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The Political Carbon Cycle

Law Working Paper N° 816/2024
December 2024

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Abstract

Democrats and Republicans strongly disagree about climate policy. This Article explains how these political disagreements have a surprisingly large effect on the greenhouse gas emissions of private-sector corporations. Combining a hand-collected dataset tracking the careers of U.S. state governors over two decades and a proprietary emissions database, I find that companies release more greenhouse gas emissions when their headquarter state has a Republican governor. To establish a causal connection between gubernatorial partisanship and corporate emissions, I analyze the effect of close elections. After a Republican replaces a Democratic governor in a closely contested election, which cannot be easily predicted in advance, companies headquartered in that state increase their greenhouse gas emissions. These empirical results are consistent with anecdotal evidence that companies face significantly more pressure from Democratic governors to adopt climate-friendly policies than from Republicans. Companies may increase carbon emissions during Republican rule because they anticipate that these governors are less likely to propose new climate regulations or enforce existing environmental laws. The Article's findings have three major legal and policy implications. First, it offers reason for skepticism about moving corporate law from maximizing shareholder wealth to giving managers the discretionary power to consider the welfare of stakeholders like workers and consumers. The political carbon cycle shows that managers may use the discretion in the stakeholder model to cater to the preferences of powerful politicians, rather than to safeguard the interests of vulnerable stakeholders. Second, the empirical analysis in this Article suggests that voluntary pledges by corporations to reduce pollution have limited effect. Elections have consequences for corporate emissions, and voluntary corporate actions may not suffice to reduce pollution as long as approximately half of state governors are skeptical about climate change mitigation. Thus, the findings raise questions about whether corporate social responsibility (CSR) is an effective substitute for a broader political consensus on climate change mitigation. Finally, this Article provides a novel justification for mandatory corporate disclosure of greenhouse gas emissions. Investors, equipped with information about firms' climate impact, will be able to push managers to become more prosocial and diminish the magnitude of the political carbon cycle, assuming that investors are willing and able to use that information.

Keywords: corporate law, securities law, carbon emissions, political economy, empirical legal studies

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The Political Carbon Cycle

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THE POLITICAL CARBON CYCLE

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The Article's findings have three major legal and policy implications. First, it offers reason for skepticism about moving corporate law from maximizing shareholder wealth to giving managers the discretionary power to consider the welfare of stakeholders like workers and consumers. The political carbon cycle shows that managers may use the discretion in the stakeholder model to cater to the preferences of powerful politicians, rather than to safeguard the interests of vulnerable stakeholders. Second, the empirical analysis in this Article suggests that voluntary pledges by corporations to reduce pollution have limited effect. Elections have consequences for corporate emissions, and voluntary corporate actions may not suffice to reduce pollution as long as approximately half of state governors are skeptical about climate change mitigation. Thus, the findings raise questions about whether corporate social responsibility (CSR) is an effective substitute for a broader political consensus on climate change mitigation. Finally, this Article provides a novel justification for mandatory corporate disclosure of greenhouse gas emissions. Investors, equipped with information about firms' climate impact, will be able to push managers to become more prosocial and diminish the magnitude of the political carbon cycle, assuming that investors are willing and able to use that information.

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I. INTRODUCTION

In 2015, Jim Inhofe (Republican of Oklahoma) stood on the Senate floor and questioned the scientific consensus on global warming. Challenging recent data showing that 2014 had been the warmest year in recorded history, he brought a snowball as "proof" that global warming was not a real threat. Inhofe was not just a sitting U.S. senator. He was also the incumbent chair of the Senate committee responsible for environmental protection.[1] Although Inhofe has since retired, partisan disagreements about climate change and environmental issues have only intensified in recent years. A recent Gallup poll found that just 35% of Republican voters are concerned about climate change, compared to 87% of Democrats.[2] While the Democratic Party platform contains several proposals to combat climate change,[3] Republicans favor a deregulatory platform removing environmental laws and increasing fossil fuel production.[4]

This Article argues that partisan differences in climate attitudes are not just reflected in the actions of elected officials, but also affect the private sector. I document the existence of a political cycle in the level of polluting activities by privately run U.S. firms, with corporations significantly increasing carbon emissions when their headquarter state has a Republican governor. Democratic governors are more likely than their Republican counterparts to propose new laws and regulations to mitigate the effects of climate change. Democratic governors are also more likely to empower state agencies to aggressively enforce existing environmental regulations against companies responsible for pollution. These differences in climate policies between governors based on their partisan affiliation allow companies to release more greenhouse gases into the atmosphere without fear of government punishment when there is a Republican governor in their headquarter state. Conversely, when a Democrat inhabits the governor's mansion, companies headquartered in that state may become less likely to engage in environmentally unsustainable activities and hence reduce greenhouse gas emissions. The political carbon cycle uncovered by this Article could thus be caused by firms anticipating that Republican governors are less likely to support new climate regulations or enforce existing environmental laws. This Article represents the first empirical demonstration of the effect of partisan ideology on the greenhouse gas emissions of private-sector businesses.

I demonstrate this political cycle in corporate pollution by combining a hand-collected dataset tracking the careers of U.S. governors over almost twenty years with a proprietary database collecting information on corporate greenhouse gas emissions. First, I find that firms increase greenhouse gas emissions directly attributable to them by about 7.5%, and total emissions (including indirect emissions from activities such as purchasing raw materials) by approximately 7%, when there is a Republican governor in their headquarter state. Second, to ensure the relationship between politics and pollution is causal, I examine how corporate emissions change in the aftermath of closely contested gubernatorial elections. Firms increase their direct emissions by 9.6% and total emissions by 6.6% the year after a Republican replaces a Democratic governor in a closely contested election. The partisanship of state governors thus has a significant effect on the greenhouse gas

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[1] *See* Ted Barrett, *Inhofe Brings Snowball on Senate Floor as Evidence Globe is Not Warming*, CNN (Feb. 27, 2015), https://www.cnn.com/2015/02/26/politics/james-inhofe-snowball-climate-change/index.html.
[2] *See* Frank Newport, *Update: Partisan Gaps Expand Most on Government Power, Climate*, GALLUP (Aug. 7, 2023), https://news.gallup.com/poll/509129/update-partisan-gaps-expand-government-power-climate.aspx.
[3] *See Combating the Climate Crisis and Pursuing Climate Justice*, DEMOCRATS, https://democrats.org/where-we-stand/party-platform/combating-the-climate-crisis-and-pursuing-environmental-justice/.
[4] *See* Lisa Friedman, *A Republican 2024 Climate Strategy: More Drilling, Less Clean Energy*, N.Y. TIMES (Aug. 4, 2023), https://www.nytimes.com/2023/08/04/climate/republicans-climate-project2025.html.

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emissions of private-sector businesses. The magnitude of the political carbon cycle is surprising, given that the scholarly literature has thus far neglected the link between gubernatorial politics and corporate emissions.

However, firms do not decrease their emissions after a Democrat replaces a Republican governor in a closely contested election. This could be because of the asymmetric polarization of the two major U.S. parties, with Republicans being far more likely to convert their ideological priorities on issues such as climate into policy once they are in power. Democratic governors who won a close election, on the other hand, may be hesitant to introduce climate rules that could slow economic growth, for fear of losing the support of voters. Therefore, the political carbon cycle is driven by companies increasing their greenhouse gas levels after the election of Republican governors.

One concern with the results could be that corporate emissions are determined by factors such as a company's size, the type of business it operates in, and general time trends such as the rate of overall economic growth. To account for such possibilities, all results in this Article control for firm, industry, and time trends. Therefore, the political cycle in corporate greenhouse gas emissions is unlikely to be explained by idiosyncratic company-specific factors or time trends in emissions for certain industries. The results also persist when I control for a battery of financial variables shown in the literature to affect the level of corporate pollution, such as firm size, profitability, and leverage.

The empirical findings have three major legal and policy implications. First, the existence of a political carbon cycle provides important evidence for the ongoing debate regarding the appropriate purpose of corporations and corporate law. Several prominent commentators advocate for corporations to abandon the dominant shareholder-centric model of corporate governance,[5] and instead embrace a "stakeholder" model that sacrifices short-term value maximization and gives weight to the welfare of stakeholders such as consumers and workers.[6] This Article's empirical result showing that companies change their emission levels in response to gubernatorial politics indicates that managers may use their discretion to cater to the preferences of politicians, rather than to safeguard the welfare of constituencies such as workers and consumers. This Article therefore adds to current criticisms of the stakeholder model by suggesting that granting managers discretion to prioritize social issues such as climate change would not necessarily lead to lower pollution, due to political pressure exerted by government on firms.

The second policy implication of the empirical findings raises questions about the role of corporate social responsibility (CSR) in combating climate change. Several policymakers, business executives, and academics have promoted CSR as a key mechanism through which corporations can reduce their climate impact. The distinguishing feature of the way U.S. firms have conducted environmental CSR activities is that it has been *voluntary*. In other words, companies have voluntarily pledged to reduce their emissions by a certain amount. Such voluntary pledges have been criticized for being vague. Moreover, many corporations fail to follow through on their promises to make their business operations more environmentally sustainable. This Article confirms such criticisms by documenting that companies increase emissions when there is a Republican governor in their headquarter state. However, at a broader level, the empirical analysis should lead us to doubt the efficacy of voluntary corporate CSR when it comes to climate change mitigation. The existence of a

[5] *See* Henry Hansmann & Reinier Kraakman, *The End of History for Corporate Law*, 89 GEO. L.J. 439 (2001).
[6] *See* Dorothy S. Lund, *Enlightened Shareholder Value, Stakeholderism, and the Quest for Managerial Accountability*, *in* RESEARCH HANDBOOK ON CORPORATE PURPOSE AND PERSONHOOD 91 (Elizabeth Pollman & Robert Thompson eds., 2021).

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political cycle indicates that elections have consequences. So long as Republican governors, who comprise about half of state political executives at any given time, remain skeptical about climate policy, it seems unlikely that corporations will be forced to cut emissions in a sustained manner.

Finally, this Article's analysis provides support for mandatory climate disclosures by publicly traded corporations. The Securities and Exchange Commission (SEC) recently finalized rules that require public firms to disclose the greenhouse gas emissions for which they are directly responsible, as well as emissions they indirectly cause through activities such as the purchase of raw materials, including electricity.[7] These rules have sparked intense debate among academics regarding whether the SEC has the authority to require climate disclosures.[8] The controversial nature of these climate rules is evident from the fact that the SEC adopted the final rules on March 6, 2024 by a narrow 3-2 vote, only to stay them less than a month later in the face of legal challenges from Republican-governed states and business groups.[9] However, a possible advantage of such disclosures could be that investors use information about firms' climate impact to pressure managers to cut emissions. This could partially reduce the political carbon cycle documented in this Article. For example, a company may be less likely to increase polluting activity when there is a Republican governor in its headquarter state because of scrutiny from large institutional investors or retail shareholders who have analyzed its climate disclosures. This Article thus provides a novel justification for the SEC's climate rules—that they could help investors mitigate political cycles in corporate pollution.[10]

The rest of this Article is organized as follows. Part II explains the considerable scholarly literature on partisan differences in attitudes toward climate change and how Republican and Democratic state governors adopt very different climate policies. Part II also generates testable hypotheses for how privately-run companies may emit different levels of greenhouse gases depending on the partisan affiliation of the incumbent governor. Part III details the various proprietary and hand-collected data sources used in the Article's empirical analysis and presents summary statistics. Part IV describes the empirical strategy and the main empirical results establishing the existence of a political cycle in corporate pollution. Part V delves into the three main legal and policy implications that arise out of the Article's empirical findings. Part VI concludes the Article.

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[7] *See* SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors, SEC. & EXCHG. COMM'N (Mar. 21, 2022), https://www.sec.gov/news/press-release/2022-46; SEC Adopts Rules to Enhance and Standardize Climate-Related Disclosures for Investors, SEC. & EXCHG. COMM'N (Mar. 6, 2024), https://www.sec.gov/news/press-release/2024-31 [hereinafter "Final Rules"].

[8] *Compare* Jill E. Fisch et al., Comment Letter of Securities Law Scholars on the SEC's Authority to Pursue Climate-Related Disclosure (June 6, 2022), https://www.sec.gov/comments/s7-10-22/s71022-20130354-297375.pdf (asserting that the SEC clearly has the authority to promulgate disclosure rules), *with* Lawrence A. Cunningham et al., *The SEC's Misguided Climate Disclosure Rule Proposal* (Oct. 27, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4256724 (arguing that the SEC had overstepped its statutory authority in issuing the rules, and that the proposals advantage public pension funds and proxy advisors at the expense of other investors).

[9] *See* Isla Binnie, *US SEC Stays Climate Disclosure Rule Amid Legal Challenges*, REUTERS (Apr. 4, 2024), https://www.reuters.com/legal/us-sec-stays-climate-disclosure-rule-amid-legal-challenges-2024-04-04/; *SEC Adopts Climate-Related Disclosure Rules*, PWC (Mar. 7, 2024), https://viewpoint.pwc.com/dt/us/en/pwc/in_briefs/2024/2024-in-brief/ib202402.html.

[10] However, as I explain in this Article, the extent of such salutary effects of mandatory climate disclosures depends on two factors. First, corporate managers must be willing to prioritize investor advocacy for lower emissions over the preferences of elected officials. Second, retail and institutional investors should effectively lobby managers to become more prosocial and cut emissions. *See infra* Section V.C.

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II. PARTISAN CLIMATE POLICIES AND FIRM BEHAVIOR

Surveys conducted by independent organizations repeatedly show a deep and persistent partisan gap in attitudes toward global warming and climate change. The share of Republican voters concerned about climate change is less than half the equivalent figure for Democrats.[11] When the *Washington Post* asked Americans what they thought had caused a spate of historically warm days in 2023, these partisan differences in attitudes toward climate change resurfaced. 35% of Republicans tied the abnormally warm weather to climate change caused by human activity, compared to 85% of Democrats and 63% of Americans overall.[12] My objective in this Part is not to adjudicate the "correctness" of any set of ideological or scientific views. Instead, it is to establish that partisanship is a first order driver of climate attitudes and climate policy. There is little doubt in contemporary research that Americans closely calibrate their climate stances to their broader political dispositions. In an experimental study published in 2018, psychologists arrived at two conclusions regarding the political foundations of climate attitudes. First, even though majorities of both Democrats and Republicans believed in climate change, there is a partisan difference in climate attitudes because voters decide on their preferred climate policy *in reaction to* what they perceive their political opponents believe. In other words, Republicans oppose climate change mitigation, despite believing in the occurrence of global warming, *because* Democratic politicians like Al Gore and Barack Obama have publicly supported the need to avert a climate crisis.[13]

Second, the study's authors found that both Democrats and Republicans significantly overestimate the political salience of the climate change issue for both voters of their own party as well as those of the opposing persuasion. Republicans, for instance, expect their co-partisans to be more strongly opposed to climate change mitigation and Democrats to be more strongly in favor than either sets of voters actually are.[14] This misperception of other voters' partisan fervor about climate change fuels voters' desire to "fit in" with what they take to be their political party's position and oppose the other group's imagined stance. As the authors put it, "Democrats and Republicans are polarized in their support for climate policy partly because they expect that other Democrats and Republicans are polarized on climate policy."[15]

Given that elected representatives respond to the preferences of their core constituencies,[16] it is unsurprising that partisan differences in climate attitudes have translated into concrete differences in how Republican and Democratic administrations have adopted (or chosen not to adopt) policies affecting the environment. For example, under the Obama administration, the United States was among the more than 190 countries that signed the 2015 Paris Agreement, committing to substantially reduce greenhouse gas emissions and maintain average global temperatures up to two degrees above pre-industrial levels. However, after Donald Trump won the presidency as a

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[11] *See* Newport, *supra* note 2.

