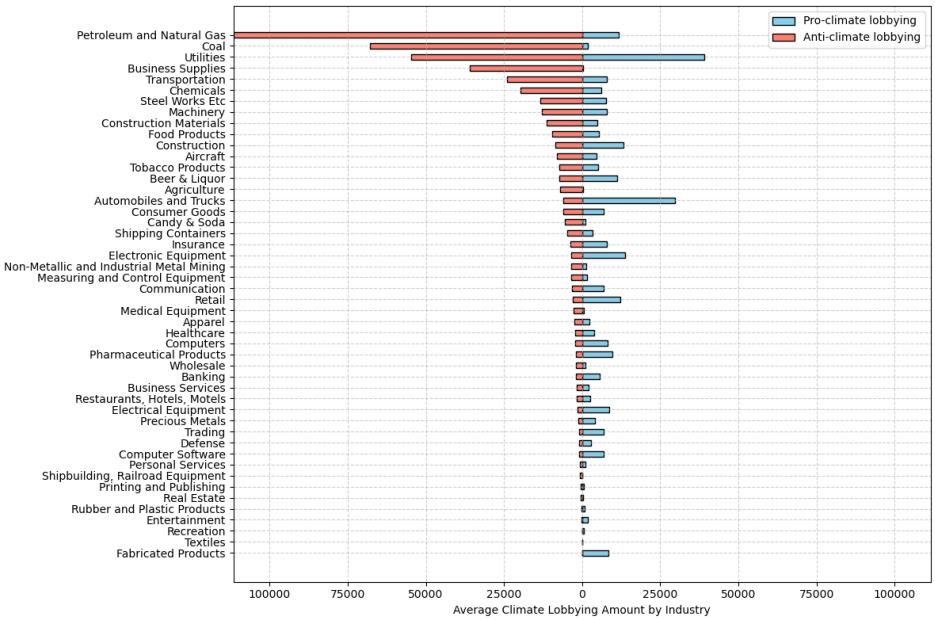
(b)

Figure 5: **Industry Distribution of Corporate Climate Lobbying**

This figure shows the distribution of climate lobbying activities across industry sectors (Fama-French 49 industry classification). Panel A reports the total climate lobbying amount by industry (aggregated across all sample years), while Panel B displays firm-level averages by industry (also across all sample years). Both panels are sorted by the amount of anti-climate lobbying.



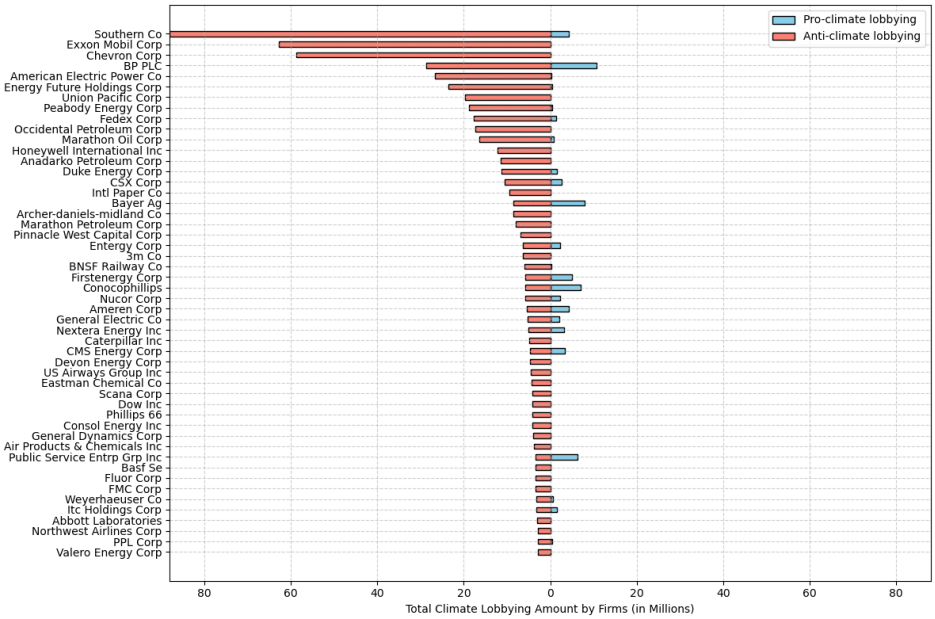
(a)



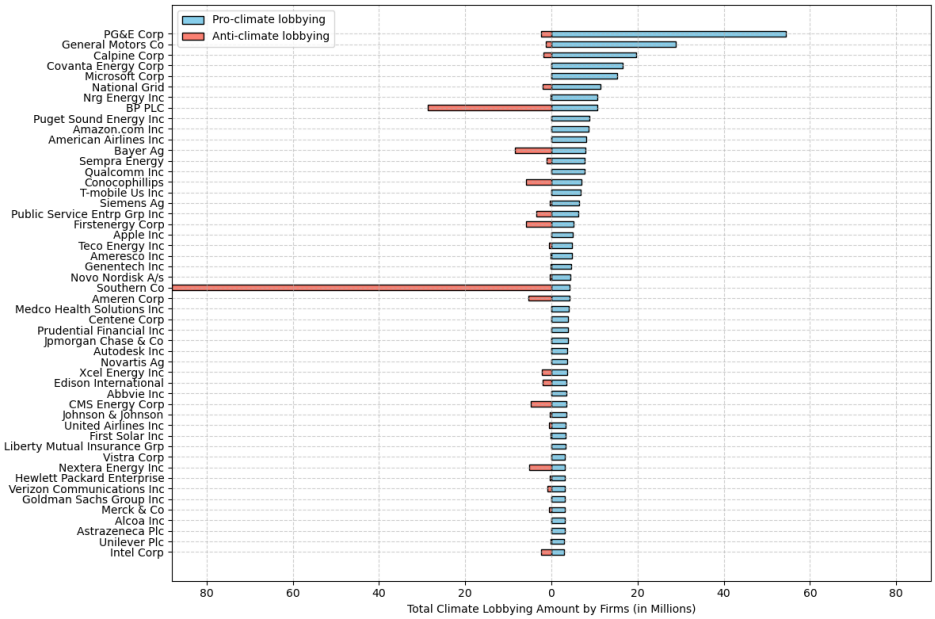
(b)

