Fighting the Future:
Short-Term Investors and Business Opposition to Climate Policy

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Abstract: Business interests have often stymied progress on climate policy, raising the question of the source of business opposition to decarbonization policy. We bring time into the study of business and climate change to build new theory on the relationship between firm ownership and policy opposition. Climate policy confronts companies with an intertemporal tradeoff: incur costs today for gains in the future. Firms with short-term owners face pressure to maximize short-term profits, making them unable to undertake this tradeoff. They therefore oppose climate policy. We test our argument using a dataset of US firms and an original firm-level measure of climate policy opposition. Firms most exposed to short-term capital oppose policy more than observably similar firms with long-term ownership. Our theory develops the micro-foundations of long-term policymaking. The greater an economy's exposure to impatient capital, the more business opposition policymakers are likely to face in adopting long-term policies.

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1. Introduction

Public policy to mitigate climate change has long faced opposition from powerful business interests (Downie 2019). One major explanation for business opposition points to the distributional effects of mitigation policies: they impose costs on firms. Consequently, carbon-intensive firms are more likely to oppose policy than less carbon-intensive ones (Colgan *et al.* 2020; Genovese and Tvinnereim 2019). Yet, while climate policy entails costs for companies, it can also generate benefits in the form increased innovation, market opportunities, resource productivity, and reputation (Aghion *et al.* 2016; Ambec and Lanoie 2008; Dechezleprêtre and Sato 2017; Porter and van der Linde 1995). The challenge, however, is that the costs and benefits are not temporally aligned for a polluting company. Costs are borne today to comply with policy and transition the firm onto a low-carbon trajectory, while the associated benefits are enjoyed primarily in the longer term. The result is that climate policy confronts firms with an intertemporal tradeoff.

We bring *time* into the study of business opposition to climate policy by theorizing the conditions under which firms can make this tradeoff. To date, scholars have focused exclusively on *present-day distributional effects* of climate policy on firms (Aklin and Mildenberger 2020; Cory *et al.* 2020; Downie 2017; Genovese 2019; Meckling 2015). Business is seen as responding only to the short-term costs of policy sticks, such as carbon pricing or regulation. We shift the focus to an explanation centered on the *intertemporal distribution* of costs and benefits. A company's climate policy preference depends on its ability to absorb short-term costs in pursuit of long-term gains. Our approach thus does not discount the role of short-term costs, but rather expands the political theory of the firm to better fit the temporal structure of decarbonization policy.

To build our theory, we pay close attention to a rich literature in management studies on ownership, corporate governance, and time horizons. Scholars in this tradition have long been concerned with how investors vary in their degree of long-term orientation and the extent to which they pressure managers to maximize short-term profits (Hill *et al.* 1988; Porter 1992). By bringing these findings into political science, we show for the first time that this myopic market pressure translates into political behavior. When companies are owned by impatient capital providers, managers face intense pressure to deliver short-term profits at the expense of long-term gains, and are therefore unable to make the intertemporal tradeoff required by climate policy. As a consequence, they oppose policy reform.

We consider three dimensions of impatient capital: stock markets, ownership concentration, and owner type. Managers of firms listed on stock markets face greater pressure to deliver short-term profits (Asker *et al.* 2015; Bernstein 2022) and should therefore be more likely to oppose policy compared to their counterparts in privately-held companies. Second, because capital tends to be more patient when ownership is concentrated in the hands of blockholders (Edmans 2009; Gourevitch and Shinn 2005), we expect firms with blockholders to oppose climate policy less. Last, certain types of owners tend to more impatient than others (Deeg and Hardie 2016; Jackson and Petraki 2011). Firms owned by these impatient investors should oppose more.

We test our argument using the case of business opposition in the United States. We leverage the very high levels of polarization surrounding climate policy between the Democrats and Republicans between 2012 and 2020 and campaign contribution data to develop an original measure of firm-level climate policy opposition for energy-related companies. Using entropy balancing to match on observables as well as fixed-effects models, we find that ownership significantly shapes firms' climate policy preferences. Publicly-traded companies oppose climate policy more than observably similar privately-owned firms. Across both public and private firms, those with high ownership concentration are less likely to oppose compared to observably similar firms with dispersed ownership. Amongst publicly traded companies, those owned by impatient investors, such as actively managed funds, and passive investors, such as Blackrock, Vanguard or State Street, oppose policy more.