[12] *See* Amudalat Ajasa et al., *Democrats and Republicans Deeply Divided on Extreme Weather, Post-UMD Poll Finds*, WASH. POST (Aug. 23, 2023), https://www.washingtonpost.com/climate-environment/2023/08/23/extreme-weather-climate-change-poll/. For a more comprehensive look at the party-based differences in attitudes toward climate change in the United States, see Hari M. Osofsky & Jacqueline Peel, *Energy Partisanship*, 65 EMORY L.J. 695 (2016).

[13] *See* Leaf van Boven et al., *Psychological Barriers to Bipartisan Public Support for Climate Policy*, 13 PERSP. ON PSYCH. SCI. 492 (2018).

[14] *See id.*

[15] *See id.* at 500.

[16] *See generally* DAVID R. MAYHEW, CONGRESS: THE ELECTORAL CONNECTION (1974) (arguing that elected representatives care most about re-election, leading them to pursue policies that will maintain their popularity among constituents).

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Republican, his administration withdrew the United States from the Paris Agreement.[17] Reflecting the views of many Republicans, Trump had earlier called climate change a "hoax."[18] The stark difference in the Obama and Trump administrations' approach to the Paris Agreements shows that in the climate arena, partisan attitudes and rhetoric translate into far-reaching governmental policy decisions.

The Paris Agreement saga also underlines another aspect of the partisan battle over climate change that is crucial for this Article's empirical design: differences on climate policy between Republicans and Democrats get reflected *at the state level*. The United States is a federalist polity, with the federal government only possessing limited and enumerated powers. The governments of the fifty states have considerable regulatory power with which they can influence the behavior of firms headquartered within their jurisdiction.[19] States have demonstrated that they are keen to exercise this power in the climate arena. Immediately after the Trump administration announced its withdrawal from the Paris Agreement, Michael Bloomberg (former mayor of New York City) and Jerry Brown (incumbent governor of California) wrote an opinion piece in the *New York Times* condemning the move and promising that U.S. states, cities, and businesses that disagreed with Trump would still try to abide by the Paris Agreement's greenhouse gas reduction goals.[20] Notably, Governor Brown is a lifelong Democrat, while Bloomberg, although a former Republican, was by then a Democrat and ran for the Democratic Party presidential nomination in 2020.

The Democratic attempt to salvage the Paris agreement was therefore a federalist project: even if the federal government was now run by climate-skeptic Republicans, liberal states and cities could still implement climate-friendly policies and regulations. A group of governors founded a group called the "United States Climate Alliance," a self-described alliance of state governments dedicated to continuing the aims of the Paris Agreement. It was launched by the governors of California, New York, and Washington—all three of which are safely Democratic states. Even today, of the 23 governors listed as members on its website, 22 are Democrats. The lone Republican, Phil Scott, is a moderate who is governor of Vermont, a heavily Democratic state at the national level.[21] On the other hand, the Democratic governors of closely contested "swing states" such as Arizona, Michigan, North Carolina, Pennsylvania, and Wisconsin have declared their states to be members of the Climate Alliance.[22] Tellingly, when Republicans Greg Gianforte of Montana, Joe Lombardo of

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[17] *See* Jeff Tollefson, *Trump Pulls United States Out of Paris Climate Agreement*, 546 NATURE 7657 (2017).

[18] *See* Justin Worland, *Donald Trump Called Climate Change a Hoax. Now He's Awkwardly Boasting About Fighting It*, TIME (July 8, 2019), https://time.com/5622374/donald-trump-climate-change-hoax-event/.

[19] *See* ROBERTA ROMANO, THE GENIUS OF AMERICAN CORPORATE LAW (1993); Akhil Reed Amar, *Of Sovereignty and Federalism*, 96 YALE L.J. 1425 (1987); Steven G. Calabresi, *Does Institutional Design Make a Difference?*, 109 NW. U. L. REV. 577 (2015).

[20] *See* Michael R. Bloomberg & Jerry Brown, *The U.S. Is Tackling Global Warming, Even if Trump Isn't*, N.Y. TIMES (Nov. 14, 2017), https://www.nytimes.com/2017/11/14/opinion/global-warming-paris-climate-agreement.html.

[21] *See Members*, U.S. CLIMATE ALLIANCE, https://usclimatealliance.org/members/ (accessed Dec. 26, 2023). The Climate Alliance technically has two additional members: Guam and Puerto Rico, which are U.S. territories. However, since the two-party system described in this Article does not neatly apply to the politics of these territories, I do not include their governors in the count shown in the main text.

[22] *See id.* I use the term "swing state" as it is defined in the literature, to denote states that are closely contested by the two main parties and often decide the outcome of presidential elections. *See* Laura García-Montaya, *Violence and Voting in the United States: How School Shootings Affect Elections*, 116 AM. POLI. SCI. REV. 807 (2022); *What Are The Swing States Of The Future?*, FIVE THIRTY EIGHT (Sept. 6, 2023), https://fivethirtyeight.com/features/what-are-the-swing-states-of-the-future/.

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Nevada, and Glenn Youngkin of Virginia succeeded their Democratic predecessors as governor, they withdrew their states from the Climate Alliance.[23]

Partisan differences in climate policy can affect state government behavior in at least two systematic ways: *policy initiatives* and *regulatory enforcement*. Simply put, Democrats are more likely to impose pro-environmental regulations that are costly to business and to enforce existing regulations zealously when in office, while Republicans are predisposed to pursuing a deregulatory agenda that eases businesses' cost of compliance and to less vigorous enforcement of climate regulations that are already on the books. A striking example for both the policy and enforcement mechanisms can be found from Arizona's experience in the past two decades. After Democrat Janet Napolitano took office in 2003, she unveiled an aggressive and ambitious climate agenda. Central to this agenda was her promulgation of a new state climate action plan, which aimed to significantly reduce the level of greenhouse gas emissions.[24] The action plan's new policies were complemented by a significant augmentation of the state's regulatory apparatus for monitoring corporate compliance. Napolitano worked closely with the head of the Arizona Department of Environmental Quality, and feuded with the state legislature to ensure the agency got adequate funding.[25]

In 2009, Napolitano left office after President Obama appointed her as the Secretary of the Department of Homeland Security. Her successor, Republican Jan Brewer, immediately issued an executive order to reassess clean air standards Napolitano had enacted.[26] Brewer also pulled Arizona out of a carbon cap-and-trade program Napolitano had entered with Democratic-leaning states like California and four Canadian provinces.[27] Brewer even signed a 2010 law that prohibited state agencies from monitoring or reporting greenhouse gas emissions.[28] Arizona remained without a climate action plan during the tenures of Brewer and the next Republican, Doug Ducey.[29] Consistent with the partisan differences in climate policy, Arizona did not enact any significant environmental policies till the Democrat Katie Hobbs won back the governor's mansion in the 2022 election. In 2023, Hobbs announced that Arizona would join the U.S. Climate Alliance and sign onto its greenhouse gas emission reduction targets.[30]

Companies headquartered in Arizona experienced markedly different climate policies under Napolitano and, now, Hobbs as compared to the administrations of the Republican governors

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[23] *See Gianforte Ends Montana's Climate Change Coalition Membership,* ASSOC. PRESS (July 9, 2021), https://apnews.com/article/government-and-politics-climate-environment-and-nature-montana-climate-change-ec0475298f6f11ace1941a291ac16e71; Arianna Skibell, *All Eyes on Virginia's Elections*, POLITICO (Oct. 3, 2023), https://www.politico.com/newsletters/power-switch/2023/10/03/all-eyes-on-virginias-elections-00119706; Yazmyn Peleaz, *Climate Groups React to Lombardo Withdrawal from U.S. Climate Alliance*, NEV. CONSERVATION LEAGUE (July 12, 2023), https://www.nevadaconservationleague.org/climate-groups-react-to-lombardo-withdrawal-from-u-s-climate-alliance/.

[24] *See* Joan Meiners, *The Arizona Climate That Could Have Been: How Napolitano Would Put the State Back on Track*, ARIZ. REPUBLIC (Oct. 26, 2022), https://www.azcentral.com/story/news/local/arizona-environment/2022/10/26/arizona-has-lost-its-way-on-climate-policy-napolitano-offers-advice/10594052002/.

[25] *See id.*

[26] *See id.*

[27] *See* Jeremy Duda, *Brewer Pulls Out of Cap-and-Trade Program*, ARIZ. CAPITOL TIMES (Feb. 12, 2010), https://azcapitoltimes.com/news/2010/02/12/brewer-pulls-out-of-cap-and-trade-program/.

[28] *See* Meiners, *supra* note 24.

[29] *See id.*

[30] *See* Allie Feinberg, *After Lull in Climate Action, Arizona Joins Group of States and Territories Pushing for Changes*, ARIZ. REPUBLIC (July 12, 2023), https://www.azcentral.com/story/news/politics/arizona/2023/07/12/arizona-joins-u-s-climate-alliance-after-lull-in-climate-efforts/70406526007/.

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Brewer and Ducey. Governors with different political affiliations can and do vary with respect to the policies they implement and the support they offer to the state's regulatory agencies in ensuring companies comply with environmental regulations. A Democratic governor could announce ambitious climate measures with greenhouse gas reduction targets and increase the budget of the state agency tasked with ensuring that firms do not pollute excessively. Their Republican successor, on the other hand, could abandon climate action plans and disclaim any greenhouse gas emission targets, while slashing environmental agency budgets and preventing agencies from performing basic tasks such as monitoring greenhouse gas levels.[31]

These partisan differences in executive branch climate ideology may manifest themselves through the actions of the state judiciary in states where the governor has a significant role in appointing judges. Studies have shown that judges appointed by Republicans or affiliated with the Republican Party are significantly more likely to rule for corporations against plaintiffs in environmental cases.[32] Therefore, in the more than twenty states where the governor plays at least some significant role in appointing judges to courts,[33] Republican governors may be more likely to appoint judges who side with corporations in environmental litigation and adopt pro-industry interpretations of climate rules and regulations. Since the appointment of such judges would reduce firms' expected liability from environmental lawsuits, they might feel more emboldened to increase their level of emissions.

How might companies react to the changing climate attitudes of the political executives in their headquarter states? Given that Democrats increase the expected cost of corporate pollution by both announcing aggressive emission targets and boosting regulatory enforcement, we should empirically observe lower corporate emissions when there is a Democratic governor in their headquarter state. Conversely, when a Republican governor with laxer environmental priorities and less emphasis on climate regulation is in office, companies may *increase* their emissions. To concretize this intuition, we can offer the following hypotheses:

Hypothesis 1. Companies emit higher levels of greenhouse gas emissions when their headquarter state has a Republican governor as opposed to a Democrat.
Hypothesis 2. Companies increase their greenhouse gas emissions when their headquarter state suddenly changes gubernatorial control from the Democratic Party to Republicans. Similarly,

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[31] Partisan differences in climate enforcement can take other forms as well. For example, governors usually control the allocation of state-level subsidies to corporations. Previous research has shown that the governor's personal characteristics and electoral fortunes play a highly significant role in determining the magnitude of subsidies as well as the identity of the recipient firms. *See* Dhruv Aggarwal & Lubomir Litov, *Military Experience and Political Cronyism* (Apr. 6, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4411224; Cailin Slattery, *The Political Economy of Subsidy Giving* (Aug. 8, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4185083. Anecdotal evidence from the media suggests that Democratic politicians are more likely to offer subsidies for climate-friendly projects such as electric vehicles, while Republicans prefer allocating subsidy dollars to encouraging fossil fuel exploitation. *See* Adam Aton, *How 2023 Changed the Way States Do Climate Policy*, POLITICO E&E NEWS: CLIMATE WIRE (Dec. 21, 2023), https://www.eenews.net/articles/how-2023-changed-the-way-states-do-climate-policy/.

[32] *See* Ashrafee Hossain et al., *Ex-ante Litigation Risk and Firm-level Climate-Change Exposure*, 214 J. ECON. BEHAV. & ORG. 731 (2023); Chelsea Liu, *Judge Political Affiliation and Impacts of Corporate Environmental Litigation*, 64 J. CORP. FIN. 101670 (2020).

[33] The governors of these states can either directly appoint members of the state bench or appoint one of the candidates selected by a nominating commission. In either case, governors wield significant influence over judicial selection by making the final decision regarding whom to appoint to judgeships. *See Assisted Appointment of State Court Judges*, BALLOTPEDIA, https://ballotpedia.org/Assisted_appointment_of_state_court_judges; *Gubernatorial Appointment of Judges*, BALLOTPEDIA, https://ballotpedia.org/Gubernatorial_appointment_of_judges.

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companies decrease their greenhouse gas emissions when their headquarter state governorship suddenly changes from Republican to Democratic hands.

The economics literature offers some preliminary evidence consistent with these hypotheses. A recent paper found that electric utilities companies reduce their spending on air pollution abatement by 90% when a Republican is governor in the state their facility is located.[34] This Article's contribution is to measure the direct effect of gubernatorial politics on corporate emissions for the entire universe of firms for which we have high-quality data.

III. DATA AND SUMMARY STATISTICS

A. Emissions Data

The outcome variable in the empirical study is the level of greenhouse gas emissions by U.S. companies. In recent years, several proprietary data sources have emerged to track and report corporate carbon emissions. However, Trucost is the most widely used and accepted of these data providers. It has been used by index providers such as MSCI and S&P, and also had its validity accepted by United Nations climate programs.[35] Moreover, Trucost emissions data has been widely used in the financial economics literature studying firm greenhouse gas levels.[36] The Trucost database uses a combination of publicly available sources (such as company filings and annual reports, information on corporate websites, regulatory data, and reports by third-party environmentalist groups) and scores imputed using its own proprietary model.[37] I use Trucost data for U.S.-based companies between 2005 and 2021. I start the sample in 2005 because this is the earliest year for which reliable emissions data is available.[38] Similarly, I end the sample in 2021 because this is the last year for which comprehensive data was available at the time I accessed the Trucost data. The Trucost sample contains emissions information for 4,581 unique companies.

Trucost reports emissions using the Greenhouse Gas Protocol, which is the most widely accepted accounting standard for measuring and reporting carbon emissions. 92% of Fortune 500 firms report using this protocol in reporting their emissions, and governments across the world rely on it in setting regulatory standards. As I will discuss later in Section V.C., the SEC has also directly referenced the Greenhouse Gas Protocol in setting its climate disclosure rules.[39] This protocol measures emissions in tons of carbon dioxide equivalents a year. I specifically focus on two types of emissions reported in Trucost. The first, "scope 1 emissions," are the greenhouse gas emissions that emanate from sources directly owned and controlled by the company itself. The emissions from a boiler located in one of the company's own factories would, for example, be included in scope 1.[40]

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[34] *See* Zach Raff et al., *Political Differences in Air Pollution Abatement under the Clean Air Act*, 212 J. PUB. ECON. 104688 (2022).
[35] *See* Shira Cohen et al., *Institutional Investors, Climate Disclosure, and Carbon Emissions*, 76 J. ACCT. & ECON. 1, 6 n.19 (2023).
[36] *See* Patrick Bolton & Marcin Kacperczyk, *Do Investors Care About Carbon Risk?*, 142 J. FIN. ECON. 517 (2021) [hereinafter *Do Investors Care*]; Patrick Bolton & Marcin Kacperczyk, *Global Pricing of Carbon-Transition Risk*, 78 J. FIN. 3677 (2023) [hereinafter *Global Pricing*].
[37] *See* Jitendra Aswani et al., *Are Carbon Emissions Associated with Stock Returns?*, REV. FIN. (forthcoming 2023), https://academic.oup.com/rof/advance-article/doi/10.1093/rof/rfad013/7100359.
[38] *See id.*
[39] *See infra* Section V.B.
[40] *See Scope 1 and Scope 2 Inventory Guidance*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance.