Figure 6: **Top-50 Firms with Corporate Climate Lobbying Expenses**

This figure shows the distribution of climate lobbying activities across firms. Panel A ranks firms based on the total anti-climate lobbying expense (aggregated across all sample years). In contrast, Panel B ranks firms based on the total pro-climate lobbying expense (aggregated across all sample years). We report the top 50 firms in each ranking.



(a)



(b)

Figure 7: **Geographical Distribution of Corporate Climate Lobbying**

This figure presents the geographical distribution of spending on climate lobbying across states, calculated based on the firms in a state. States where anti-climate lobbying exceeds 50% of the total climate lobbying amount are marked in red, while the remaining states are shaded in blue. We allocate firms to states based on the headquarters location.

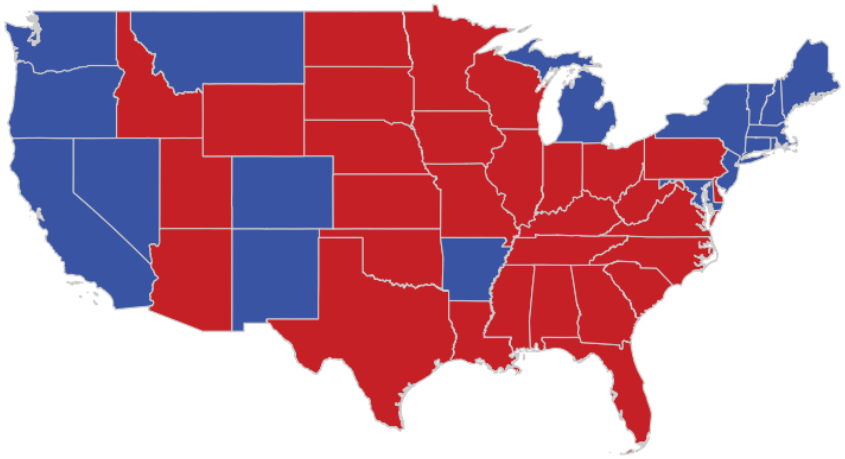


Table 1: **Descriptive Statistics on Corporate Climate Lobbying**

This table presents summary statistics at the firm-year level for key variables used in the analysis. In Panel A, the sample consists of U.S.-listed firms that undertake lobbying. In Panel B, the sample consists of U.S.-listed firms that undertake climate lobbying. In both panels, the sample period is from 2001 to 2022. Not all variables are available for all years and firms. Variables are defined in the Data Appendix.

Panel A: Full Lobbying Sample						
Variable	Mean	SD	5%	50%	95%	N
$ClimateLobby_{i,t}$	76,661	515,264	0	0	319,427	13,660
$ClimateLobby_{i,t}^{Anti}$	49,219	416,252	0	0	130,286	13,660
$ClimateLobby_{i,t}^{Pro}$	27,442	307,381	0	0	65,833	13,660
$ClimateLobby_{i,t}^{Anti-Pro}$	21,777	519,615	-60,000	0	122,833	13,660
$ClimateLobby_{i,t}^{Anti\,(Text)}$	36,109	357,988	0	0	63,036	13,660
$ClimateLobby_{i,t}^{Pro\,(Text)}$	17,229	255,982	0	0	0	13,660
$ClimateLobby_{i,t}^{Anti-Pro\,(Text)}$	18,880	441,211	0	0	60,000	13,660
$\mathbb{1}(ClimateLobby_{i,t})$	16.6%					13,660
$\mathbb{1}(ClimateLobby_{i,t}^{Anti})$	10.0%					13,660
$\mathbb{1}(ClimateLobby_{i,t}^{Pro})$	7.4%					13,660
$\mathbb{1}(ClimateLobby_{i,t}^{Anti-Pro})$	9.6%					13,660
$ClimateLobbyIntensity_{i,t}^{Anti}$	5.14	133.23	0	0	8.42	13,660
$ClimateLobbyIntensity_{i,t}^{Pro}$	3.78	49.10	0	0	3.19	13,660
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$	1.36	141.81	-2.78	0	8.15	13,660
$Lobby_{i,t}^{Rep}$	528,819	1,719,379	0	60,000	2,533,000	13,660
$Lobby_{i,t}^{Dem}$	356,994	1,343,863	0	0	1,837,500	13,660
$CarbonEmission_{i,t}$	3,144,526	9,554,176	1,529	88,869	19,200,000	5,962
$CarbonIntensity_{i,t}$	316.65	929.19	0.53	16.10	2411.44	5,962
$Coal/Asset_{i,t}$	236.07	852.38	0	0	1989.32	899
$NaturalGas/Assets_{i,t}$	152.93	425.68	0	1.59	980.71	899
$Nuclear/Assets_{i,t}$	42.65	220.40	0	0	0	899
$Oil/Assets_{i,t}$	30.35	190.61	0	0	11.17	899
$Renewable/Assets_{i,t}$	88.78	310.43	0	0	696.81	899
$Others/Assets_{i,t}$	9.28	36.57	0	0	58.58	899
$GreenPatents_{i,t}$	9.36%	19.85%	0	0.65%	50.00%	6,373
$GreenInnovation_{i,t}$	0.09%	0.33%	0	0	0.42%	8,943
$ClimateIncidents_{i,t}^{Number}$	2.66	5.35	0	1	11	2,168
$ClimateIncidents_{i,t}^{Severity}$	3.85	7.33	0	2	16	2,168
Panel B: Climate Lobbying Sample						
Variable	Mean	SD	5%	50%	95%	N
$ClimateLobby_{i,t}$	460,912	1,191,494	14,286	138,050	1,805,655	2,272
$ClimateLobby_{i,t}^{Anti}$	295,921	984,415	0	30000	1,346,833	2,272
$ClimateLobby_{i,t}^{Pro}$	164,991	738,625	0	0	770,333	2,272
$ClimateLobby_{i,t}^{Anti-Pro}$	130,930	1,268,709	-767,273	26,833	1,346,833	2,272
$ClimateLobby_{i,t}^{Anti\,(Text)}$	217,098	855,270	0	0	1,059,932	2,272
$ClimateLobby_{i,t}^{Pro\,(Text)}$	103,588	620,616	0	0	513,846	2,272
$ClimateLobby_{i,t}^{Anti-Pro\,(Text)}$	113,510	1,077,072	-496,250	0	1,059,932	2,272
$ClimateLobbyIntensity_{i,t}^{Anti}$	30.90	325.52	0	1.35	76.58	2,272
$ClimateLobbyIntensity_{i,t}^{Pro}$	22.71	118.62	0	0	84.09	2,272
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$	8.18	347.70	-83.45	1.11	74.43	2,272
$Lobby_{i,t}^{Rep}$	1,343,293	3,019,685	0	200,000	6,645,000	2,272
$Lobby_{i,t}^{Dem}$	871,538	2,462,613	0	0	4,439,300	2,272