We test whether our proposed mechanism—time horizons—is driving the results by using shareholder payouts as a proxy for firm-level time horizons. Firms that make larger payouts to shareholders, in the form of dividends and share buybacks, are more focused on offering short-term financial rewards to their investors with no direct benefit for the long-term health of the firm (Lazonick and Shin 2019). As expected, we find that higher shareholder payouts are associated with higher opposition.

To ensure that our results do not rely on our measure of firm-level opposition, we perform supplemental analyses of two additional corporate political behaviors: lobbying expenditure on climate-related issues and membership in anti-climate business coalitions. Our findings do not change. Across multiple measures of ownership and firm-level policy position, companies with impatient owners oppose climate policy more.

By highlighting the intertemporal tradeoff at the heart of decarbonization policy, our paper brings time to the fore and builds on insights from management studies to contribute new theory to the study of business and climate politics. Our approach shows how business opposition is shaped not only by the present-day distributional effects of policy (Colgan *et al.* 2020; Cory *et al.* 2020; Downie 2017; Genovese 2019; Meckling 2015; Mildenberger 2020), but also the ability of polluting firms to make intertemporal tradeoffs—absorb short-term costs today in pursuit of long-term gains. Furthermore, by emphasizing how ownership shapes firms' time horizons, we highlight the critical role that capital markets play in shaping climate change politics. Finally, recent scholarship has explored how ownership—specifically domestic versus foreign—influences the way firms are treated by governments (Bayer 2023). Here we show that it also affects the way they behave toward governments.

More broadly, the paper advances our understanding of the micro-foundations of long-term policymaking. From education, pensions, and infrastructure to biodiversity loss and climate change, long-term societal challenges are everywhere (Finnegan 2022b; Hale 2024). In addressing these policy problems, governments are confronted with intertemporal tradeoffs: impose costs on society today for greater benefits in the future (Jacobs 2011). Our findings explain how ownership institutions shape the preferences of firm managers over these types of policies, and therefore, why opposition to long-term policy varies across firms.

Our argument also has important cross-national implications. The aggregate ownership structure of an economy—and thus the patience of capital—tends to vary systematically across the high-income democracies due to institutions like corporate governance rules, tax law, and financial regulation (Deeg and Hardie 2016; Hall and Soskice 2001). Some economies are more dependent on impatient, stock market capital while others are undergirded by patient capital from banks, families, and industrial foundations. As a result, governments in countries with more patient capital provision are likely to face less vociferous business opposition to stringent climate policy than those in countries dominated by impatient owners. While future research on cross-national variation is needed, this reasoning provides a complementary explanation for why, for example, Scandinavia and Germany, where patient capital has predominated, have tended to lead on climate policy since the 1980s (Finnegan 2022b).

Last, our findings have implications for politics and policy. They raise questions about the role of financial investors in climate politics specifically and the role of corporate governance reform in long-term policymaking more generally. We discuss these in the conclusion.

2. Corporate ownership and business opposition to climate policy

2.1. The intertemporal tradeoff that climate mitigation policy entails

Businesses oppose climate policies that impose costs on them (Meckling 2011, 2015; Mildenberger 2020; Stokes 2020). Key factors that shape their opposition include the carbon-intensity of their assets (Colgan *et al.* 2020; Downie 2017; Meckling and Trachtman 2024), trade exposure (Genovese 2019), the stringency of policy (Genovese and Tvinnereim 2019), the relative carbon intensity of competitors (Kennard 2020), and their embeddedness in fossil fuel supply chains (Cory *et al.* 2020).