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Secondly, I obtain data on "scope 2 emissions." These are the emissions that arise because of the company's energy use, i.e., its purchase of raw materials like electricity, hear, or steam. Although the actual activity generating these emissions is by the energy producer, scope 2 recognizes that these emissions would not exist but for the purchasing company's demand, and thus attributes it to the purchaser.[41] Prior work in leading social science journals has defined scope 1 as the firm's "direct" contribution to emissions, and the sum of scope 1 and 2 emissions as its total emissions.[42] I follow these conventions and use two dependent variables throughout this Article's empirical analysis: scope 1 as the firm's direct emissions, and the sum of scope 1 and 2 emissions as its total emissions. Significantly, I find strong evidence for a political cycle in firm carbon emissions regardless of whether I use direct or total emissions as the outcome variable.

The Greenhouse Gas Protocol also contains a third category of emissions called "scope 3 emissions." Scope 3 is an expansive definition of emissions that could be indirectly tied to a company's operations because of its supply chain or consumers' use of its products. Given the inherent vagueness of this definition, previous work has found that firms find it hard to accurately ascertain their scope 3 emissions. These emissions are not uniformly used in finance studies studying a firm's total emissions, and are highly correlated with firm size rather than actual levels of polluting activity.[43] Given the arbitrariness of scope 3 measurement, the SEC decided not to mandate corporate disclosure of these emissions.[44] Reports indicate the agency was concerned that including scope 3 disclosure would have made the climate disclosure rule vulnerable to lawsuits.[45] Therefore, following the current literature, I do not include scope 3 emissions in the Article's outcome variable for greenhouse gas emissions.

Figure 1 plots the distribution of scope 1 emissions in the sample. The distribution of total emissions (the sum of scope 1 and 2) appears very similar. The most notable aspect of the figure is its uneven distribution. Firm emissions range widely, from 44 tons of carbon dioxide equivalents a year to 9.6 million tons. Previous empirical analyses of firm-level emissions have also noted the skewed distribution of emissions.[46] Figure 1 shows that a non-negligible portion of companies emit very large amounts of direct emissions. Manual inspection shows that three categories of firms can be classified as "super-emitters" in the sample: energy companies (such as ConocoPhillips and Exxon Mobil Corporation), mining companies (such as Alcoa Corporation and Cleveland-Cliffs Steel Holding Corporation), and transportation companies (such as United Airlines and American Airlines).[47] This is consistent with scholarly literature arguing that certain industrial sectors, called "brown industries," are especially linked to pollution in the United States.[48] The salience of certain

[41] *See id.*
[42] *See* Cohen et al., *supra* note 35; Zacharias Sautner et al., *Firm-Level Climate Change Exposure*, 78 J. FIN. 1449 (2023).
[43] *See* Aswani et al., *supra* note 37.
[44] *See* SEC. & EXCHG. COMM'N, Final Rules, *supra* note 7.
[45] *See* Jarrett Renshaw et al., *Exclusive: US Securities Regulator Signals It May Curb Climate Rule Ambitions*, REUTERS (Nov. 20, 2023), https://www.reuters.com/business/environment/us-securities-regulator-signals-it-may-curb-climate-rule-ambitions-2023-11-20.
[46] *See* Bolton & Kacperczyk, *Global Pricing*, *supra* note 36. The authors log-transformed emissions data in their empirical analysis because of this skewed distribution of carbon emissions. *See id.* at 3695-96.
[47] These examples of large emitters are based on the author's manual inspection of firms belonging to the largest quintile of emitters in the sample
[48] *See* Dean Lueck et al., *Campaign Contributions, Partisan Politics, and Environmental Polarization in the US Congress*, J.L. ECON. & ORG. (forthcoming), https://academic.oup.com/jleo/advance-article-abstract/doi/10.1093/jleo/ewad018/7328886.

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industries in greenhouse emissions is why, in later empirical analysis, I control for industry-specific time trends.

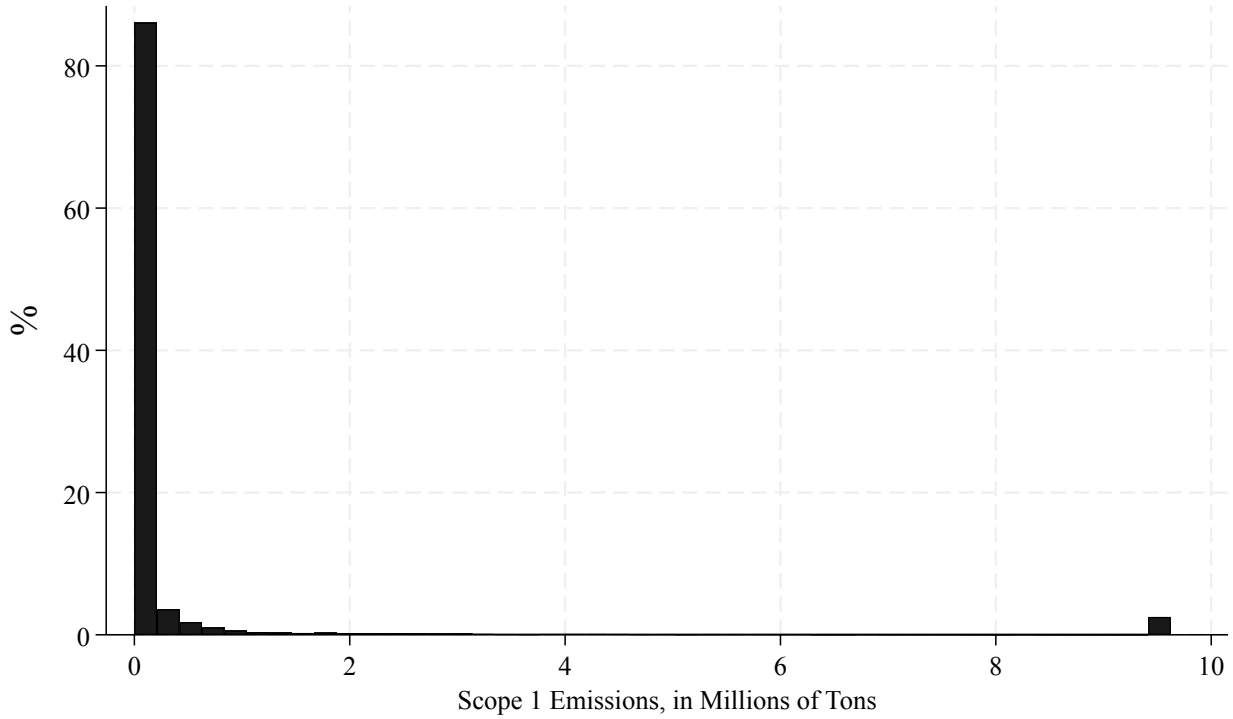


Figure 1. Distribution of Scope 1 Emissions. This figure depicts the level of scope 1 emissions (i.e., greenhouse gas emissions directly attributable to the firm's operations or activities) in millions of tons, at the firm-year level.

B. The Governor Career Dataset

A key contribution of this Article is to complement the proprietary emissions data with hand-collected information about the career paths of U.S. state governors between 2005 and 2021. I assemble a dataset tracking the backgrounds and careers of governors for all fifty U.S. states in during the sample period.[49] The governor dataset is at the state-year level, and includes information on the name, party membership, gender, age, and professional background of each governor. The primary source of data I use is the Book of States. Published by the Council of State Governments since 1935, the Book of States has information about political executives such as governors at the yearly level.[50] Where necessary, I supplement this information with data from state government websites, newspapers, and Internet searches. If more than one governor was in office in the same state during a calendar year, I code the governor who served for more than half the year as the incumbent for that year.

The dataset contains 165 unique governors, including 91 Democrats, 74 Republicans, and 3 Independents or third-party candidates. Note that the sum of governors by party affiliation exceeds the total of 165 unique governors in the data. This is because three governors changed party affiliation while in office: Charlie Crist of Florida defected from the Republicans and became an

[49] The process for creating this dataset is described in Aggarwal & Litov, *supra* note 31.
[50] *See Publication*, COUNCIL STATE GOV'TS, https://www.csg.org/work/publications/.

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independent; Jim Justice of West Virginia went from being a Democrat to being a Republican; and Lincoln Chafee of Rhode Island started as an independent but eventually joined the Democratic Party.

Demographically, the governor sample is not representative of the U.S. population. 141 governors, or about 85% of the unique individuals in the sample, are men. A fifth of the governors attended an Ivy League university. 67 governors were lawyers before attaining elected office, and six were medical doctors. The high representation of lawyers, who comprise about 40% of governors in the sample, is consistent with a vast literature detailing the disproportionate influence attorneys exercise over American public life.[51]

I also code for whether the governor subsequently ran for (or were appointed to) another public office, whether or not they won the relevant election. Only about 30% of governors sought another political office after serving as chief executive of their state. Of these governors, some ran for President of the United States (e.g., Steve Bullock and Jeb Bush) while others ran for other offices such as U.S. senator (e.g., Phil Bredesen and Maggie Hassan) or were appointed to the federal presidential cabinet (e.g., Gina Raimondo and Jennifer Granholm). However, for a large majority of individuals in the sample, being a state governor was the apex of their political career.

Finally, I code for the partisan balance of state legislatures. The U.S. political system is characterized by a separation of powers between the executive, legislature, and judiciary.[52] If the state legislature is controlled by the opposing party, a governor may not be able to fully implement her climate plans. For instance, a Republican-controlled legislature may prevent a Democratic governor from passing ambitious climate legislation, while a Democratic-dominated legislature could prevent a Republican governor from rolling back environmental laws. The political carbon cycle documented in this paper could thus be understated in cases where the opposing party controls the legislature, and amplified when the governor's party also controls the legislature. I use the Book of States and other sources to create an indicator variable *Unified Control*, which equals one if the same party controls the governor's office as well as both chambers of the state legislature. 53.7% of state-year observations in the governor dataset are characterized by the governor's party also controlling both houses of the state legislature.

C. Election Data

U.S. states elect their governors on a regular four-year cycle. Several studies have used this political cycle as part of their empirical strategy, since the timing of the election is fixed and mandated by state constitutions.[53] In other words, unlike parliamentary democracies elsewhere in the world, U.S. state governments cannot opportunistically call a gubernatorial election when the economy or other factors are favorable to the incumbent.[54] I collect data for every state election held

[51] *See, e.g.*, ALEXIS DE TOCQUEVILLE, DEMOCRACY IN America 514 (1840) ("In America there are no nobles or men of letters, and the people is apt to mistrust the wealthy; lawyers consequently form the highest political class, and the most cultivated circle of society"); Adam Bonica et al., *The Political Ideology of American Lawyers*, 8 J. LEGAL ANALYSIS 277 (2016).
[52] *See* John F. Manning, *Separation of Powers as Ordinary Interpretation*, 124 HARV. L. REV. 1939 (2011).
[53] *See* J. Tyler Leverty & Martin F. Grace, *Do Elections Delay Regulatory Action?*, 130 J. FIN. ECON. 409 (2018).
[54] *See, e.g.*, Shashwat Alok & Meghana Ayyagari, *Politics, State Ownership, and Corporate Investments*, 33 REV. FIN. STUD. 3031 (2020) (describing how, in India, incumbents can opportunistically dissolve state legislative assemblies midway through their five-year term).

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during the sample period, and record the vote shares received by the Democratic and Republican candidates, as well as the victory margin of the winning candidate. The primary source for this information is Ballotpedia, a free online encyclopedia of U.S. politics.[55] I cross-check the information for each of these elections from Internet sources, especially the official results from the relevant secretary of state's website. These cross-checks reveal the information on Ballotpedia to be accurate. I coded 214 elections during the sample period. Of these elections, Democrats won 97 elections and Republicans received more votes in 116.[56] In one election, Rhode Island's 2010 race, an independent candidate (Lincoln Chafee) beat his Republican opponent by 2.5 percentage points.

As I explain in greater detail in Section IV.C., an especially important aspect of this Article's empirical analysis is to look at the impact of "close elections." These are elections where the margin between Democratic and Republican candidates is small enough that observers would presumably not have been able to predict the outcome of the race before election day. Focusing on close elections allows me to establish that a governor's political affiliation has a causal effect on emissions by firms headquartered in her state. Close elections have been used as an empirical method to establish the causal effects of partisanship in several studies in political science, economics, and finance.[57] A standard definition of a "close election" in this literature is one where the margin between the winning and losing candidates was up to five percentage points.[58] 56 of the elections in the data fit this definition of a close election.[59]

D. Firm Financial, Industry, and Headquarter Data

To control for firm financial variables that are commonly used in the literature on emissions, I merge the Trucost data with financial and accounting data from the Compustat database.[60] Compustat is a standard database used in virtually all corporate finance scholarship for basic financial information about publicly traded companies.[61] Based on prior scholarship, I select the following financial controls: capital intensity, leverage, firm size, the logarithm of the book-to-market ratio, and return on assets.[62] Capital intensity is a measure of how tangible or long-lived a firm's asset structure is, and equals the ratio of the firm's net property, plant, and equipment to its total assets. The higher this quantity is, the more long-lived the firm's assets are. Capital intensity could be a relevant financial control for assessing carbon emissions because durable assets such as factories and machinery are responsible for a large portion of firm-level pollution.

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[55] *See* BALLOTPEDIA, https://ballotpedia.org/Main_Page.

[56] The significant Republican edge in number of gubernatorial wins is consistent with accounts of that party's dominance in state-level politics in recent years. *See* Amber Phillips, *These 3 Maps Show Just How Dominant Republicans Are in America After Tuesday*, WASH. POST (Nov. 12, 2016), https://www.washingtonpost.com/news/the-fix/wp/2016/11/12/these-3-maps-show-just-how-dominant-republicans-are-in-america-after-tuesday/.

[57] *See* Thushyanthan Baskaran et al., *Election Cycles and Electricity Provision: Evidence from a Quasi-Experiment with Indian Special Elections*, 126 J. PUB. ECON. 64 (2015); Olle Folke et al., *Patronage and Elections in U.S. States*, 105 AM. POLI. SCI. REV. 567 (2011); Brandon Julio & Youngsuk Yook, *Political Uncertainty and Corporate Investment* Cycles, 67 J. FIN. 45 (2012).

[58] *See, e.g.*, Baskaran et al., *supra* note 57 (defining close elections as those with margins up to five percentage points).

[59] In Section IV.C., I show that the empirical results persist if I instead define close elections as those with a margin of up to three percentage points.

[60] The Trucost data contains each firm's global company key, or GVKEY, which is an identifier used in Compustat. This allows me to merge the information from the two databases relatively seamlessly.

[61] *See* Kai Du et al., *Lost in Standardization: Effects of Financial Statement Database Discrepancies on Inference*, 76 J. ACCT. & ECON. 101573 (2023).

[62] *See* Aswani et al., *supra* note 37; Bolton & Kacperczyk, *Do Investors Care*, *supra* note 36; Cohen et al., *supra* note 35.