Table 2: **Corporate Climate Lobbying, Carbon Emissions, and Green Innovation**

This table presents regressions at the firm-year level relating corporate climate lobbying to carbon emissions (Panel A) and green innovation (Panel B). Control variables (not reported) include $Log(Asset)$, B/M, ROA, $Capex/Assets$, $Leverage$, $Tangibility$, $Sales\,Growth$. Independent variables are normalized to have a mean of zero and a standard deviation of one (except those using logs). The sample consists of U.S.-listed firms that undertake lobbying. In Panel A, the sample period is from 2005 to 2020, and in Panel B, the sample period is from 2011 to 2022. t-statistics, reported in parentheses, are based on standard errors clustered by industry. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

Panel A: Carbon Emissions						
	$ClimateLobbyIntensity_{i,t}^{Anti}$		$ClimateLobbyIntensity_{i,t}^{Pro}$		$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$	
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Log}(CarbonEmissions_{i,t})$	0.79**		-0.67*		1.46***	
	(2.03)		(-1.81)		(3.29)	
$CarbonIntensity_{i,t}$		2.84***		-0.49**		3.32***
		(5.57)		(-2.57)		(6.38)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5,776	5,776	5,776	5,776	5,776	5,776
R^2	0.08	0.08	0.03	0.03	0.03	0.03
Panel B: Green Green Patent and Green Innovation						
	$ClimateLobbyIntensity_{i,t}^{Anti}$		$ClimateLobbyIntensity_{i,t}^{Pro}$		$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$	
	(1)	(2)	(3)	(4)	(5)	(6)
$GreenPatents_{i,t}$	0.10		4.39**		-4.29*	
	(0.18)		(2.07)		(-1.85)	
$GreenInnovation_{i,t}$		0.19		5.29**		-5.10**
		(0.33)		(2.49)		(-2.26)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
N	3,529	5,774	3,529	5,774	3,529	5,774
R^2	0.02	0.02	0.06	0.07	0.02	0.03

Table 3: **Corporate Climate Lobbying and Electricity Generation Characteristics**

This table presents regressions at the firm-year level relating corporate climate lobbying to electricity generation sources for firms operating power plants. Control variables (not reported) include $Log(Asset)$, B/M, ROA, $Capex/Assets$, $Leverage$, $Tangibility$, $Sales\,Growth$. Independent variables are normalized to have a mean of zero and a standard deviation of one. A constant is included by not reported. The sample consists of U.S.-listed firms that undertake lobbying. The sample period is from 2002 to 2022. t-statistics, reported in parentheses, are based on standard errors clustered by industry. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$ClimateLobbyIntensity_{i,t}^{Anti}$	$ClimateLobbyIntensity_{i,t}^{Pro}$	$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$
	(1)	(2)	(3)
$Coal/Assets_{i,t}$	0.34**	-1.72***	2.06***
	(2.33)	(-3.38)	(5.02)
$NaturalGas/Assets_{i,t}$	1.08**	-4.23*	5.31**
	(2.70)	(-1.77)	(2.28)
$Nuclear/Assets_{i,t}$	0.23	4.31*	-4.08*
	(0.36)	(1.77)	(-1.88)
$Oil/Assets_{i,t}$	-0.49	-3.10**	2.61**
	(-1.67)	(-2.69)	(2.40)
$Renewable/Assets_{i,t}$	0.14	-0.26	0.40
	(0.26)	(-0.11)	(0.16)
$Other/Assets_{i,t}$	-0.76	-0.75	-0.01
	(-1.50)	(-0.31)	(-0.01)
Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
N	842	842	842
R^2	0.12	0.34	0.28