These findings reflect a broader understanding of the ways in which the present-day distributional impact of policy on companies' profits shapes their preferences on environmental policy and beyond (e.g., Falkner 2008; Gourevitch 1986; Martin 1995; Prakash 2000; Rogowski 1989). Managers tend to oppose policies that increase costs, and, conversely, tend to support policies that increase profits. Studies in international political economy have analyzed how factor endowments and sectoral differences influence material gains to business from trade, foreign, and macroeconomic policy, and therefore shape their political positions (e.g., Rogowski 1989). Welfare state scholars have pointed out how business preferences on social policy are shaped by the extent to which such policies impose costs or generate benefits (e.g., Hacker and Pierson 2002; Martin 1995; Pierson 1996).

What has received less attention, however, is the way in which the temporal structure of policy shapes business' political behavior. In the case of climate change, policy reforms tend to be long-term policy investments that impose short-term costs on society today in order to generate greater future benefits (Finnegan 2022a, 2022b; Hale 2024; Jacobs 2011). Importantly, we argue that this intertemporal tradeoff occurs at the level of the firm itself. Firms incur short-term costs to comply with policy and to adjust to a low-carbon future, while over the long-term, as we move toward a decarbonized society, they can benefit from improved market performance as a result of reduced costs and greater revenues.

Before we discuss these costs and benefits in detail, it is important to point out that we aim to explain opposition to climate policies that impose costs on business, as opposed to policies that offer only "carrots" (e.g., subsidies). As such, we theorize firm behavior toward cost-imposing policies, notably regulation and market-based policies. The primary cost-bearing group is energy- and emissions-intensive firms (what we call 'polluting firms') which have historically been the most significant opponents.

Climate policy requires polluting companies to bear costs as they invest in regulatory compliance. This includes investments to decarbonize their production processes and products, including investments in R&D, the adoption of cleaner technologies, hiring of new staff, retooling factories, and developing zero-carbon products. Additionally, there are costs associated with investments in environmental management processes—such as carbon accounting and reporting.

At the same time, these investments over the short run can generate long-term benefits by improving market performance. Here we draw on a large literature in management and economics that shows how investments undertaken to comply with environmental regulations can generate future benefits by reducing costs and increasing revenues (Ambec *et al.* 2013; Ambec and Lanoie 2008; Dechezleprêtre and Sato 2017; Porter and van der Linde 1995). Investments can generate innovation in the production process that leads to higher resource productivity, input savings, and profits—referred to as the Porter Hypothesis (Porter and van der Linde 1995). Evidence suggests that environmental policy can increase firms' multifactor productivity and resource efficiency, which in turn has a positive impact on profitability (Albrizio *et al.* 2014; Rexhäuser and Rammer 2014). Furthermore, a greener business model can reduce the cost of capital by reducing a firm's climate transition risks, which arise from policy shifts and new technologies, and physical climate risks associated with extreme weather events (Gianfrate *et al.* 2023). Last, investments can improve a firm's reputation and reduce future costs associated with external stakeholders, such as government, environmental groups, the media, and the public. This can take the form of, for example, less costly compliance with future regulation, fewer fines and less litigation, less likelihood of suffering a boycott, and quicker approvals from government and communities to build or expand facilities (Ambec and Lanoie 2008; Minor and Morgan 2011). Indeed, maintaining a good reputation and social license to operate is important as the public is increasingly concerned with climate change (Shapira 2015).

Turning to revenue growth, climate policies can increase future revenue by stimulating innovation that enables firms to expand into growing markets for green products and services, such as renewable electricity, hydrogen, electric vehicles, green metals, and minerals for clean technologies. Studies find that carbon pricing has caused firms to innovate more in clean technologies, enabling them to expand into markets for low-carbon products (Aghion *et al.* 2016; Calel and Dechezleprêtre 2016). A low-carbon business model can also give firms access to new segments of market demand, such as environmentally-conscious consumers and green public procurement contracts (Ghisetti 2017). Last, expansion into green markets can simply mean that a firm stays in business as the entire technology ecosystem changes, such as the shift from the internal combustion engine to electric vehicles.