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I proxy firm size by the natural logarithm of its total assets. The empirical finance literature has found a substantial correlation between a firm's size or the scale of its operations and its level of emissions.[63] Clearly, it would be unfair to compare the emissions of a large corporation like Wal-Mart with those of a smaller company operating in a few locations or product segments. Therefore, it is important to control for firm size. Next, leverage is defined as the ratio of the firm's total debt to its assets, and is thus a measure of how indebted the company is. The book-to-market ratio is the ratio of the firm's book value to its market value. I include controls for leverage and the book-to-market ratio because previous research has found that leverage and book-to-market ratios affect firms' reported levels of emissions.[64] Finally, return on assets is the ratio of net income to total assets, and is an accounting measure of firm profitability. Adding this independent variable allows us to control for the influence of profitability on emissions.

Finally, I include information about the firm's state of headquarters and industrial classification from Compustat. The information regarding headquarter state is crucial to assess the effect of political cycles on firm emissions. While firms may have operations in several states, the corporate finance literature uses headquarter data because firms are most likely to be influenced by the political authorities in the jurisdiction that contains its corporate headquarters.[65] As is standard in the finance literature, I proxy the firm's industrial sector by its two-digit Standard Industrial Classification (SIC) code.[66] Given that some industries, such as energy and mining, are responsible for a large of share of emissions, as seen in Figure 1,[67] it is important to control for industry-specific trends in greenhouse gas levels.

E. Summary Statistics

Table 1 presents summary statistics for the emissions, financial, and political variables used in this Article's empirical analysis. The average level of direct firm greenhouse gas emissions, as proxied by scope 1, is 451,635 tons of carbon dioxide equivalents. This figure, of course, masks the considerable heterogeneity in firm emissions depicted earlier in Figure 1. Following the finance literature, I *winsorize* the emissions and financial data to prevent the results from being driven by outliers (i.e., by abnormally large or small values of the relevant variables). Winsorization is a statistical procedure whereby researchers set extreme values above or below a certain threshold to equal that threshold. For example, "winsorizing at 1%" means that all observations of the winsorized variable that exceed the 99th percentile value are replaced with the 99th percentile value, and all observations smaller than the 1st percentile value are replaced with the 1st percentile value. Winsorization is a common technique in social science research to account for extreme outliers in raw data.[68] Based on the previous scholarship on firm carbon emissions,[69] I winsorize financial variables and greenhouse gas emission measures at different levels to account for their different degrees of outliers. I winsorize firm financials at the 1% level and greenhouse gas emission variables

[63] *See* Aswani et al., *supra* note 37.
[64] *See* Bolton & Kacperczyk, *Do Investors Care*, *supra* note 36, at 530.
[65] *See* Frederico Belo et al., *Government Spending, Political Cycles, and The Cross Section of Stock Returns*, 107 J. FIN. ECON. 305 (2013); Todd A. Gormley et al., *The Politicization of Social Responsibility* (Nov. 24, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4558097.
[66] *See* Dhruv Aggarwal et al., *The Rise of Dual-Class Stock IPOs*, 144 J. FIN. ECON. 122 (2022); Jan Bena et al., *Shielding Firm Value: Employment Protection and Process Innovation*, 146 J. FIN. ECON. 637 (2022).
[67] *See supra* Section III.A.
[68] *See* Andrew J. Leone et al., *Influential Observations and Inference in Accounting Research*, 94 ACCT. REV. 337 (2019).
[69] *See* Aswani et al., *supra* note 37; Bolton & Kacperczyk, *Do Investors Care*, *supra* note 36.

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at the 2.5% level. The results are qualitatively unchanged if I instead winsorize both firm financial and emissions variables at the 1% or 2.5% level.

	N	Mean	SD
Capital Intensity	41870	.17	.236
Democratic Governor	45410	.516	.5
Leverage	28587	.287	.248
Ln(Assets)	45370	8.477	1.87
Ln(Book-to-Market Ratio)	33566	.004	.09
Republican Governor	45410	.483	.5
Return on Assets	34465	.001	.195
Scope 1 Emissions, thousands of tons	45410	451.635	1708.537
Scope 1 and 2 Emissions, thousands of tons	45410	612.701	1991.155

Table 1. Summary Statistics. This table presents information on firm financials, for the period 2005-21. All financial variables are winsorized at the 1% level, while greenhouse gas emissions are winsorized at the 2.5% level.

IV. POLITICS AND CORPORATE POLLUTION: EMPIRICAL EVIDENCE

A. Empirical Strategy

The emissions data, as depicted in Figure 1, is highly "right-skewed." In other words, while most companies emit between zero and one million carbon dioxide equivalent tons a year, a substantial number of firms are responsible for far more emissions. Recent work in econometrics has concluded that the standard ordinary least squares (OLS) linear regression model is less reliable when the outcome measure is right-skewed. Instead, these studies recommend that empirical researchers use the non-linear Poisson fixed-effects model.[70] The Poisson model accounts for skewness in the outcome data, as long as this data is strictly non-negative. Since the emissions data is both skewed and strictly positive, with a minimum value of 44 tons, it meets the requirements for the Poisson model. Nevertheless, the Article's main results persist if I instead estimate the equation described in this Section as an OLS model.

I evaluate the following Poisson fixed effects model to evaluate Hypothesis 1, which predicts that firms emit greater quantities of greenhouse gas emissions when their headquarter state has a

[70] *See* Jiafeng Chen & Jonathan Roth, *Logs with Zeros? Some Problems and Solutions*, Q.J. ECON. (forthcoming), https://academic.oup.com/qje/advance-article-abstract/doi/10.1093/qje/qjad054/7473710; Jonathan B. Cohn et al., *Count (and Count-Like) Data in Finance*, 146 J. FIN. ECON. 529 (2022). Recent works in empirical legal studies have also used the Poisson approach when using outcome data that is not conducive to the standard assumptions underlying the OLS method. *See, e.g.*, Dhammika Dharmapala et al., *Collective Bargaining Rights and Police Misconduct: Evidence from Florida*, 38 J.L. ECON. & ORG. 1 (2022) (using a Poisson fixed effects model similar to that used in this Article). One advantage of the Poisson approach is that it allows researchers to include several group-based fixed effects. *See* Cohn et al., *supra*. This allows me to include the firm and industry-year fixed effects seen in equation (1).

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Republican governor.[71] The equation relates to emissions at time *t* for firm *i*, which belongs to industry *j* and is headquartered in state *s*:

$$Emissions_{it} = exp\left(\beta Republican_{st} + \pi X_{it} + \delta_i + \theta_{jt}\right)\varepsilon_{it} \quad (1)$$

The dependent variable $Emissions_{it}$ equals the absolute value of either scope 1 emissions, or the sum of scope 1 and 2 emissions ("total emissions"). $Republican_{st}$ is an indicator variable that equals 1 if state *s* has a Republican governor at time *t*, and 0 otherwise. X_{it} is a vector of the firm financial variables described in Section III.D. and based on the prior empirical literature on corporate carbon emissions. β is the coefficient of interest, and tells us the increase in firm greenhouse gas emissions when a Republican governs their state.

Equation (1) then includes two important fixed effects to ensure that it accurately captures the effect of gubernatorial partisanship on firm emissions. δ_i is a firm fixed effect, and captures any firm-specific idiosyncratic factors that can affect pollution levels. Therefore, we can account for the possibility that a given firm is generally predisposed to pollute more or less than average. θ_{jt} is an industry-year fixed effect, which controls for industry-specific and time-specific trends in emissions. Including industry-year fixed effects allows us to control for within-industry time trends in the dependent variable that could be correlated with the presence of a Republican governor.[72] ε_{it} is the standard regression error. Finally, I use "doubly robust" standard errors in the regression model by clustering at the firm and year level. Researchers cluster standard errors to account for potential correlation of errors at the level of treatment.[73] By double-clustering standard errors, I account for the possibility that they are correlated at the firm or year levels.

B. Firms Emit More Greenhouse Gases Under a Republican Governor

Before I present the formal regression results from estimating equation (1), it is worthwhile to explore some summary statistics related to the political struggle over climate policy in Arizona, as detailed in Part II. During 2005-08, Janet Napolitano was in office, while Jan Brewer was governor between 2009 and 2014. Figure 2 graphs the average levels of scope 1 emissions during these two periods, separately for firms headquartered in Arizona and elsewhere. Note that Napolitano's administration began in 2003, but the average for her time in office only accounts for emissions beginning in 2005, since that is the first year for which we have reliable Trucost data. Panel A shows that there was a significant increase in emissions for Arizona firms, whose average scope 1 emissions rose by about 20% between the Napolitano and Brewer administrations. On the other hand, Panel B shows that the average level of emissions in the other states, which were collectively experiencing a mix of different political cycles, was basically stagnant.

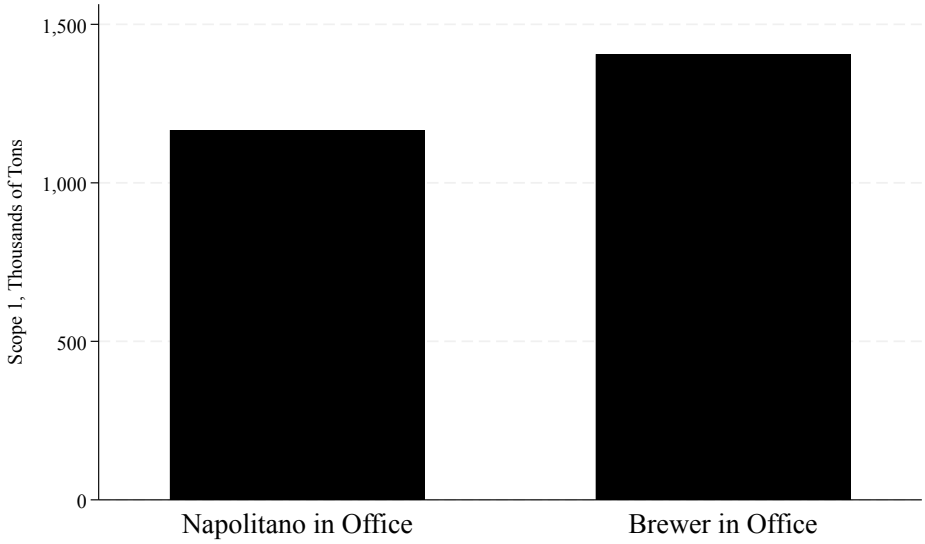
[71] *See supra* Part II.

[72] *See, e.g.*, Shashwat Alok et al., *Creditors' Rights, Threat of Liquidation, and the Labor and Capital Choices of Firms*, 65 J.L. & ECON. 687 (2022) (explaining the inclusion of industry-year fixed effects in this manner).

[73] *See* Alberto Abadie et al., *When Should You Adjust Standard Errors for Clustering?*, 138 Q.J. ECON. 1 (2023).

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Panel A. Arizona Firms



Panel B. Other Firms

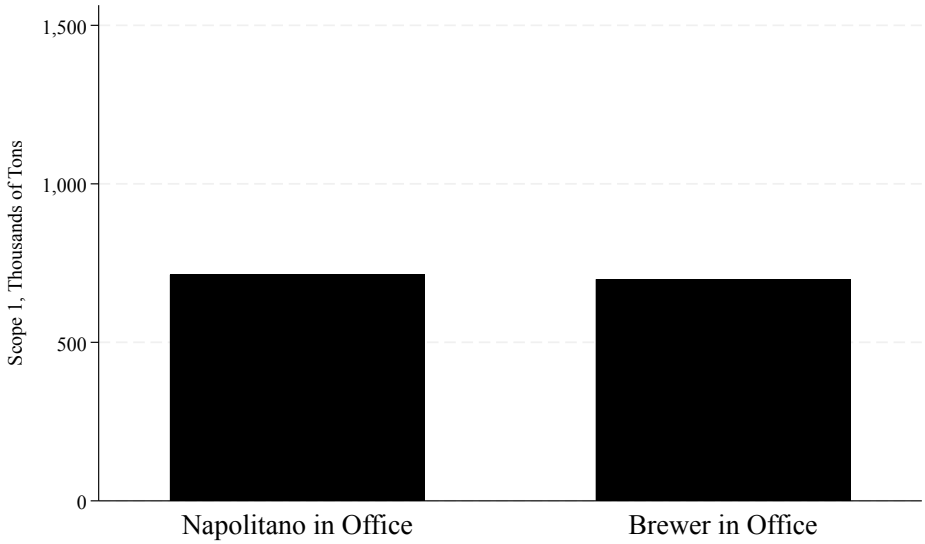


Figure 2. Average Scope 1 Emissions: The Political Cycle in Arizona. This figure depicts the average level of scope 1 emissions (i.e., greenhouse gas emissions directly attributable to the firm's operations or activities) in thousands of tons, at the firm-year level. Panel A focuses on firms headquartered in Arizona, while Panel B looks at other firms. I split the sample into two time periods: when Janet Napolitano was governor of Arizona (2005-08), and when Jan Brewer was governor of Arizona (2009-14). Note that Napolitano's tenure as governor began in 2003, but I only have reliable emissions data beginning in 2005, so the average for her governorship only accounts for the years 2005-08.

These basic summary statistics strongly support the notion that political cycles in climate policy and enforcement lead to firms calibrating their own emissions. When a Democrat with an

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aggressive climate policy was in office, Arizona firms anticipated a high expected cost from pollution, and released fewer scope 1 emissions. These firms increased their emissions when a Republican opposed to climate regulations and enforcement entered office. Figure 2 suggests that this effect was *caused* by the political cycle in Arizona, since the average scope 1 emissions in the other states was relatively flat over this time period. With these supporting summary statistics in mind, I now turn to a formal analysis of the Poisson model described in equation (1).

Table 2 reports the results from estimating equation (1). I use scope 1 emissions as the dependent variable in columns (1) and (2), and the sum of scope 1 and 2 emissions as the outcome in columns (3) and (4). Columns (1) and (3) are "baseline" results, where I regress firm emissions against the dummy for Republican governor and the firm and industry-year fixed effects. Columns (2) and (4) add control for the time-varying firm financial variables. In all four models, the variable for Republican governor is positive and statistically significant. Therefore, accounting for firm, industry, and time-specific factors, and even controlling for time-varying financial variables, firms release more greenhouse gases if there is a Republican governor in charge of their headquarter state.

	(1)	(2)	(3)	(4)
	Scope 1 Emissions		Scope 1 and 2 Emissions	
	Baseline	With Financials	Baseline	With Financials
Republican Governor	0.0721***	0.0673*	0.0674***	0.0630**
	(2.749)	(1.763)	(2.709)	(2.092)
Ln(Assets)		0.509***		0.525***
		(9.764)		(12.06)
Return on Assets		-0.108		-0.128
		(-0.887)		(-1.062)
Ln(Book-to-Market Ratio)		-0.106		-0.0323
		(-0.688)		(-0.288)
Capital Intensity		0.278		0.400**
		(1.176)		(1.964)
Leverage		-0.479***		-0.456***
		(-3.300)		(-4.033)
Observations	44,907	23,080	44,907	23,080
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes

Table 2. Gubernatorial Politics and Firm Greenhouse Emissions. This table presents the results of a Poisson fixed effects regression, for the period 2005-21, where the dependent variable is the level of scope 1 emissions in columns (1) and (2) and the sum of scope 1 and scope 2 emissions in columns (3) and (4). All financial variables are winsorized at the 1% level, while greenhouse gas emissions are winsorized at the 2.5% level. Z-statistics are presented in parentheses. All columns include firm and industry-year fixed effects, and standard errors are double clustered at the firm and year level. The ***, **, and * denote significance at the 1%, 5%, and 10% levels.