Table 4: **Corporate Climate Lobbying and Future Climate-related Performance**

This table presents regressions at the firm-year level relating the number and severity of negative climate incidents (Panel A) and Scope 1 carbon emissions (Panel B) (all for the next year) to corporate climate lobbying (in the current year). Control variables (not reported) include $Log(Asset)$, B/M, ROA, $Capex/Assets$, $Leverage$, $Tangibility$, $Sales\,Growth$, as well as current year's climate performance (climate incidents for Panel A and carbon emissions for Panel B). Independent variables are normalized to have a mean of zero and a standard deviation of one (except those using logs). The sample consists of U.S.-listed firms that undertake lobbying. In Panel A, the sample period is from 2007 to 2022, and in Panel B, the sample period is from 2005 to 2020. t-statistics, reported in parentheses, are based on standard errors clustered by industry. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

Panel A: Future Climate Incidents				
	Log($ClimateIncidents^{Number}_{i,t+1}$)		Log($ClimateIncidents^{Severity}_{i,t+1}$)	
	(1)	(2)	(3)	(4)
$ClimateLobbyIntensity^{Anti}_{i,t}$	0.04**		0.05***	
	(2.68)		(3.15)	
$ClimateLobbyIntensity^{Pro}_{i,t}$	0.01		0.01	
	(1.09)		(0.91)	
$ClimateLobbyIntensity^{Anti-Pro}_{i,t}$		0.03***		0.03***
		(3.00)		(3.44)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	2,051	2,051	2,051	2,051
R^2	0.52	0.52	0.50	0.49
Panel B: Future Carbon Emissions				
	Log($CarbonEmissions_{i,t+1}$)		$CarbonIntensity_{i,t+1}$	
	(1)	(2)	(3)	(4)
$ClimateLobbyIntensity^{Anti}_{i,t}$	0.01**		4.55**	
	(2.22)		(2.18)	
$ClimateLobbyIntensity^{Pro}_{i,t}$	-0.00		-1.48	
	(-0.08)		(-1.09)	
$ClimateLobbyIntensity^{Anti-Pro}_{i,t}$		0.00		3.35
		(0.88)		(1.44)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	5,025	5,025	5,025	5,025
R^2	0.98	0.98	0.96	0.96

Table 5: **Climate Lobbying and Future Stock Returns**

This table reports weighted least square regression at the firm-month level relating excess stock returns to corporate climate lobbying. We regress monthly returns from February of year t+1 to January of year t+2 on the lobbying amount of year t. The sample consists of U.S. firms that undertake lobbying. In Columns 1–4, the sample period covers returns from January 2002 to December 2009, and in Columns 5–8, from January 2010 to December 2022. A constant is included but not reported. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors double clustered by firm and year. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$ExcessReturn_{i,t+1}$							
	2001-2009				2010-2022			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ClimateLobbyIntensity_{i,t}^{Anti}$	-0.16	-0.06			0.43***	0.45***		
	(-0.81)	(-0.29)			(4.09)	(4.11)		
$ClimateLobbyIntensity_{i,t}^{Pro}$	-0.24*	-0.39			-0.37	-0.35		
	(-1.97)	(-1.64)			(-1.38)	(-1.49)		
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$			-0.10	0.02			0.40**	0.40**
			(-0.50)	(0.09)			(2.43)	(2.65)
$LobbyIntensity_{i,t}^{Rep}$		-0.03		-0.03*		-0.01		-0.01
		(-1.83)		(-1.88)		(-1.65)		(-1.47)
$LobbyIntensity_{i,t}^{Dem}$		0.08		0.08		-0.00		-0.00
		(1.16)		(1.06)		(-0.08)		(-0.03)
$Log(MarketCap)_{i,t}$		-0.29***		-0.29***		-0.03		-0.03
		(-5.40)		(-5.40)		(-0.75)		(-0.75)
$B/M_{i,t}$		0.26		0.26		-0.07		-0.07
		(1.35)		(1.35)		(-0.32)		(-0.32)
$ROA_{i,t}$		1.36		1.36		0.55		0.55
		(0.73)		(0.73)		(0.35)		(0.35)
$Capex/Assets_{i,t}$		-0.12		-0.12		-0.50**		-0.50**
		(-0.29)		(-0.29)		(-2.21)		(-2.21)
$Leverage_{i,t}$		-0.60		-0.60		0.34		0.34
		(-1.18)		(-1.17)		(0.72)		(0.72)
$Tangibility_{i,t}$		-0.02		-0.04		-0.09		-0.08
		(-0.04)		(-0.07)		(-0.20)		(-0.20)
$Sale\,Growth_{i,t}$		-0.31		-0.31		-0.58***		-0.58***
		(-0.68)		(-0.69)		(-5.03)		(-5.51)
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	53,850	53,850	53,850	53,850	100,158	100,158	100,158	100,158
R^2	0.25	0.25	0.25	0.25	0.32	0.32	0.32	0.32

Table 6: **Climate Lobbying and Future Stock Returns: Accounting for Carbon Emissions**