In principle, all firms, even fossil fuel producers, can transition to low-carbon products and services through either investment in technological substitution or economic diversification. Technological substitution means that clean technologies replace dirty technologies (Kelsey 2018; Kupzok and Nahm 2024). Currently, this is occurring in sectors like electricity generation (e.g., through adoption of renewable energy), automobiles (e.g., electric vehicles), and steel (e.g., electric arc furnaces). In the absence of technological substitutes, firms can diversify into adjacent low-carbon lines of business. Fossil fuel producers are pursuing this path by exploring renewables, hydrogen, geothermal energy, and the mining of critical minerals for clean technologies (Shojaeddini *et al.* 2019).

To be sure, the magnitude of future benefits is likely to vary across firms. For instance, reputational risks may be higher for consumer-facing firms than for business-facing firms (Bullock and van der Ven 2020). Similarly, market opportunities vary across firms. For carbon-intensive firms, increased revenue from future market opportunities may not always outweigh short-term costs. For example, dirty technologies often generate greater profit margins than clean technologies (Christophers 2024). However, when the future benefit is the firm's survival, it should outweigh short-term adjustment costs. This is the case when policy and market environments no longer allow firms to offer carbon-intensive products and services. There is substantial uncertainty as to when this will be the case in a given sector, and it likely depends on technology, market, and policy trends. Automakers, for instance, have realized that investing in electric vehicles is essential for future survival in a global auto market with a new technology paradigm and growing carbon constraints (Vormedal and Meckling 2024). Steel, chemical, and cement companies, by contrast, are not yet at this point, but will likely be soon. The magnitude of the future benefits of corporate decarbonization thus grow over time as sectors and economies decarbonize. In this way, the intertemporal tradeoff of climate policy arises for firms at different points in time along the low-carbon transition.

There are two sets of firms for which climate policy poses no intertemporal tradeoff. The first set are pure-play clean technology companies. They benefit from climate policy both in the short and long term as it increases demand for their products and services. The second are those that face short-term costs substantially lower than those of their competitors, thus gaining a competitive advantage (Kennard 2020; Meckling 2015). Both of these types of firms would be expected to support climate policy. They are, however, likely the minority of politically active firms in climate politics. Research shows that business opposition is pervasive across broad sectors of the economy (Cory *et al.* 2020), indicating that most polluting firms face short-term costs.

2.2. Corporate ownership and firms' time horizons

When should firms be able to undertake the intertemporal tradeoff that climate policy requires? Scholars of management and comparative political economy (CPE) have long argued that corporate ownership shapes the degree of short- versus long-term orientation of firms' market behavior. Owners can supply firms with patient or impatient capital (Culpepper 2005; Deeg and Hardie 2016; Gourevitch and Shinn 2005; Hall and Soskice 2001). Patient capital is "equity or debt whose providers aim to capture benefits (both financial and otherwise) specific to long-term investments and do not exit their investment or loan if … managers do not respond to short-term market pressures" (Deeg and Hardie 2016, 629). In this way, patient capital shields managers from "the need to react to the short-term vicissitudes of financial and product markets or to focus on short-term financial gains at the expense of long-term gains" (Deeg and Hardie 2016, 629). Conversely, impatient capital puts pressure on managers to produce short-term returns and exits if profit expectations are not met.

Management scholars have uncovered broad patterns of capital patience, identifying three sources of variation: public versus private markets, concentrated ownership versus dispersed ownership, and specific owner type.

First, public capital markets tend to provide firms with impatient capital, and as a result, managers of publicly listed companies tend to be more short-term oriented than their counterparts in privately-held companies (Asker *et al.* 2015; Bernstein 2015, 2022; Gajurel 2021). There are a number of structural features of stock markets that foster short-termism, including the shareholder-value model of the firm, which views maximizing the wealth of shareholders as the overriding objective of managers and corporate governance (Lazonick and Shin 2019), as well as the arm's length relationship investors have to companies rather than a commitment to any one's long-term performance (Gourevitch and Shinn 2005; Hall and Soskice 2001).