The rise in firm greenhouse gases associated with gubernatorial politics is quantitatively significant. The baseline result in column (1) shows that firms emit 7.48% more scope 1 emissions when there is a Republican governor in their headquarter state. The baseline specification in column (3) indicates that total corporate emissions (the sum of scope 1 and 2) increase by 6.98% when there

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is a Republican headquarter state governor. The regression results in Table 2, combined with the anecdotal evidence described in Part II and the summary statistics in Figure 2, collectively provide strong support to the notion that corporate carbon emissions are significantly affected by the partisan affiliation of home state governors.

The indicator for Republican governor has a positive and statistically significant coefficient in columns (2) and (4), which include controls for firm financials. While I control for factors for which the literature has posited a theoretical relationship with carbon emissions, it is important to sound two notes of caution. First, the number of observations is lower for these models, since they require the availability of all the firm financial controls. Therefore, these models may leave out many firm-year observations with missing data for some of the time-varying firm financials. Second, the ascent of a Republican to the governor's office may directly affect at least some of these controls. For example, the election of a Republican could increase (or decrease) the profitability of firms in different industries, or with some connection to Republican officials. Such a connection is not theoretical: a recent empirical study found that firms with preexisting connections to Donald Trump gained significant value upon his surprise election to the U.S. presidency in 2016.[74] The financial controls included in columns (2) and (4) could hence themselves be affected by the presence of a Republican governor, leading to what the finance literature has called the *endogenous controls* problem.[75] Given these two possible problems with including firm financials, it is reassuring that the indicator for Republican governor is significant and positive (and, in fact, *more* significantly greater than zero) in the baseline model where we do not control for any time-varying firm financials. Estimating equation (1) thus provides strong support for Hypothesis 1, which predicted that firms will increase emissions when there is a Republican governor in their headquarter state.

In unreported results, I modify equation (1) to test for the possibility that partisan control of the state legislature may affect the extent of the political carbon cycle. As explained in Section III.B., I create an indicator variable *Unified Control* that equals 1 for observations where the governor's party also controls both houses of the state legislature. I re-estimate equation (1) as a difference-in-differences model, interacting the variable for Republican governor with the unified control dummy. This modified regression model provides no support for the thesis that partisan control either amplifies or diminishes the extent of the political carbon cycle: none of the terms including *Unified Control* have a significant coefficient. Therefore, while I do not tabulate these results, the political cycle in corporate pollution seems to be driven by the politics of state governors rather than the legislature.

The relative unimportance of partisan control over the legislature for corporate emissions is consistent with what Professor Miriam Seifter has called "gubernatorial administration": in recent years, state governors have expanded their powers in contentious areas like climate policy, and the influence of state legislatures has shrunk.[76] One key avenue for gubernatorial power is the state executive's control over state administrative agencies.[77] Gubernatorial control over climate policy can be seen in the Arizona case study described earlier in Part II. Governors Napolitano and Brewer were able to single-handedly set the tone for the state's environmental policy, without needing the legislature, through their promulgation of climate action plans and control over the Arizona

[74] *See* Trevor Barclay Child et al., *Surprise Election for Trump Connections*, 140 J. FIN. ECON. 676 (2021).
[75] *See* Todd A. Gormley & David A. Matsa, *Playing It Safe? Managerial Preferences, Risk, and Agency Conflicts*, 122 J. FIN. ECON. 431 (2016).
[76] *See* Miriam Seifter, *Gubernatorial Administration*, 131 HARV. L. REV. 483 (2017).
[77] *See id.* at 501–07.

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Department of Environmental Quality.[78] Therefore, consistent with recent work, the political carbon cycle is driven by the political preferences of the state governor rather than those of the legislature.

C. Establishing Causality: Evidence from Close Elections

The results in Table 2 establish that firms emit more greenhouse gases when a Republican sits in the governor's office in their headquarter states. However, standing by themselves, they are not sufficient proof for a *causal* relationship between gubernatorial politics and private sector pollution. Consider this scenario: a recession occurs during a Democratic governorship, severely diminishing the political standing of the incumbent and depressing industrial activity, thus reducing firm greenhouse gas emissions. The Democrat, their reputation in tatters, is soundly defeated in the next election and replaced by a Republican. For cyclical macroeconomic reasons having little to do with the new governor's policies, the recession ends during the new governor's term, industrial activity recovers, and greenhouse gases increase. While the Republican would presumably be all too happy to claim credit for the change in economic circumstances, the increase in greenhouse gases could be solely attributed to cyclical economic conditions rather than her policy differences with the preceding Democrat.[79] Although the fixed effects in equation (1) would partially account for such a possibility (the industry-year fixed effect would be particularly likely to soak up industry-specific effects of a recession), such a possibility casts doubt on any causal connection between the partisan leanings of public actors and pollution levels of private actors.

To establish that this Article's results are indeed causal, I study the effects of *close elections*. I focus on 56 close elections, each decided by a margin of less than five percentage points, as discussed earlier in Section III.C. This helps us assess Hypothesis 2, which predicts that firms increase emissions immediately after a Republican wins a gubernatorial election in their headquarter state, and decrease emissions after a Democrat similarly wins.[80] The vast social science literature using close elections to test the causal effect of political ideology[81] assumes that closely contested elections are effectively an experiment—it is difficult, ex ante, for voters, businesses, politicians, or regulators to know which politician will become governor if the margin between the Democratic and Republican parties is slim. For example, in North Carolina's 2016 governor's race, the Democrat Roy Cooper defeated sitting Republican Pat McCrory by less than 10,000 votes, a margin of about 0.2 percentage points. Cooper narrowly prevailed despite Republicans winning both the presidential and U.S. Senate races in the state the same night. In fact, McCrory had been leading the race for most of election night.[82] Since North Carolina businesses would not have been able to confidently

[78] *See supra* notes 24–29 and accompanying text.
[79] This hypothetical is related to the longstanding question of whether presidential party affiliation "causes" growth or recessions. Although the U.S. economy has grown faster under Democratic presidents than Republicans, this could be because Democratic presidents have been more likely to benefit from macroeconomic events such as oil price decreases, favorable international relations, and consumer optimism. *See* Alan S. Blinder & Mark W. Watson, *Presidents and the US Economy: An Econometric Exploration*, 106 AM. ECON. REV. 1015 (2016). It is challenging to disentangle which macroeconomic events are happenstance and which the product of presidential policy actions. For example, a more friendly international environment could coincidentally occur more frequently under Democratic presidencies or be caused by the Democratic Party being more internationalist than Republicans.
[80] *See supra* Part II.
[81] See sources listed *supra* note 57.
[82] *See* Jessica Huseman, *N.C. Governor Loses Re-Election Bid, Attempts to Hold Power by Claiming Voter Fraud*, PROPUBLICA (Nov. 30, 2016), https://www.propublica.org/article/pat-mccrory-re-election-bid-attempts-hold-power-claiming-voter-fraud.

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predict that a Democrat would become governor, we can treat Cooper's election as a credible shock to the state's policies allowing us to identify the causal effect of gubernatorial politics.

There are 56 close elections decided by a margin of within five percentage points. Of these contests, Democrats won 32 close victories, Republicans won 23, and an independent (Lincoln Chafee of Rhode Island) won one. Of special interest are close elections where the partisan affiliation of a state's governor changed, i.e., where a Democrat was replaced by a Republican (or vice versa) by a margin of less than five percentage points. I call elections where the governorship flipped from the Republican Party to Democrats, with the margin being less than five percentage points, a *Close Democratic Transition*. Similarly, I classify a transition from the Democratic Party to a Republican governor in a close election decided by less than five percentage points as a *Close Republican Transition*. An example of a close Democratic transition is the 2016 North Carolina election decided earlier, where Roy Cooper replaced a sitting Republican governor by a slim margin. Close Republican transitions are like those in Illinois's 2014 election, where Republican Bruce Rauner prevailed over Democrat Pat Quinn by 3.9 percentage points to become governor.

Note that the definition of these transitions does not require the candidate who wins to defeat the incumbent governor. All that is required for an election to meet the definition of a close transition is for the margin to be within five percentage points and for the party that controls the governor's office to change. This is because the core hypothesis being tested is that Republican governors are systematically less likely to enact climate policies or enforce environmental regulations than Democrats. Therefore, a close, and therefore unexpected, switch in parties should allow us to test for the causal effect of gubernatorial politics on corporate emissions.[83]

As a first empirical test, I assess whether close elections—no matter which political party wins—generate a significant change in corporate carbon emissions. I estimate the following Poisson fixed effect model:

$$Emissions_{it} = exp\left(\beta CloseElection_{st} + \pi X_{it} + \delta_i + \theta_{jt}\right)\varepsilon_{it} \quad (2)$$

Recall that U.S. governor elections typically occur in November, while governors start a new term the following January. Therefore, I construct the indicator $CloseElection_{st}$ to equal 1 in year *t* if a close election (decided by a margin of less than five percentage points) occurred in the November of the previous calendar year, *t*–1. To give an example, if there were a close election in a state in November 2014, $CloseElection_{st}$ would equal 1 for that state for 2015, when the new governor who won the close contest started her term. The other terms in equation (2) retain the same meanings as equation (1). As before, I double cluster standard errors at the firm and year level.

If firms changed their level of emissions because of policy uncertainty,[84] as proxied by close elections, the coefficient for $CloseElection_{st}$ would be significant. Table 3 presents the baseline results from estimating equation (2). Columns (1) and (2) use the standard definition of close election (those decided by a margin of up to five percentage points). Columns (3) and (4) use an alternative, narrower definition of close elections: those where the victor's margin was no more than three percentage points. There were 32 elections during the sample period that met this alternative

[83] *See* Michael Koetter & Alexander Popov, *Political Cycles in Bank Lending to the Government*, 34 REV. FIN. STUD. 3138 (2021) (similarly testing for the causal effect of a switch in local governing party).

[84] There is a burgeoning and important new literature on the effect of policy uncertainty on an array of important economic outcomes. *See* Scott R. Baker, *Measuring Economic Policy Uncertainty*, 131 Q.J. ECON. 1593 (2016).

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definition of being closely contested. The dependent variable is the level of scope 1 emissions in columns (1) and (3), and the total sum of scope 1 and 2 emissions in columns (2) and (4). The coefficient for $CloseElection_{st}$ is insignificant in all four specifications in Table 3. Therefore, Table 3 provides no statistical support to the notion that corporate emissions change in response to close elections in general. If anything, certain types of close elections may influence the level of private sector pollution. In the rest of this Section, I show that close elections which lead to a change in the political party controlling the governor's mansion influence firm greenhouse gas emissions.

	(1)	(2)	(3)	(4)
	Margin ≤ 5		Margin ≤ 3	
	Scope 1	Scope 1+2	Scope 1	Scope 1+2
Close Election	0.00140	0.0117	-0.00718	0.00394
	(0.0962)	(0.782)	(-0.637)	(0.320)
Observations	44,907	44,907	44,907	44,907
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes

Table 3. Close Elections and Firm Greenhouse Emissions. This table presents the results of a Poisson fixed effects regression, for the period 2005-21, where the dependent variable is the level of scope 1 emissions in columns (1) and (3) and the sum of scope 1 and scope 2 emissions in columns (2) and (4). I define close elections as those where the victorious candidate's winning margin is within five percentage points in columns (1) and (2) and three percentage points in columns (3) and (4). All financial variables are winsorized at the 1% level, while greenhouse gas emissions are winsorized at the 2.5% level. Z-statistics are presented in parentheses. All columns include firm and industry-year fixed effects, and standard errors are double clustered at the firm and year level. The ***, **, and * denote significance at the 1%, 5%, and 10% levels.

For the next empirical test, I replace the $CloseElection_{st}$ indicator with the two variables for close political transitions described earlier: *Close Republican Transition*, where the governorship flips from Democratic to Republican hands in a close election, and *Close Democratic Transition*, where the opposite flip occurs, also in a closely contested election. For example, if a Republican replaced a Democratic governor in a November 2014 election, *Close Republican Transition* would equal 1 for that state in 2015, when the new Republican governor assumed office. I thus estimate the following equation:

$$Emissions_{it} = exp\big(\beta Close\ Republican\ Transition_{st} + \mu Close\ Democratic\ Transition_{st} + \pi X_{it} + \delta_i + \theta_{jt}\big)\varepsilon_{it} \quad (3)$$

Table 4 presents the results from estimating equation (3) where the dependent variable $Emissions_{it}$ equals a firm's scope 1 emissions. As before, I present the results defining close elections with both the five-point and three-point margins, and show results for both the baseline specification and controlling for time-varying firm financial variables. Across all four specifications of this table, the variable $Close\ Republican\ Transition_{st}$ has a positive and highly statistically significant (p<0.01) coefficient. In both the baseline specifications in columns (1) and (3), the governorship of a state changing hands from Democratic to Republican hands leads to an approximately 9.57% increase in firm scope 1 emissions. Therefore, a close election that leads to a Republican takeover of the governor's mansion leads to firm greenhouse gas emissions rising by almost a tenth—a

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quantitatively significant and credibly causal link between gubernatorial politics and corporate emissions.

	(1)	(2)	(3)	(4)
	Margin ≤ 5		Margin ≤ 3	
	Baseline	With Financials	Baseline	With Financials
Close Republican Transition	0.0914***	0.142***	0.0776***	0.155***
	(3.467)	(5.277)	(3.747)	(3.545)
Close Democratic Transition	-0.00306	-0.0645	-0.00394	-0.0636
	(-0.283)	(-1.455)	(-0.339)	(-1.205)
Ln(Assets)		0.512***		0.513***
		(9.847)		(9.856)
Return on Assets		-0.113		-0.110
		(-0.906)		(-0.894)
Ln(Book-to-Market Ratio)		-0.108		-0.109
		(-0.700)		(-0.703)
Capital Intensity		0.256		0.257
		(1.078)		(1.083)
Leverage		-0.473***		-0.471***
		(-3.271)		(-3.233)
Observations	44,907	23,080	44,907	23,080
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes

Table 4. Close Elections, Party Transitions, and Scope 1 Emissions. This table presents the results of a Poisson fixed effects regression, for the period 2005-21, where the dependent variable is the level of scope 1 emissions. I define close elections as those where the victorious candidate's winning margin is within five percentage points in columns (1) and (2) and three percentage points in columns (3) and (4). All financial variables are winsorized at the 1% level, while greenhouse gas emissions are winsorized at the 2.5% level. Z-statistics are presented in parentheses. All columns include firm and industry-year fixed effects, and standard errors are double clustered at the firm and year level. The ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Although $Close\ Democratic\ Transition_{st}$ has a negative coefficient in all four specifications in Table 4, none of these coefficients are statistically significant at traditional levels. One may have expected an equally large and significant *decrease* in firm emissions after a close election changes the governor's office from Republican to Democratic hands, given the Democratic Party's emphasis on climate policy and its enforcement.[85] However, the data does not support such a story. This is consistent with broader results in the literature on law and political economy arguing that modern U.S. politics is characterized by "asymmetric polarization." Under this theory, the Republican Party is more likely to prioritize its ideological commitments as a policy matter, while the Democrats are more prone to moderation.[86] Therefore, it is possible that after ascending to the

[85] *See supra* Part II.