This table reports weighted least square regression at the firm-month level relating excess stock returns to corporate climate lobbying. We regress monthly returns from February of year t+1 to January of year t+2 on the lobbying amount of year t. We use a six-month lag in carbon emission measures when matching with stock returns to address concerns regarding the delayed availability of emission data to investors. The sample consists of U.S. firms that undertake lobbying. in Columns 1–4, the sample period covers returns from January 2006 to December 2009, and in Columns 5–8 from January 2010 to December 2021 (data on emissions is available from 2005 to 2020). A constant is included but not reported. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors double clustered by firm and year. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$ExcessReturn_{i,t+1}$							
	2006-2009				2010-2022			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$ClimateLobbyIntensity^{Anti}_{i,t}$	-0.26	-0.28			0.52***	0.46***		
	(-0.31)	(-0.34)			(3.71)	(3.59)		
$ClimateLobbyIntensity^{Pro}_{i,t}$	-0.69	-0.67			-0.35	-0.34		
	(-1.93)	(-1.82)			(-1.18)	(-1.16)		
$ClimateLobbyIntensity^{Anti-Pro}_{i,t}$			0.19	0.17			0.44**	0.41**
			(0.38)	(0.34)			(2.99)	(2.85)
Log($CarbonEmission_{i,t}$)	0.10		0.10		-0.00		-0.00	
	(1.07)		(1.09)		(-0.05)		(-0.04)	
$CarbonIntensity_{i,t}$		0.04		0.04		0.08		0.08
		(0.99)		(1.00)		(1.28)		(1.32)
$LobbyIntensity^{Rep}_{i,t}$	-0.01	-0.00	-0.04	-0.03	-0.03	-0.02	-0.02	-0.02
	(-0.17)	(-0.02)	(-0.53)	(-0.54)	(-1.55)	(-1.50)	(-1.25)	(-1.25)
$LobbyIntensity^{Dem}_{i,t}$	0.33**	0.32*	0.30*	0.28	-0.01	-0.01	-0.01	-0.01
	(3.25)	(2.98)	(2.40)	(2.20)	(-0.20)	(-0.20)	(-0.16)	(-0.17)
$Log(Market\,Capital)_{i,t}$	-0.06	0.03	-0.07	0.02	-0.01	-0.02	-0.01	-0.02
	(-0.26)	(0.15)	(-0.30)	(0.09)	(-0.21)	(-0.35)	(-0.21)	(-0.34)
$B/M_{i,t}$	0.35	0.38	0.34	0.38	-0.16	-0.16	-0.16	-0.16
	(1.03)	(1.21)	(1.01)	(1.19)	(-0.95)	(-0.88)	(-0.95)	(-0.88)
$ROA_{i,t}$	1.96	2.05	1.99	2.08	0.14	0.16	0.14	0.16
	(0.64)	(0.73)	(0.66)	(0.77)	(0.08)	(0.10)	(0.08)	(0.10)
$Capex/Assets_{i,t}$	0.64	0.64	0.63	0.64	-0.52**	-0.52**	-0.52**	-0.52**
	(1.91)	(1.89)	(1.88)	(1.89)	(-2.44)	(-2.38)	(-2.48)	(-2.42)
$Leverage_{i,t}$	0.95**	1.07**	0.99**	1.11**	0.01	0.01	0.01	0.01
	(3.58)	(3.65)	(3.56)	(3.52)	(0.03)	(0.02)	(0.03)	(0.02)
$Tangibility_{i,t}$	-0.14	0.02	-0.29	-0.13	0.49	0.45	0.49	0.45
	(-0.31)	(0.03)	(-0.85)	(-0.29)	(1.46)	(1.52)	(1.48)	(1.54)
$Sales\,Growth_{i,t}$	-1.33***	-1.36**	-1.35***	-1.38***	-0.86**	-0.86**	-0.86**	-0.86**
	(-5.92)	(-5.32)	(-6.80)	(-6.11)	(-2.69)	(-2.97)	(-2.69)	(-2.97)
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	10,965	10,965	10,965	10,965	64,518	64,518	64,518	64,518
R^2	0.30	0.30	0.30	0.30	0.31	0.31	0.31	0.31

Table 7: **Event Study Results**

This table presents regressions at the firm level relating cumulative abnormal returns (CARs) around two events to corporate climate lobbying. CARs are calculated as the cumulative market-adjusted abnormal returns over a one-day/five-day/ten-day window from the event date. In Panel A, we conduct an event study for the failure of the Waxman-Markey Cap-and-Trade bill, and in Panel B for the announcement of the Inflation Reduction Act (IRA). Control variables (not reported) include $LobbyIntensity_{i,t}^{Rep}$, $LobbyIntensity_{i,t}^{Dem}$, $Log(Market\,Capital)$, B/M, ROA, $Capex/Assets$, $Leverage$, $Tangibility$, $Sales\,Growth$. The sample consists of U.S.-listed firms that undertake lobbying. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors that are clustered by industry. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

Panel A: Senator Lindsey Graham Dropps Support for Waxman-Markey Cap-and-Trade Bill						
	CAR[0,1]	CAR[0,2]	CAR[0,3]	CAR[0,1]	CAR[0,2]	CAR[0,3]
	(1)	(2)	(3)	(4)	(5)	(6)
$ClimateLobbyIntensity_{i,t}^{Anti}$	0.95***	0.84**	1.03**			
	(3.05)	(2.17)	(2.10)			
$ClimateLobbyIntensity_{i,t}^{Pro}$	-0.30***	-0.59***	-0.63***			
	(-4.02)	(-6.08)	(-5.78)			
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$				0.33***	0.60***	0.65***
				(4.29)	(6.25)	(6.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	538	538	538	538	538	538
R^2	0.23	0.19	0.18	0.23	0.19	0.18
Panel B: Passage of the Inflation Reduction Act						
	CAR[0,1]	CAR[0,2]	CAR[0,3]	CAR[0,1]	CAR[0,2]	CAR[0,3]
	(1)	(2)	(3)	(4)	(5)	(6)
$ClimateLobbyIntensity_{i,t}^{Anti}$	-1.63***	-1.77**	-0.85*			
	(-3.53)	(-2.21)	(-1.72)			
$ClimateLobbyIntensity_{i,t}^{Pro}$	1.68*	2.46**	2.61*			
	(1.75)	(2.55)	(1.95)			
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$				-1.66**	-2.21***	-1.97**
				(-2.58)	(-2.95)	(-2.27)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
N	696	696	696	696	696	696
R^2	0.30	0.29	0.22	0.30	0.29	0.22