Though, as mentioned above, perhaps the most consequential is the threat of investor exit. The high liquidity of stock markets means that investors dissatisfied with short-term financial results can sell their shares and exit the firm quickly (Bourveau *et al.* 2023). Managers fear this market punishment because it reduces the share price, which can mean less pay (as pay is often tied to the share price), removal by the board, and a hostile takeover and restructuring . In response, managers strive to meet or beat earnings expectations to boost stock prices, their pay, and their careers (Coates *et al.* 1995; Graham *et al.* 2005; Matsunaga and Park 2001; Shin 2012). To hit expectations, managers have been shown to reduce investment in the near term (Almeida *et al.* 2016).

A second dimension of capital patience is ownership concentration. Capital tends to be more patient when ownership is concentrated in the hands of blockholders—owners with a large number of shares (Culpepper 2005; Deeg and Hardie 2016; Gourevitch and Shinn 2005; Hall and Soskice 2001). Given their large stakes, blockholders (who tend to also be board members, directors, and managers) have an incentive to invest in a close relationship with the firm (Edmans

2014; Gourevitch and Shinn 2005). They gather information about its fundamental value and can know whether reduced profits in the short run are the result of a desirable long-term investment or poor management (Edmans 2009; Edmans and Holderness 2017). If it is the former, the blockholder can attenuate stock price decline by holding the stock. If it is the latter, blockholders can exert influence over managers using voice rather than exit. The result is that managers are better insulated from market pressures and can therefore invest in long-run growth rather than focus exclusively on short-term profits (Aghion *et al.* 2013; Edmans 2009).

The third dimension is owner type. Certain types of owners tend to more patient than others (Deeg and Hardie 2016; Jackson and Petraki 2011). Actively managed funds, hedge funds, and investment banks tend to be the most impatient as they themselves are under intense pressure from their clients to perform each quarter (Bourveau *et al.* 2023; Bushee 2001; Chaganti and Damanpour 1991; Deeg and Hardie 2016; Hansen and Hill 1991; Jackson and Petraki 2011). When these owners predominate, CEO turnover is higher as managers are fired for underperformance (Goyal and Low 2019) and companies invest less in R&D (Bushee 1998), have lower patent activity (Agarwal, Vashishtha, and Venkatachalam 2018), and downsize more frequently (Jung 2015). At the other end of the spectrum are patient owners like families, foundations, relationship banks, and the state. Family-owned firms tend to have longer-term orientations (Kappes and Schmid 2013; Miller *et al.* 2008) and are more likely to tolerate short-term losses in pursuit of longer-term goals (Alessandri *et al.* 2018). Similarly, firms owned by independent non-profit organizations, such as industrial foundations, display more long-term oriented business behavior (Thomsen *et al.* 2018).

There is debate as to where passive asset managers fit along the capital patience spectrum. Because they cannot sell shares as long as a firm is part of an index, they cannot exit if short-term earnings disappoint. For this reason, some argue they are permanent owners that provide patient capital (Deeg and Hardie 2016; Fichtner and Heemskerk 2020). However, in practice, the evidence suggests they tend to be impatient (Baines and Hager 2022; Braun 2022b; Voss 2024). For example, Fichtner and Heemskerk (2020) find that they overwhelmingly vote with management when it comes to indicators of short-termism like share buybacks and merger and acquisition deals. We shed additional empirical light on this question in our analysis below.

2.3. Corporate ownership and firms' climate policy preferences

It is clear from the rich literature in management and CPE that corporate ownership shapes the time horizons of firms and their corresponding market behavior. We now consider the *political* implications of these insights.

As explained in the previous section, climate policy requires polluting firms to make an intertemporal tradeoff. The extent to which managers can do so should depend in part on the ownership of the firm. When impatient capital predominates in a polluting firm, managers should have shorter time horizons as they focus myopically on meeting quarterly earnings expectations. They should be unable, and therefore unwilling, to incur costs today for long-term gains. As a consequence, these conditions should tilt their preferences against climate policy and they should oppose government action that is costly to them, all else equal.

Our arguments yield a number of observable implications. First, given their exposure to stock market pressures, managers of publicly-listed polluting firms should find it more difficult to make intertemporal tradeoffs compared to their counterparts in private companies. We therefore expect public companies to be more opposed to climate policy than private ones.