[86] *See, e.g.*, MATT GROSSMAN & DAVID A. HOPKINS, ASYMMETRIC POLITICS: IDEOLOGICAL REPUBLICANS AND GROUP INTEREST DEMOCRATS (2016) (arguing that Republicans are an ideologically driven movement while Democrats are a

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governorship, Republicans set about implementing their deregulatory agenda and dismantling climate regulations and their enforcement. Democrats may be more hesitant to immediately implement climate rules, not least because they could be costly to businesses and impede economic growth, potentially alienating voters. This is especially true of close elections, where parties typically nominate moderate candidates with relatively centrist policies.[87]

If Republicans are asymmetrically polarized, they are less likely to nominate truly "moderate" candidates even in close elections.[88] Thus, Democratic victors in close elections may be more moderate than Republican winners, and less likely to pursue an aggressively ideological agenda on polarizing issues such as climate. Consistent with this theory, some Democratic governors have recently vetoed climate policies such as electric vehicle subsidies passed by legislators from their own party, for fear of alienating voters.[89] It is one thing for Democratic governors to join the U.S. Climate Alliance, as nearly all of them have done.[90] Such a move comports with their ideological commitments and appeals to their party base, while not imposing significant costs on voters who do not prioritize climate concerns. On the other hand, taking concrete steps such as proposing new climate rules or actively enforcing environmental regulations could hurt the local economy and increase voter dissatisfaction.

The results from Table 4 hence partially validate Hypothesis 2 described earlier in the text, which posited that an unexpected electoral change in the governor's political affiliation would lead to a change in corporate emissions. I find strong evidence that a switch in gubernatorial affiliation from Democratic to Republican hands in a close election leads to a rise in firm emissions. However, I fail to find similarly significant evidence that the governorship flipping from Republicans to Democrats in a closely decided election leads to a decrease in emissions. Therefore, while I establish a causal link between gubernatorial politics and corporate emissions, this relationship is driven by firms increasing their greenhouse gas levels after the election of Republican governors.

Table 5 presents the results from estimating equation (3), this time using the sum of scope 1 and 2 emissions as the outcome variable $Emissions_{it}$. $Close\ Republican\ Transition_{st}$ has a positive and significant coefficient in both baseline models. Columns (1) and (3) both suggest that firms increase the sum of scope 1 and 2 emissions by about 6.6% following a close election in which the governor's office switches hands from the Democratic Party to Republicans. The only difference from the previous table is that the coefficient for $Close\ Republican\ Transition_{st}$ is positive but not significant at traditional levels in column (4), where we control for firm financials and define close elections as those with a margin within three percentage points. However, we should not overinterpret the insignificance of this coefficient for two reasons. First, as discussed earlier, the non-availability of data for some financial variables reduces the sample size for specifications

coalition of different interest groups); Joseph Fishkin & David E. Pozen, *Asymmetric Constitutional Hardball*, 118 COLUM. L. REV. 915 (2018) (claiming that Republican officeholders have been more likely than Democrats to test the limits of the Constitution to advance their preferred policy outcomes).

[87] *See* Charles Barrilleaux et al., *Electoral Competition, Legislative Balance, and American State Welfare Policy*, 46 AM. J. POLI. SCI. 415, 416 (2002).

[88] This can be seen in the fact that Republicans have nominated ideologically extreme candidates even in races where it would have been rational for them to have a relatively moderate nominee. The Republicans have lost many of these elections in recent years. *See* Ezra Klein, *Republicans are Paying a Price for their Extremism*, VOX (Dec. 14, 2017), https://www.vox.com/policy-and-politics/2017/12/14/16772990/republicans-senate-majority.

[89] *See* Aton, *supra* note 31.

[90] *See supra* note 21–22 and accompanying text.

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including these controls. Second, using the three-point-margin definition leaves us with few (32) closely contested elections, further reducing the power of the regression model. As in Table 4, $Close\ Democratic\ Transition_{st}$ has a negative but insignificant coefficient in all specifications.

	(1)	(2)	(3)	(4)
	Margin ≤ 5		Margin ≤ 3	
	Baseline	With Financials	Baseline	With Financials
Close Republican Transition	0.0639**	0.0658**	0.0404**	0.0265
	(2.567)	(2.177)	(1.978)	(0.751)
Close Democratic Transition	-0.00335	-0.0456	-0.00500	-0.0492
	(-0.297)	(-0.934)	(-0.432)	(-0.918)
Ln(Assets)		0.528***		0.528***
		(12.20)		(12.20)
Return on Assets		-0.130		-0.129
		(-1.065)		(-1.061)
Ln(Book-to-Market Ratio)		-0.0317		-0.0312
		(-0.287)		(-0.283)
Capital Intensity		0.379*		0.381*
		(1.855)		(1.862)
Leverage		-0.450***		-0.450***
		(-3.944)		(-3.928)
Observations	44,907	23,080	44,907	23,080
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes

Table 5. Close Elections, Party Transitions, and Scope 1 and 2 Emissions. This table presents the results of a Poisson fixed effects regression, for the period 2005-21, where the dependent variable is the sum of the level of scope 1 and 2 emissions. I define close elections as those where the victorious candidate's winning margin is within five percentage points in columns (1) and (2) and three percentage points in columns (3) and (4). All financial variables are winsorized at the 1% level, while greenhouse gas emissions are winsorized at the 2.5% level. Z-statistics are presented in parentheses. All columns include firm and industry-year fixed effects, and standard errors are double clustered at the firm and year level. The ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Overall, the results from this Section support a causal interpretation for the relationship between the politics of governors and the level of greenhouse gas emissions by firms headquartered in their states. After a closely contested election in which Democrats lose control of the governor's office to Republicans, firms increase their direct emissions (i.e., scope 1) by 9.6% and their total emissions (i.e., the sum of scope 1 and scope 2) by 6.6%. This increase is both statistically and quantitatively significant. On the other hand, when Democrats replace a Republican governor in a close election, there is no significant change in firm emissions. This is consistent with a broader literature claiming that Republicans are more likely than Democrats to translate ideological commitments in areas such as climate into concrete policy changes once they are in office. It could also reflect Democratic

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governors' unwillingness to aggressively pursue climate policies that could slow economic activity and spark voter dissatisfaction.

V. POLICY IMPLICATIONS: STAKEHOLDER THEORY, CSR, AND CLIMATE DISCLOSURES

A. Stakeholderism and Regulatory Capture

This Article's empirical results, showing that companies change the level of their greenhouse gas emissions based on the political leaning of the governor in their headquarter state, is consistent with a broader story that economists have been telling about firm-state relations for more than half a century. The Nobel laureate George Stigler, writing in 1971, developed a theory of *regulatory capture* to explain why government regulation of various economic sectors often does not further the public interest. Although the textbook economics of the time assumed that political interventions in the market took the form of scientific policies aimed at fixing market failures, Stigler's insight was to show that that regulation can instead be a way politicians and regulated businesses further their own interests, often at the expense of the voting public.[91] In particular, he argued that politicians make the content of regulations more favorable to particular businesses in exchange for these companies' support in terms of campaign contributions, fundraising, and employment for political supporters.[92] One could imagine that in a populous democracy such as the United States, at least some of the many voters would be able to counteract such collusion between politicians and industry. However, the diffuse nature of such a large electorate, and the fact that business groups have far larger stakes in any particular regulation than virtually any individual voter, means that the electorate is unlikely to incur the cost in time or effort to investigate government policies.[93]

Regulation can therefore be seen as the product of bargaining between political authorities and the businesses they regulate. Empirical work in recent decades has shown that such bargaining is valuable to both politicians and businesspeople. Companies that maintain political ties with influential politicians benefit from higher market valuations,[94] superior access to state resources,[95] and a greater likelihood of government bailouts in times of financial distress.[96] On the other hand, politicians can benefit from corporate support in two ways. The most direct way politicians can benefit is through campaign contributions. A study found that after the U.S. Supreme Court's *Citizens United* decision,[97] Republicans became four percentage points more likely to win state house races. The authors of the study linked this phenomenon to the *Citizens United* decision's deregulation of corporate campaign contributions, since businesses are more likely to support Republican candidates.[98] Thus, politicians can become more likely to win elections if they receive financial support from businesses. The second way politicians can benefit is through *credit claiming*. The

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[91] *See* George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971). Stigler's paper has had an enduring influence on how economists analyze the causes and consequences of political interventions in markets in the United States and other economies. *See* Sam Peltzman, *George Stigler's Contribution to the Economic Analysis of Regulation*, 101 J. POL. ECON. 818 (1993).

[92] *See* Stigler, *supra* note 91, at 12.

[93] *See id.* at 11-12.

[94] *See* Raymond Fisman, *Estimating the Value of Political Connections*, 91 AM. ECON. REV. 1095 (2001).

[95] *See* Simon Johnson & Todd Mitton, *Cronyism and Capital Controls: Evidence from Malaysia*, 67 J. FIN. ECON. 351 (2003).

[96] *See* Mara Faccio et al., *Political Connections and Corporate Bailouts*, 61 J. FIN. 2597 (2006).

[97] 558 U.S. 50 (2010).

[98] *See* Tilman Klumpp et al., *The Business of American Democracy:* Citizens United*, Independent Spending, and Elections*, 59 J.L. & ECON. 1 (2016).

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political scientist David Mayhew defined credit claiming as "acting so as to generate a belief in [voters] that one is personally responsible for causing . . . something that the [voters] consider desirable."[99] Politicians can claim credit for expenditures incurred by private-sector corporations even if they had nothing to do with these projects. The political economy literature has extensively documented the prevalence and importance of credit claiming.[100]

The political cycle in corporate carbon emissions documented in Part IV can be reconciled with the regulatory capture theory. During Democratic governorships, political authorities are unlikely to propose regulations to benefit fossil fuel, mining, or electric utilities interests. These are the "brown industries" most associated with polluting activities.[101] Most brown industry companies support Republicans and do not contribute to the campaigns of Democratic politicians.[102] Therefore, campaign contributions are not typically a reason for Democratic governors to craft policies that are favorable to brown industries. Similarly, given Democratic voters' deeply-held concerns about climate change,[103] Democratic officeholders are unlikely to want to claim credit for corporate activities such as the inauguration of a new coal plant. Republican governors' political incentives are exactly the opposite. Given the heavily Republican-leaning political orientation of brown industries, Republican governors stand to receive significant campaign contributions from these firms, which should lead them to frame policies that are more favorable to these interests.[104] Republicans are also more likely to credit claim for brown industry activities. Since Republican voters are more likely to view fossil fuels favorably,[105] a Republican politician is more likely to claim credit for her ability to lure fossil fuel projects to her state. The Republican-majority Texas legislature, for example, recently passed a legislation providing $5 billion in loans and grants specifically to encourage the construction of gas-fired power plants.[106]

Economic theories of regulatory capture hence help us understand why Democratic governors craft new climate policies and emphasize the enforcement of existing regulations, as discussed in Part II. This link between regulatory capture and the political carbon cycle adds to an emerging literature on the shortcomings of the "stakeholder" model of corporate governance. Traditionally, corporate law has been conducted under a shareholder wealth maximization paradigm: managers must operate the business with a single-minded focus on increasing the financial returns of equityholders.[107] However, in recent years, commentators have suggested that firms should broaden the range of actors whose welfare and interests managers should consider when making decisions. This view of corporate governance is called the "stakeholder" model.[108] Some scholars have even suggested that faithfully maximizing shareholder *welfare* (rather than merely increasing shareholder

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[99] *See* MAYHEW, *supra* note 16, at 53.
[100] *See* Justin Grimmer et al., *How Words and Money Cultivate a Personal Vote: The Effect of Legislator Credit Claiming on Constituent Credit Allocation*, 106 AM. POLI. SCI. REV. 703 (2012); Saad Gulzar & Benjamin J. Pasquale, *Politicians, Bureaucrats, and Development: Evidence from India*, 111 AM. POLI. SCI. REV. 162 (2017).
[101] *See supra* note 48 and accompanying text.
[102] *See Oil and Gas Summary*, OPEN SECRETS, https://www.opensecrets.org/industries/indus?ind=E01 ("Since the 1990 election cycle, more than two-thirds of this sector's contributions to candidates and party committees has gone to Republicans. Besides oil and gas, the electric utilities industry is another big donor in this sector. Less generous, but even more partisan, is the mining industry.").
[103] *See supra* Part II.
[104] *See* OPEN SECRETS, *supra* note 102.
[105] *See supra* Part II.
[106] *See* POLITICO E&E NEWS: CLIMATE WIRE, *supra* note 31.
[107] *See* Hansmann & Kraakman, *supra* note 5.
[108] *See* Lund, *supra* note 6.

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wealth) requires managers to consider the interests of constituencies such as workers and consumers.[109] Responding to such views, many states (crucially, including Delaware, which is the state of incorporation for most major U.S. firms) have passed statutes allowing for public benefit corporations (PBCs). PBCs are companies whose managers are statutorily allowed to balance concerns for shareholder wealth *and* the welfare of others affected by the companies' business operations (such as employees and consumers).[110]

An abiding concern about the stakeholder model is that in allowing managers to consider the interests of multiple constituencies, it leaves them free to only pursue their own. While the shareholder primacy model gives managers a simple command (to maximize the market value of the firm), stakeholderism provides no discernible framework in choosing between the often-conflicting interests of different constituencies, such as workers and consumers. As the economist Michael Jensen put it:

> [S]takeholder theory . . . leaves managers and directors in . . . firms unaccountable for their stewardship of the firm's resources. With no criteria for performance, managers cannot be evaluated in any principled way. Therefore, stakeholder theory plays into the hands of self-interested managers to pursue their own interests at the expense of society and their financial claimants. . . By expanding the power of managers in a powerful and unproductive way, stakeholder theory therefore increases agency costs in the economic system. Viewed in this way it is not surprising that so many managers like it.[111]

The political carbon cycle is arguably an example of managers using their discretion in an inappropriate manner. Corporations claim that they are reducing emissions to benefit society as a whole, and to safeguard the interests of vulnerable communities most likely to suffer the consequences of global warming.[112] However, this Article's empirical analysis suggests that they might instead be catering to the interests of powerful politicians and governmental authorities. My objective here is not to adjudicate between longstanding debates between shareholder primacy and stakeholderism. Instead, this Article's evidence regarding political cycles in corporate greenhouse gas emissions should be seen as fitting a broader pattern of corporate managers failing to follow through on their declared pro-sociality, and instead self-interestedly increasing pollution levels when the expected political costs of such activities decrease.

B. The Inadequacy of Voluntary CSR

An important feature of the contemporary CSR movement in the U.S. is its voluntariness. Several major publicly traded corporations today claim that they aim to *voluntarily* become more eco-friendly. More specifically, many of the largest U.S. companies have pledged to significantly reduce their greenhouse gas emissions. The Business Roundtable, a prominent association of about 200 chief executive officers (CEOs) of some of the country's largest businesses, state that they "are

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[109] *See* Oliver Hart & Luigi Zingales, *Companies Should Maximize Shareholder Welfare Not Market Value*, 2 J.L. FIN. & ACCT. 247 (2017).

[110] *See generally* Leo E. Strine Jr., *Making It Easier for Directors to "Do The Right Thing"?*, 4 HARV. BUS. L. REV. 235 (2014) (providing an overview of the PBC movement).

[111] *See* Michael C. Jensen, *Value Maximization, Stakeholder Theory, and the Corporate Objective Function*, 7 EURO. FIN. MGMT. 297, 305 (2001). Jensen coauthored the original work that laid out the original thesis about "agency costs" between corporate managers and shareholders. *See* Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976).

[112] *See, e.g.*, *Communities*, BUS. ROUNDTABLE, https://opportunity.businessroundtable.org/communities/ (linking "environmental and economic sustainability" to "supporting . . . local communities").