Internet Appendix

for

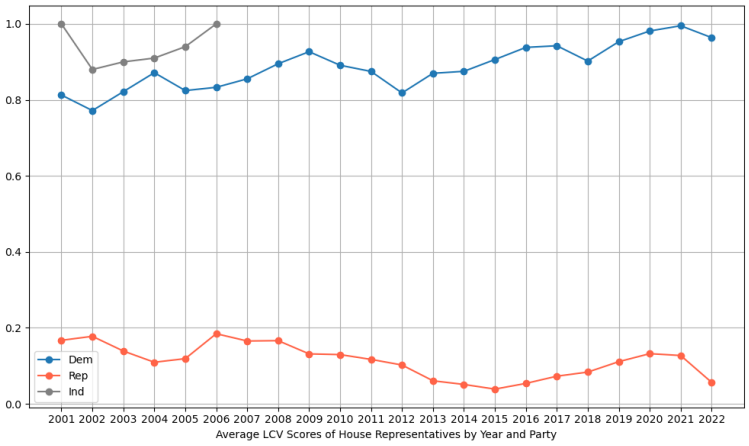
Corporate Climate Lobbying

This Internet Appendix provides additional material supporting the main text.

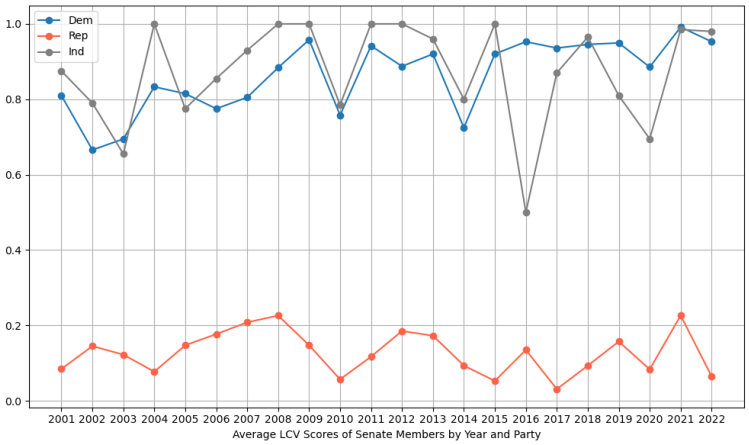
A Additional Figures and Tables

Figure IA1: **LCV Scores of Congress Members**

This figure presents the average national environmental league of Conservation Voters (LCV) scores of congress members from different political parties over time. In Panel A, we illustrate LCV scores for House representatives; in Panel B, we depict them for Senators. LCV scores range from zero to one and track the voting records of all Congress members on critical environmental, climate, environmental justice, and democracy legislation. Higher LCV scores reflect a stronger pro-environmental stance.



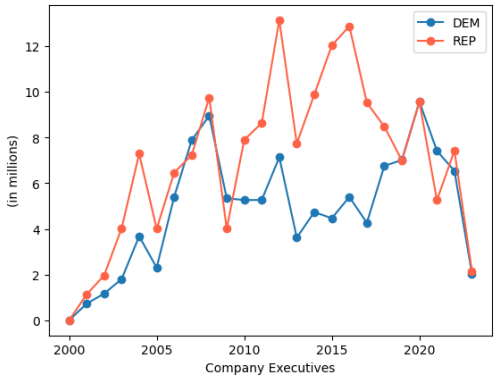
(a)



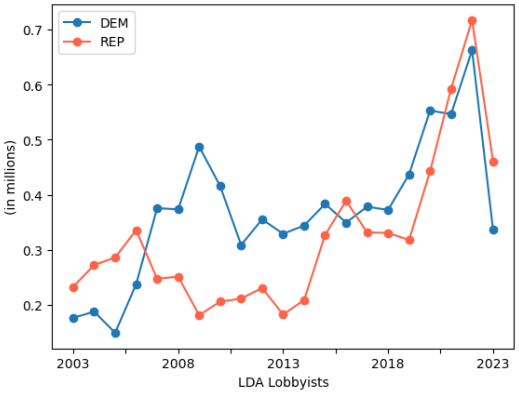
(b)

Figure IA2: **Contribution to Political Parties**

This figure depicts the time-series variation in contributions to the Republican and Democratic Party from corporate executives (Panel A) and lobbyists (Panel B).



(a)



(b)

Table IA1: **Sample Formation**

This table presents the sample formation. In Panel A, we report how we match firms listed as clients in lobbying reports to U.S.-listed firms in Compustat. In Panel B, we detail how we identify relevant lobbying reports for inclusion in our sample.

Panel A: Matching from OpenSecret to Compustat				
All client names from OpenSecret	59,979			
Client names from listed firms in Compustat	5,586			
Client names from listed firms in Compustat North America	5,195			
- perfect match			3,875	
- fuzzy/manual match (if no perfect match)			1,320	
Client names from U.S.-listed firms in Compustat North America	4,055			
Panel B: Lobbying Reports				
All lobbying reports from OpenSecrets	1,235,401			
Lobbying reports from firms in Compustat	291,337			
Lobbying reports from U.S.-listed firms	257,691			
Step 1:		*Step 2:*		
Reports related to climate lobbying	26,714	Reports assigned to a political stance	150,682	
		- Republicans		81,950
		- Democrats		68,732
Reports related to climate lobbying & assigned to a political stance			15,719	
- Republicans				8,161
- Democrats				7,558