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committing to long-term greenhouse gas reduction goals and deploying comprehensive strategies to optimize energy usage."[113] Beyond the Roundtable, hundreds of companies have pledged to reach a goal of "net-zero" greenhouse gas emissions by 2050.[114] The economic theory of regulation outlined in the previous Section clearly tells us that companies *can* increase emissions when a Republican governs their state. However, it does not necessarily imply that they *must* raise emissions when the political leaning of the local governor changes. If the CEOs of companies with climate change pledges were walking the walk, they would presumably not alter their emissions in response to Republican administrations. Instead, we would see a steady decrease in corporate emissions over time, regardless of state-level political cycles. The empirical results in Part IV instead support a more cynical theory: voluntary corporate carbon pledges may simply be a form of "cheap talk"[115] that is not backed by concrete steps by CEOs and other executives to reduce emissions. Consistent with this cynical account, the Business Roundtable's membership includes some of the worst polluters in the United States, including ExxonMobil and ConocoPhillips.[116]

The empirical scholarship suggests that managerial insincerity and opportunism have tainted voluntary corporate pledges to increase environmental CSR and reduce firms' negative effects on the climate. For instance, in August 2019, the Business Roundtable released a major statement announcing that its members would move away from the shareholder-centric model and become more socially responsible. Included as a key plank of this new approach toward corporate governance was a commitment to "protect the environment."[117] However, subsequent empirical work has shown that the signatories of the 2019 statement have not walked the walk. Business Roundtable members who signed the 2019 statement have subsequently been *more* likely to report significant violations of environmental regulations than peer firms in the same industries, and had to pay larger fines. Moreover, these firms have spent more money lobbying political authorities for favorable regulations than peer firms that did not sign the 2019 Business Roundtable declaration.[118]

The political carbon cycle documented in this Article supports the existing scholarship on the potential insincerity of corporate emission reduction pledges. However, at a broader level, it introduces a new dimension of why voluntary environmental CSR might always be inadequate: the primacy of politics, and the perverse incentives some governmental authorities offer to corporate managers to increase pollution levels. As long as about half of U.S. governors are climate skeptics and do not prioritize either creating new climate rules or enforcing existing environmental regulations,[119] managers will always be tempted to increase emissions. The existence of the political

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113 *See Reducing Carbon Emissions*, BUS. ROUNDTABLE, https://businessroundtable.org/reducing-carbon-emissions.
114 *See* Daniel C. Esty & Nathan de Arriba-Sellier, *Zeroing in On Net-Zero: From Soft Law to Hard Law in Corporate Climate Change Pledges*, 94 COLO. L. REV. 635 (2023).
115 In economic theory, cheap talk is a type of message that does not cost the speaker anything to convey, and is thus not considered credible. *See* Joseph Farrell & Matthew Rabin, *Cheap Talk*, 10 J. ECON. PERSP. 103 (1996).
116 *See Members*, BUS. ROUNDTABLE, https://www.businessroundtable.org/about-us/members.
117 *See Business Roundtable Redefines the Purpose of a Corporation to Promote 'An Economy That Serves All Americans'*, BUS. ROUNDTABLE (Aug. 19, 2019), https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans.
118 *See* Aneesh Raghunandan & Shivaram Rajgopal, *Do Socially Responsible Firms Walk the Talk?*, J.L. & ECON. (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3609056. Professors Lucian Bebchuk and Roberto Tallarita have also shown that the Business Roundtable members have failed to live up to the August 2019 declaration. *See* Lucian A. Bebchuk & Roberto Tallarita, *Will Corporations Deliver Value to All Stakeholders?*, 75 VAND. L. REV. 1031 (2023).
119 As of January 1, 2024, 26 of the 50 state governors were Republicans. *See Governors*, NATL. GOV. ASS'N, https://www.nga.org/governors/.

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cycle does not imply that voluntary corporate emissions pledges are *bad*: in the absence of such pledges, one can imagine that corporations would increase pollution under Republican governors to an even larger degree. However, this cycle indicates that voluntary corporate environmental CSR is not enough to address the societal challenge of global warming by itself. Changing Republican attitudes toward global warming and making the policies of Republican officeholders more environmentally sustainable are daunting tasks,[120] and I do not delve into how one might do so in this Article. But a clear policy takeaway from the empirical results is that political cycles in climate policy and enforcement can significantly undermine whatever utility voluntary corporate CSR has in reducing corporate emissions.

The deleterious effect of politics on CSR has previously been shown in empirical work on the system of corporate philanthropy in India. Since 2015, India has required companies meeting certain size or profitability thresholds to mandatorily contribute at least two percent of their net profits to philanthropy. Relevant to this Article's subject matter, environmental causes count as an important spending category that is eligible for the CSR designation under the Indian system.[121] The Indian parliament passed this legislation with the declared aim of having wealthy corporations do their part in combating serious societal problems like inequality and climate change. However, scholarly analyses of this new system have mostly arrived at pessimistic conclusions. Politicians have treated corporate CSR funds as opportunities to further their own political careers, demanding that companies prioritize projects that help their reelection prospects rather than those that maximize social welfare.[122] Companies that had previously been spending more than two percent of net profits on CSR *decreased* such spending after the legislation, since they had now received a signal from the government that two percent was "enough" to be socially responsible.[123] Finally, reflecting the political capture of the CSR system, politically dependent firms decrease CSR spending when there are elections in their headquarter state and redirect these funds toward campaign contributions for locally influential politicians.[124]

The Indian CSR system is different from the greenhouse gas emission reduction pledges by U.S. firms discussed earlier in this Section in two important ways. First, it is a (supposedly) *mandatory* system where firms *have to* spend a certain amount on CSR, unlike the voluntary emission reduction policies of U.S. companies such as the Business Roundtable members. Second, the Indian CSR system might be an inapposite analogy because of the obvious social, political, and economic differences between the U.S. and India.[125] However, both the Indian CSR system and the U.S. corporate emissions studied in this Article share one significant feature: corporations are less likely to abide by pledges to act in a stakeholder-friendly manner, whether self-imposed or legally

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120 *See, e.g.*, Dan M. Kahan, *Climate-Science Communication and the* Measurement Problem, 36 ADV. POL. PSYCH. 1 (2015) (explaining the challenge in measuring and changing Republican attitudes toward climate change).
121 *See* Dhammika Dharmapala & Vikramaditya Khanna, *The Impact of Mandated Corporate Social Responsibility: Evidence from India's Companies Act of 2013*, 56 INT'L REV. L. & ECON. 92 (2018).
122 *See* Damien Krichewsky, *CSR Public Policies in India's Democracy: Ambiguities in the Political Regulation of Corporate Conduct*, 19 BUS. & POL. 510 (2017).
123 *See* Dharmapala & Khanna, *supra* note 121; Hariom Manchiraju & Shivaram Rajgopal, *Does Corporate Social Responsibility (CSR) Create Shareholder Value? Evidence from the Indian Companies Act 2013*, 55 J. ACCT. RSCH. 1257 (2017).
124 *See* Dhruv Chand Aggarwal, *The Politics of Mandatory Corporate Philanthropy*, J.L. & ECON. (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4377655.
125 *See generally* Roberta Romano, *A Cautionary Note on Drawing Lessons from Comparative Corporate Law*, 102 YALE L.J. 2021 (1993) (describing various problems in extrapolating lessons for the U.S. system based on corporate law systems in countries with markedly different political and economic conditions).

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mandated, when it becomes politically expedient to do so. Such political cycles are a major obstacle in using CSR to address societal issues such as global warming.

C. The Climate Disclosure Debate

The previous Section focused on the mushrooming number of major U.S. corporations that have pledged to reduce their greenhouse gas emissions. An important aspect of these pledges is their *voluntariness*: companies are free to determine how much they will reduce their emissions, and the timeline for such reduction. Indeed, they are free to not abide by their pledges at all.[126] This is consistent with the flexible nature of U.S. corporate law, which is based on the state of incorporation and typically defined by a set of default rules. Default rules are rules supplied by state corporation statutes that govern a corporation's internal affairs *unless the company decides to change them*. In other words, default rules can be altered by a firm's management or shareholders by altering the corporate charter or bylaws.[127] U.S. state corporate law does not usually prescribe the substantive content of corporate policies via mandatory (i.e., binding) rules. This partially explains why U.S. corporate carbon pledges are emphatically voluntary in nature, while countries like India can mandate that their companies contribute to CSR.[128]

There is, however, an area of U.S. business law that typically employs mandatory, and not default, rules: securities regulation.[129] The rationale for security regulation's use of mandatory rules is that it is administered at the federal level. Congress has passed nationally applicable securities laws, and the federal SEC administers these laws and passes regulations for all U.S. firms. Unlike corporate law, there is no state competition in corporate law. Therefore, while a company can change the default rules that apply to its internal functioning by reincorporating from one state to another, it may not change the securities regime it faces while it still operates in the United States and solicits investments from American investors.[130] It is within this securities regulation ecosystem that the first mandatory U.S. regulations regarding environmental CSR have emerged, with the SEC

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[126] As noted in the previous Section, many of the prominent signatories of such pledges subsequently did not abide by them. *See supra* note 118 and accompanying text.

[127] *See* Melvin Aron Eisenberg, *The Structure of Corporation Law*, 89 COLUM. L. REV. 1461 (1989). The details of *how* the corporation can change default rules matter a great deal. For instance, contemporary boards can usually unilaterally enact bylaw amendments, while charter amendments need shareholder approval. *See* Jill E. Fisch, *Governance by Contract: The Implications for Corporate Bylaws*, 106 CALIF. L. REV. 373 (2018). However, such distinctions are not important for this Article's purposes.

[128] *See supra* Section V.A.

[129] While U.S. securities law uses mandatory rules, other jurisdictions use a "comply or explain" approach. Under this approach, companies must either state that they comply with a given securities rule, or explain why they are out of compliance. The comply or explain mode of securities regulation is commonly used in Europe and the United Kingdom. *See* Christian Andres & Erik Theissen, *Setting a Fox to Keep the Geese—Does the Comply-or-Explain Principle Work?*, 14 J. CORP. FIN. 289, 290-91 (2008).

[130] *See generally* ROBERTA ROMANO, THE ADVANTAGE OF COMPETITIVE FEDERALISM FOR SECURITIES REGULATION (2002) (explaining the difference between the federalist system of U.S. corporate law and the centralized nature of securities regulation, where the SEC has exclusive jurisdiction). The predominance of default and mandatory rules in state corporate law and federal securities law, respectively, also helps explain the different ways these systems of law are enforced. The SEC, like other administrative agencies, can issues its own interpretations of federal securities laws, which are often treated as authoritative by the courts. *See, e.g.*, Ross v. Sec. & Exchg. Comm'n, 34 F.4th 1114, 1120 (D.C. Cir. 2022) (deferring to the SEC's interpretation of the Dodd-Frank Act applying the *Chevron* doctrine). It has the ability to bring administrative actions or federal court cases against violators. *See* Stephen J. Choi & Adam C. Pritchard, *The SEC's Shift to Administrative Proceedings: An Empirical Assessment*, 34 YALE. J. ON REG. 1 (2017). On the other hand, there is no centralized agency to enforce Delaware corporate law. Instead, individual shareholders must bring fact-intensive lawsuits claiming that the directors acted in bad faith or violated the corporation's bespoke set of rules. *See* Albert H. Choi & Geeyoung Min, *Contractarian Theory and Unilateral Bylaw Amendments*, 104 IOWA L. REV. 1 (2018).

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recently finalizing its climate disclosure rules. The remainder of this Section briefly details these climate rules, and then analyzes them in light of the political carbon cycle documented in this Article.

In a July 2021 speech, SEC Chair Gary Gensler announced that the commission was considering introducing climate disclosure rules. Gensler pointed to the widespread adoption of voluntary emission reduction pledges by the largest public companies, and support for climate disclosure by investors, as reasons for proposing such a rule.[131] Gensler also alluded to an aspect of these preexisting corporate emissions pledges previously discussed in Section V.B.: since these pledges are voluntary, they are often vague and do not provide investors with concrete information about the firm's emissions levels. For instance, Gensler pointed out that companies' voluntary carbon disclosures often did not tell investors what proportion of emissions were directly attributable to the firm (scope 1 emissions), related to the purchase of electricity and other types of energy (scope 2), or imputed from the supply chain (scope 3).[132] Gensler's complaint about the voluntary system of corporate carbon disclosure echoes a broader argument historically made by supporters of mandatory disclosure. Without a standardized system of disclosure prescribed and policed by a regulator like the SEC, each company would present information in its own format and using potentially disparate standards.[133] This could confuse investors and undermine the informational role of disclosure. For instance, if every company presented its financial information using different accounting methods, investors would need to understand the assumptions underlying each of these methods to compare investment opportunities. This would probably not be a worthwhile investment of time or effort for a vast majority of market participants. Therefore, Gensler's proposal sought to make firms' climate impact informationally legible to investors.

The SEC released an initial draft of its climate rules in March, 2022. The proposed version of these rules required a mix of quantitative disclosure of emission levels and qualitative descriptions of the company's climate exposure and related governance activities. Companies would be required to disclose their scope 1 and scope 2 emissions. They would also need to disclose scope 3 emissions, but only if those emissions were material or the company's own carbon emission reduction target explicitly referred to decreasing scope 3 emissions. The qualitative aspect of the proposed regulations included mandatory managerial discussion of climate-related risks and their effects on the company's business, as well as an identification of the steps the firm had taken to mitigate these risks.[134]

The release of the initial SEC climate rules provoked a firestorm of academic debate about their lawfulness and desirability. Supporters of the climate rules contended that the statutory text and legislative history of the New Deal-era securities laws allowed the SEC to enact rules requiring companies to disclose information about their climate impact and level of greenhouse gas emissions. Specifically, these supporters argued that information about emissions would play a salutary role in helping investors decide how much they ought to pay for shares of companies. An investor could choose not to purchase shares of a company, or reduce their valuation of the stock, if the disclosures

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131 *See* Gary Gensler, Prepared Remarks Before the Principles for Responsible Investment "Climate and Global Financial Markets" Webinar, SEC. & EXCHG. COMM'N (July 28, 2021), https://www.sec.gov/news/speech/gensler-pri-2021-07-28.

132 *See id.*

133 *See* Jill E. Fisch, *Making Sustainability Disclosure Sustainable*, 107 GEO. L.J. 923, 947-48 (2019).

134 *See SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors*, SEC. & EXCHG. COMM'N (Mar. 21, 2022), https://www.sec.gov/news/press-release/2022-46

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left them with the impression that the company's climate risks were high or if the firm did not have an acceptable strategy to mitigate these risks.[135] Opponents of the SEC's climate rules stress the fact that Congress itself has never adopted national emissions targets, and a company does not, under current law, face financial penalties for emitting carbon. Therefore, they argue, it is unclear how requiring disclosure of scope 1 and scope 2 emissions without any materiality requirement would benefit shareholders. As for the effect of climate disclosure on accurate pricing for a company's stock, opponents of the SEC rule pointed to empirical research failing to find that most of the climate information required by the proposed rule was material to market participants in making investment decisions. In other words, opponents of the SEC rule contend that climate disclosure will not help investors to more accurately price corporate stock, since much of the information the rule would require is irrelevant to their investment decisions.[136]

Without adjudicating between these powerful arguments for and against the SEC's rules, it is important to note that the significant disagreement between experts was accompanied by the SEC's hesitance to promulgate a final rulemaking to implement climate disclosure. The Commission repeatedly delayed finalizing the rules. On December 6, 2023, the Commission revealed that it would again delay a final decision, and would next consider a set of final climate rules in spring 2024.[137] The SEC was buffeted not just by the disagreement between leading securities commentators, but also the threat of lawsuits by business groups such as the U.S. Chamber of Commerce.[138] One sign of the Commission's anxiety about its climate rules being challenged and struck down in court was that it eventually announced that it will not require firms to reveal their scope 3 emissions.[139] The SEC announced its final rules on March 6, 2024, which require corporate management to discuss the climate risks facing their companies and to disclose scope 1 and 2 (but not scope 3) emissions.[140] However, less than a month later, on April 4, 2024, the Commission stayed these rules after facing lawsuits from business groups and Republican-governed states alleging that the SEC had exceeded its legal authority.[141]

The SEC's climate disclosure rules, while temporarily stayed, have an important implicit policy goal. These rules assume that climate-conscious investors can "punish" management by not investing in their company and pushing companies to transition away from fossil fuels. The SEC's justifications for its rule as published in the Federal Register repeatedly link disclosure of scope 1 and scope 2 emissions to "a transition to a low-carbon economy."[142] Supporters of the rules similarly link their enactment to subsequent reductions in the level of emissions.[143] While the rules may officially purport only to mandate disclosure, they seem to have an underlying policy goal to reduce

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135 *See* Fisch et al., *supra* note 8, at 1–4. As this letter points out, standardized climate disclosure can help investors assess whether the company had a concrete plan to address its climate exposure, or if it was deliberately trying to obfuscate climate-related risks. This latter phenomenon is referred to as "greenwashing," which supporters suggest the SEC climate rules can counteract. *See id.* at 4.