Table IA2: **Correlations of Key Variables**

This table presents correlations at the firm-year level for key variables used in the analysis. The sample consists of U.S.-listed firms that undertake lobbying. The sample period is from 2001 to 2022. Variables are defined in the Data Appendix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
$ClimateLobbyIntensity_{i,t}^{Anti}$	1.00													
$ClimateLobbyIntensity_{i,t}^{Pro}$	0.01	1.00												
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$	0.94	-0.33	1.00											
$ClimateLobbyIntensity_{i,t}^{Anti\,(Text)}$	0.89	0.01	0.84	1.00										
$ClimateLobbyIntensity_{i,t}^{Pro\,(Text)}$	0.01	0.75	-0.25	0.02	1.00									
$ClimateLobbyIntensity_{i,t}^{Anti-Pro\,(Text)}$	0.81	-0.30	0.87	0.91	-0.40	1.00								
$LobbyIntensity_{i,t}^{Rep}$	0.42	-0.01	0.40	0.39	-0.01	0.36	1.00							
$LobbyIntensity_{i,t}^{Dem}$	-0.01	0.26	-0.09	0.00	0.11	-0.05	-0.02	1.00						
$CarbonEmission_{i,t}$	0.20	0.02	0.09	0.24	0.04	0.12	-0.02	-0.04	1.00					
$CarbonIntensity_{i,t}$	0.19	0.03	0.08	0.23	0.05	0.10	-0.02	-0.04	0.76	1.00				
$GreenPatents_{i,t}$	0.06	0.14	-0.01	0.08	0.13	-0.04	0.07	0.10	0.22	0.25	1.00			
$GreenInnovation_{i,t}$	0.10	0.17	-0.05	0.13	0.21	-0.06	0.05	0.07	0.18	0.23	0.44	1.00		
$ClimateIncidents_{i,t}^{Number}$	0.06	-0.03	0.07	0.06	-0.03	0.06	0.00	-0.05	0.34	0.05	0.05	0.00	1.00	
$ClimateIncidents_{i,t}^{Severity}$	0.07	-0.04	0.08	0.06	-0.03	0.07	0.00	-0.05	0.35	0.05	0.05	0.00	0.99	1.00

Table IA3: **Climate Lobbying and Future Stock Returns: Text-based Measures**

This table reports weighted least square regression at the firm-month level relating excess stock returns to corporate climate lobbying for U.S. sample firms. We regress monthly returns from February of year t+1 to January of year t+2 on the lobbying amount of year t. The sample consists of U.S.-listed firms that undertake lobbying. The sample period covers returns from January 2010 to December 2022. A constant is included but not reported. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors double clustered by firm and year. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$ExcessReturns_{i,t+1}$			
	(1)	(2)	(3)	(4)
$ClimateLobbyIntensity_{i,t}^{Anti\,(Text)}$	0.49**	0.48**		
	(2.74)	(2.75)		
$ClimateLobbyIntensity_{i,t}^{Pro\,(Text)}$	-0.46	-0.44		
	(-1.27)	(-1.58)		
$ClimateLobbyIntensity_{i,t}^{Anti-Pro\,(Text)}$			0.48***	0.46***
			(3.16)	(3.76)
$LobbyIntensity_{i,t}^{Rep}$		-0.01		-0.01
		(-1.32)		(-1.39)
$LobbyIntensity_{i,t}^{Dem}$		-0.01		-0.01
		(-0.38)		(-0.36)
$Log(MarketCap)_{i,t}$		-0.03		-0.03
		(-0.76)		(-0.76)
$B/M_{i,t}$		-0.07		-0.07
		(-0.32)		(-0.32)
$ROA_{i,t}$		0.56		0.56
		(0.35)		(0.35)
$Capex/Assets_{i,t}$		-0.50**		-0.50**
		(-2.22)		(-2.21)
$Leverage_{i,t}$		0.33		0.33
		(0.68)		(0.68)
$Tangibility_{i,t}$		-0.08		-0.08
		(-0.18)		(-0.18)
$Sale\,Growth_{i,t}$		-0.58***		-0.58***
		(-5.03)		(-5.04)
Year-Month Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	100,158	100,158	100,158	100,158
R^2	0.32	0.32	0.32	0.32

Table IA4: **Climate Lobbying and Future Stock Returns: Climate Lobby Sample**

This table reports weighted least square regression at the firm-month level relating excess stock returns to corporate climate lobbying. We regress monthly returns from February of year t+1 to January of year t+2 on the lobbying amount of year t. The sample consists of U.S.-listed firms that undertake climate lobbying. The sample period covers returns from January 2010 to December 2022. A constant is included but not reported. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors double clustered by firm and year. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$ExcessReturn_{i,t+1}$			
	(1)	(2)	(3)	(4)
$ClimateLobbyIntensity_{i,t}^{Anti}$	0.45***	0.61**		
	(4.26)	(2.38)		
$ClimateLobbyIntensity_{i,t}^{Pro}$	-0.47	-0.37		
	(-1.42)	(-1.28)		
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$			0.46**	0.47**
			(2.23)	(2.21)
$LobbyIntensity_{i,t}^{Rep}$		-0.08		-0.05
		(-1.20)		(-0.91)
$LobbyIntensity_{i,t}^{Dem}$		-0.03		-0.02
		(-0.58)		(-0.35)
$Log(MarketCap)_{i,t}$		-0.08		-0.08
		(-0.61)		(-0.63)
$B/M_{i,t}$		0.09		0.09
		(0.39)		(0.44)
$ROA_{i,t}$		0.34		0.33
		(0.13)		(0.12)
$Capex/Assets_{i,t}$		-0.90*		-0.90*
		(-1.88)		(-1.93)
$Leverage_{i,t}$		1.28		1.28
		(1.05)		(1.09)
$Tangibility_{i,t}$		-0.02		-0.01
		(-0.02)		(-0.01)
$Sale\,Growth_{i,t}$		0.15		0.15
		(0.40)		(0.39)
Year-month Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	21,717	21,717	21,717	21,717
R^2	0.39	0.39	0.39	0.39