136 *See* Cunningham et al., *supra* note 8.

137 *See* Soyoung Ho, *SEC Once Again Delays Action on Final Climate Disclosure Rule*, THOMSON REUTERS (Dec. 12, 2023), https://tax.thomsonreuters.com/news/sec-once-again-delays-action-on-final-climate-disclosure-rule/.

138 *See id.*

139 *See* Renshaw et al., *supra* note 45.

140 *See* SEC. & EXCHG. COMM'N, Final Rules, *supra* note 7.

141 *See* PWC, *supra* note 9.

142 *See* The Enhancement and Standardization of Climate-Related Disclosures for Investors, 87 Fed. Register 21334, 21434 & 21446 (Apr. 11, 2022).

143 *See* Madison Condon et al., *Mandating Disclosure of Climate-Related Financial Risk*, 23 NYU J. LEGIS. & PUB. POL'Y 745, 790–91 (2021).

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the level of carbon emissions.[144] This policy objective assumes that carbon disclosures primarily have investors as their audience. Under this theory, investors will pay attention to the disclosures and incorporate them into financial decisions, and lobby management into reducing emissions and transitioning toward cleaner energy sources.

If we accept this premise, and expect investors to use emission disclosures to advocate for reduced corporate emissions, the SEC's finalized climate rules could be a significant step toward ameliorating the political carbon cycle identified in this Article. In recent years, various market participants ranging from individual retail investors to asset managers with trillions of dollars of assets under management have expressed interest in nudging corporations to become more socially responsible and specifically cut emissions. Many retail investors have expressed interest in companies that prioritize environmental, social, and corporate governance (ESG) goals.[145] Similarly, the three largest asset managers—BlackRock, Vanguard, and State Street—have announced that they will engage with management at portfolio companies that have excessive carbon emissions.[146] It is therefore conceivable that some combination of pressure from these different investors would translate to tangible climate action at companies that would now be publicly revealed to be heavy polluters. Consistent with this expectation, SEC Chair Gary Gensler invoked the demand for climate information by both "[l]arge and small investors" when initially announcing the climate rules.[147] Managers could become hesitant to ramp up polluting activities and the resulting emissions under Republican rule if investors are keeping a watchful eye on climate disclosures, and especially if these investors are aware of the potential for a political carbon cycle. A novel justification for the SEC's climate rules thus is that investors can use these new corporate disclosures to disrupt the firm-state nexus that causes corporate pollution to increase when there is a Republican governor in a company's headquarter state.

However, any optimistic assessment of the potential role of the SEC climate rules in countering the political carbon cycle crucially relies on investors *using* these disclosures to advocate for more environmentally friendly corporate practices. Recent empirical evidence should give us pause when imagining that either large or small investors would be effective in pushing managers to reduce carbon emissions. Retail investors flocked to a group of companies, such as AMC and GameStop, that became known as "meme stocks" in recent years. However, with the increase in retail ownership, these firms' ESG scores markedly deteriorated, in contrast to retail investors' stated preference for prosocial causes.[148] Turning to institutional investors, recent research has found that the three largest asset managers, despite their stated policies on nudging managers to cut emissions, do not seem to take greenhouse gas emissions into account when deciding which portfolio

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[144] This is consistent with a broader theme in disclosures relating to sustainability. While the official purpose of disclosure is to ensure the accurate pricing of securities, investors and other constituencies who seek disclosure on matters such as climate actually do so because they have some sort of policy preference (such as the reduction of greenhouse gas emissions). *See* Ann M. Lipton, *Mixed Company: The Audience for Sustainability Disclosures*, 107 GEO. L.J. ONLINE 81 (2018).

[145] *See* Quinn Curtis et al., *Do ESG Funds Deliver on Their Promises?*, 120 MICH. L. REV. 393, 404 (2021).

[146] *See* José Azar et al., *The Big Three and Corporate Carbon Emissions Around the World*, 142 J. FIN. ECON. 674 (2021).

[147] *See* Gensler, *supra* note 131.

[148] *See* Dhruv Aggarwal et al., *Meme Corporate Governance*, S. CAL. L. REV. (forthcoming 2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4347885. Other research has also found that retail investors are actually less likely than their institutional counterparts to vote for ESG proposals. *See* Alon Brav et al., *Retail Shareholder Participation in the Proxy Process: Monitoring, Engagement, and Voting*, 144 J. FIN. ECON. 492 (2022).

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companies to engage with regarding corporate governance.[149] Investors, both small (retail) and large (institutional), may hence not be practicing what they preach when it comes to forcing companies to cut emissions. They would need to translate their climate rhetoric into action in their interactions with corporate managers for the climate disclosure rules to have a significant effect in diminishing the political carbon cycle.

Even if investors were following through on their promises to punish managers for excessive greenhouse gas emissions, an important countervailing force may make such efforts moot: the brute force of governmental power. As discussed in Section V.A., political connections and proximity to government power carries tangible economic benefits for corporations.[150] Moreover, government in the contemporary United States wields an enormous amount of regulatory power over corporations of all sizes and across industries. As George Stigler put it in his original article on the theory of regulatory capture, government can use taxation and regulation as a "threat to every industry in the society," using the "power to prohibit or compel" as a credible danger to the profitability of private enterprises.[151] Compared to these unparalleled powers of state coercion, which Part IV of this Article shows Democratic and Republican governors can use to reduce or decrease emissions respectively, the shaky mechanisms of investor influence on greenhouse gas levels may pale in comparison.[152] A vivid illustration of the dominance of political pressure over securities disclosure is the fact that the current litigation against the SEC climate rules has been spearheaded by Republican-governed states.[153]

A novel justification for the SEC's climate rules thus is that the information in these disclosures would allow investors to advocate for emission reductions, and to reduce the extent of political cycles in corporate carbon emissions. However, such an argument depends on investors being able to effectively push corporations and managers to reduce carbon emissions once they are aware of each firm's climate risk. Recent empirical work in corporate governance indicates both retail and institutional investors may not actually take climate concerns into consideration when engaging with managers.[154] In contrast, the strong ideological preferences of Democratic and Republican governors for more and less climate regulations and enforcement, respectively, translate into quantitatively and statistically significant differences in the levels of greenhouse gas emissions for companies headquartered in their states. Even if small and large investors were perfectly consistent in using climate disclosures to advocate for emission reductions, the political economy literature suggests their influence could be outstripped by the political priorities of governors, who exercise state powers such as taxation and regulation over the private sector. Therefore, a future climate disclosure regime is unlikely to be immune from Republican skepticism regarding climate change and the wisdom of government regulation in this area. For the climate disclosure rules to have a noticeable

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[149] *See* Dhruv Aggarwal et al., *Big Three (Dis)Engagements* (Dec. 6, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4580206.

[150] *See supra* notes 94–96 and accompanying text.

[151] *See* Stigler, *supra* note 91, at 3.

[152] Shareholders engaged in climate activism are often themselves politically motivated actors. Relatively Democratic-leaning shareholders are especially likely to submit shareholder proposals on environmental issues to Republican-leaning firms. *See* Geeyoung Min & Hye Young You, *Active Firms and Active Shareholders: Corporate Political Activity and Shareholder Proposals*, 48 J. LEGAL STUD. 81 (2019). Faced with satisfying the preferences of two political actors—an activist shareholder and the government of the local jurisdiction—corporate management would presumably rationally select those of the latter, since it yields concrete state powers of taxation and regulation as described in Stigler, *supra* note 91, at 3.

[153] *See* PWC, *supra* note 9.

[154] *See supra* notes 148–149 and accompanying text.

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impact in reducing the political carbon cycle, retail and institutional investors need to increase the role of environmental concerns in their engagements with corporate management.

An empirical finding regarding the Indian CSR system discussed earlier in Section V.B. could help us understand the promise of investors in advocating for corporate sustainability. Companies are significantly more likely to comply with their statutory CSR targets if they have greater institutional ownership. Moreover, politically dependent companies are less likely to divert funds from CSR toward campaign contributions in election years if institutional ownership is higher. The extent of election-year reductions in CSR spending and redirection of CSR funds toward political donations is markedly smaller for firms that have above-median institutional ownership, as opposed to those with below-median institutional ownership.[155] This is an important sign of the monitoring role such investors can play in ensuring that politics does not trump a corporation's obligations to society. It is all the more remarkable that institutional investors are able to play such a role in India, where politicians' control over corporate CSR is well-documented. Indian corporate CSR managers think of politicians as the "top team" who "always get their way" in deciding which projects companies will spend their CSR funds on.[156] This is because, as in the United States, Indian politicians wield state power over corporations in a way even the most influential and resourceful activist does not. Nevertheless, institutional investors are able to ensure that corporations behave more responsibly through their share ownership.

If retail and institutional investors were to play a similar role in the U.S., utilizing information about corporate climate impact from the SEC's climate disclosure rule, they could help to at least partially reverse the effect of gubernatorial political cycles. This Article's empirical finding thus establishes a novel justification for the salutary policy effects of the climate rules. However, prior work in corporate governance and political economy suggests that U.S. investors must increase their engagement with management on environmental issues to be able to compete with political actors in determining the extent of corporate pollution.

VI. CONCLUSION

This Article presents an original empirical analysis of the law and political economy of corporate greenhouse gas emissions in the United States. Combining proprietary data on corporate carbon emissions with a hand-collected dataset tracking the careers of governors, I find that gubernatorial politics affects the extent of polluting activities by publicly traded U.S. companies. Companies increase scope 1 emissions, the types of greenhouse gas emissions directly attributable to their own activities, by 7.5% when there is a Republican governor in their headquarter state. Companies increase the total sum of scope 1 and scope 2 emissions (the latter referring to emissions traceable to their purchase of electricity and other forms of energy) by 7% during Republican administrations in their headquarter jurisdiction. To assess whether there is a causal link between gubernatorial ideology and corporate emissions, I collect information about the margins of victory between Democratic and Republican candidates in elections held during the sample period. I find that firms increase their direct emissions by 9.6% and total emissions by 6.6% the year after a Republican replaces a Democratic governor in a closely contested election. This provides strong evidence for the governor's partisan affiliation having a direct causal effect on the polluting activities of companies based in their state. All regression specifications in this Article account for firm, industry,

[155] *See* Aggarwal, *supra* note 124.
[156] *See* Ninitha Koya & Juliet Roper, *Legislated CSR in Practice: The Experience of India*, 22 J. PUB. AFF. 1, 6 (2022).

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and time-specific trends and employ doubly robust standard errors, increasing confidence in the main finding that there is a political cycle in corporate pollution.

The empirical results are consistent with longstanding literature on stark partisan differences in the extent to which Democrats and Republicans consider climate change to be a serious policy concern. The politicization of the climate issue in contemporary U.S. politics often entails Democrats seeing pro-climate policies as part of their partisan identity, while Republicans may view climate change mitigation as antithetical to their beliefs. This partisan divide is reflected in the rhetoric and actions of elected officials. Democratic officials are more likely to enact new climate-friendly laws and regulations, and enforce existing environmental policies vigorously. Republican officials, on the other hand, are more likely to roll back environmental policies as part of a deregulatory agenda and under-enforce climate-related rules already on the books. This Article's empirical contribution is to demonstrate that companies respond to the differential incentives generated by such partisan differences, increasing their emissions when relatively climate-skeptical Republican governors are in control.

The existence of a political carbon cycle has three main legal and policy implications. First, it poses a challenge to those who want corporate law to move from focusing on shareholder wealth maximization to safeguarding the welfare of vulnerable communities such as workers and consumers. A central assumption of such a stakeholder model is that giving corporate managers greater discretion over business operations will lead to them paying more attention to the interests of such communities. However, this Article's empirical results suggest that managers might cater to the political agendas of influential politicians rather than the interests of workers and consumers. When managers are free to serve the interests of multiple constituencies, they might only accommodate the whims of powerful governments and politicians. Counteracting this tendency is a key challenge for stakeholderism moving forward.

Second, the Article's analysis should make us question the promise of voluntary corporate social responsibility (CSR) initiatives. Many leading U.S. companies have voluntarily pledged to significantly cut their carbon emissions and become more climate-conscious. However, this Article's empirical results suggest that voluntary corporate action may be inadequate in addressing the societal challenge of climate change. So long as about half the nation's governors are climate skeptics and do not prioritize new climate policies or the enforcement of existing environmental regulations, corporate managers will be incentivized to increase emissions when their headquarter state is governed by a Republican. Addressing climate change thus requires not just voluntary corporate pledges, but also a change in Republican attitudes toward climate.

Third, the Article's empirical results relate to the ongoing debate about the SEC's final climate disclosure rules, which have recently been stayed after being challenged by Republican-governed states and business groups in court. The rules have generated a significant academic debate, with different experts expressing support and opposition for the legality and wisdom of climate disclosure. The rules contain an embedded policy goal: that investors, once they are armed with sufficient information about a company's emissions activity, will push managers to reduce their emissions and assist in the transition to a greener economy. This Article thus provides a novel justification for the SEC's climate rules, by presenting the possibility of shareholders using carbon disclosure information to partially mitigate the political carbon cycle. However, in assessing this potential benefit of the climate disclosure rules, we should pay attention to recent empirical work showing that both retail and institutional investors may not match their pro-climate rhetoric with

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concrete actions at companies in which they invest. Even if investors are willing to engage in climate advocacy, they might be unlikely to match the coercive power of government authorities, who have a monopoly over taxation and regulation. If a sitting Republican governor gives firms the green light to increase their emissions, the resulting rise in pollution may not be significantly stemmed by pro-climate advocacy from even the largest shareholders. Despite these caveats, retail and institutional investors could potentially diminish the political carbon cycle if they were to use information from the climate disclosure rules to incorporate environmental concerns into their engagements with corporate management.

Reasonable minds can disagree about the optimal response to the political carbon cycle identified in this Article. For example, while some might take the results to signal the inadequacy of corporate emissions reduction pledges, others could instead propose that these pledges be redesigned in a way that decreases the risk of political cycles (by, for example, providing definite and verifiable yearly emission reduction targets). Similarly, some could use the existence of the political carbon cycle to stress the importance of introducing climate disclosure rules, to allow investors to use information from these disclosures to push management to decrease emissions. Others could argue that retail and institutional investors are unlikely to effectively use climate disclosures to counteract political incentives to reduce environmental compliance and increase pollution. However, regardless of whether one's preferred responses match those described in this Article, future scholarship must engage with the political foundations of corporate emissions, and unpack their legal and policy implications.

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