Table IA5: **Robustness Check: Climate Lobbying and Future Returns**

This table reports weighted least square regression at the firm-month level relating excess stock returns to corporate climate lobbying for U.S. sample firms. In Columns 1-2, we regress monthly returns from February of year t+1 to January of year t+2 on dummy variables that each equal one if the respective lobbying amount of year t is positive. In Columns 3-4, we cluster standard errors by industry and year. In Columns 5-6, we regress monthly returns from July of year t+1 to June of year t+2 on the lobbying amount of year t. The sample consists of U.S.-listed firms that undertake lobbying. The sample period covers returns from January 2010 to December 2022. A constant is included but not reported. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors double clustered by firm and year in Columns 1-2 and 5-6. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$Excessreturns_{i,t+1}$					
	Climate Lobbying Dummy		Cluster SE by Industry and Year		Six Months Time Lag	
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}(ClimateLobbyIntensity^{Anti}_{i,t})$	0.43**	0.41**				
	(2.34)	(2.63)				
$\mathbb{1}(ClimateLobbyIntensity^{Pro}_{i,t})$	0.27	0.28				
	(1.19)	(1.21)				
$ClimateLobbyIntensity^{Anti}_{i,t}$			0.45***		0.53*	
			(8.15)		(2.15)	
$ClimateLobbyIntensity^{Pro}_{i,t}$			-0.35		-0.37	
			(-1.17)		(-1.47)	
$ClimateLobbyIntensity^{Anti-Pro}_{i,t}$				0.40**		0.45**
				(2.43)		(2.86)
$LobbyIntensity^{Rep}_{i,t}$		-0.01	-0.01	-0.01	-0.02*	-0.02
		(-1.23)	(-1.41)	(-1.27)	(-1.78)	(-1.53)
$LobbyIntensity^{Dem}_{i,t}$		-0.01	-0.00	-0.00	0.01	0.01
		(-0.61)	(-0.08)	(-0.03)	(0.51)	(0.64)
$Log(MarketCap)_{i,t}$		-0.06*	-0.03	-0.03	-0.02	-0.02
		(-2.12)	(-0.55)	(-0.55)	(-0.59)	(-0.58)
$B/M_{i,t}$		-0.07	-0.07	-0.07	-0.05	-0.05
		(-0.35)	(-0.32)	(-0.32)	(-0.25)	(-0.25)
$ROA_{i,t}$		0.58	0.55	0.55	0.84	0.84
		(0.37)	(0.37)	(0.37)	(0.56)	(0.56)
$Capex/Assets_{i,t}$		-0.48*	-0.50**	-0.50**	-0.53*	-0.53*
		(-2.06)	(-2.58)	(-2.64)	(-2.13)	(-2.08)
$Leverage_{i,t}$		0.34	0.34	0.34	0.23	0.23
		(0.78)	(0.80)	(0.81)	(0.45)	(0.47)
$Tangibility_{i,t}$		-0.22	-0.09	-0.08	0.01	0.01
		(-0.52)	(-0.17)	(-0.16)	(0.02)	(0.03)
$Sale\,Growth_{i,t}$		-0.55***	-0.58***	-0.58***	-0.61***	-0.62***
		(-5.45)	(-7.36)	(-8.41)	(-4.28)	(-4.71)
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	100,158	100,158	100,158	100,158	95,203	95,203
R^2	0.32	0.32	0.32	0.32	0.32	0.32

Table IA6: **Climate Lobbying and Earnings Surprises**

This table reports regression at the firm-year level relating earnings surprises to corporate climate lobbying. $SUE1_{i,t}$ ($SUE2_{i,t}$) is the one-year (two-year) earnings surprises measured as the actual earnings per share minus the consensus (median) analyst forecast eight (20) months before the end of the forecast period, scaled by the stock price (and multiplied by 100). The sample consists of U.S. firms that undertake lobbying. The sample period ranges from 2010 to 2022. A constant is included but not reported. We multiply the coefficients on the lobbying variables by 100. t-statistics, reported in parentheses, are based on standard errors double clustered by firm and year. *** p<0.01, ** p<0.05, * p<0.1. Variables are defined in the Data Appendix.

	$SUE1_{i,t}$		$SUE2_{i,t}$	
	(1)	(2)	(3)	(4)
$ClimateLobbyIntensity_{i,t}^{Anti}$	-0.03		-0.10	
	(-0.32)		(-1.07)	
$ClimateLobbyIntensity_{i,t}^{Pro}$	-0.08		0.11	
	(-1.64)		(0.67)	
$ClimateLobbyIntensity_{i,t}^{Anti-Pro}$		0.05		-0.11
		(1.15)		(-0.87)
$Log(Asset)$	0.05**	0.05**	0.12***	0.12***
	(2.31)	(2.36)	(4.36)	(4.36)
$B/M_{i,t}$	-0.65**	-0.65**	-1.23***	-1.23***
	(-2.57)	(-2.55)	(-3.37)	(-3.38)
$ROA_{i,t}$	3.41***	3.41***	6.00***	6.00***
	(6.11)	(6.10)	(9.56)	(9.57)
$Capex/Assets_{i,t}$	-5.11**	-5.12**	-5.16**	-5.16**
	(-2.42)	(-2.41)	(-2.70)	(-2.70)
$Leverage_{i,t}$	-0.53**	-0.52**	-0.60***	-0.60***
	(-2.82)	(-2.79)	(-3.56)	(-3.56)
$Tangibility_{i,t}$	0.57	0.56	-0.00	-0.00
	(1.51)	(1.51)	(-0.01)	(-0.01)
$Sale\,Growth_{i,t}$	0.64*	0.64*	1.01**	1.01**
	(2.12)	(2.12)	(2.41)	(2.41)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N	6,906	6,906	6,349	6,349
R^2	0.10	0.10	0.17	0.17

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