Hypothesis 1a: Publicly-listed polluting firms are more likely to oppose climate policy than privately-held polluting firms, all else equal.

Additionally, we expect heterogeneity in time horizons within the broad categories of public and private companies. First, polluting firms with a high degree of blockholding should be shielded from capital market pressures and therefore less opposed to climate policy than companies dominated by dispersed, minority owners.

Hypothesis 1b: The higher the ownership concentration of a polluting firm, the less likely it will oppose climate policy, all else equal.

Second, we hypothesize the effect of owner type. Polluting firms that are heavily owned by impatient owners, such as active investment managers and investment banks, should be less able to tradeoff short-term profits for long-term goals and therefore more opposed to climate policy.

Hypothesis 1c: The higher a polluting firm's ownership share by impatient investors, the more likely it will oppose climate policy, all else equal.

Last, we formulate a hypothesis around the proposed causal mechanism—corporate time horizons—that we argue links ownership to climate policy opposition.

Hypothesis 2: The shorter the time horizon of a polluting firm, the more likely the firm will oppose climate policy, all else equal.

In sum, ownership structure conditions poluuting firms' ability to absorb short-term policy costs. If owners have short time horizons, firm managers have limited ability to absorb policy costs and are more likely to oppose reform. In this way, ownership shapes not only the market behavior of companies, but also their political behavior.

3. Research design

We expect our arguments to hold for companies around the world, though we choose to test them using the case of the US. We do this for two reasons. First, while on the whole capital is argued to be impatient in liberal market economies like the US (Hall and Soskice 2001), with managers having shorter time horizons compared to managers in other high-income democracies (e.g., Porter 1992; Poterba and Summers 1995), there is still substantial variation in firm ownership. Second, the case enables us to leverage partisan polarization to develop a measure of firm-level climate policy preferences.

3.1. Measuring firms' opposition to climate policy

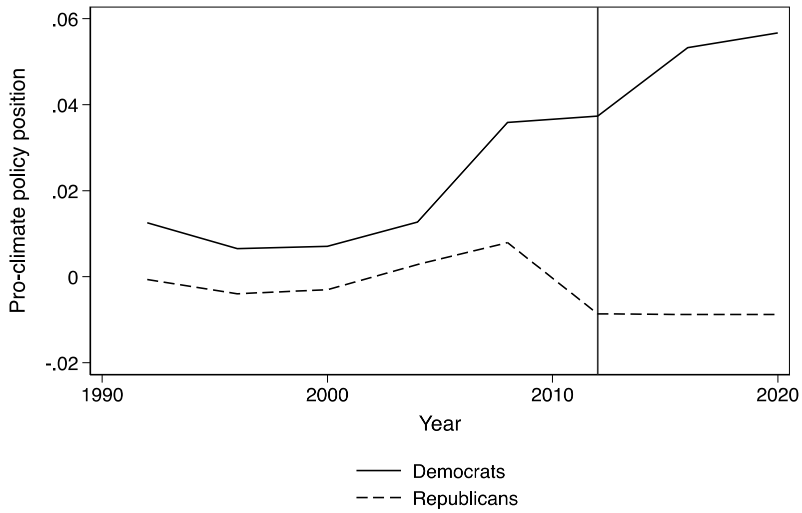
Our theory predicts firms' opposition. To test it, we therefore require a measure of firms' *position* on climate policy. Firms sometimes state their climate positions publicly in press releases, evidence to committees, and public consultations. Though measuring these in a comparable way for a large number of companies presents challenges. Moreover, relying on what firms say is problematic, as businesses often strive to obscure or camouflage their true preferences via elaborate and well-financed public relations and greenwashing campaigns. Another possibility is lobbying expenditure data, which is available from lobbying disclosure reports. However, disclosure rules do not require companies to say whether they lobbied for or against a particular policy, and therefore a firm's position is not observable.

Our approach is to measure business preferences as revealed by their actions; specifically, their campaign contributions. These data can be directly measured in a comparable way for a large sample of businesses using records filed with the Federal Election Commission, and importantly, can reveal opposition to climate policy. Additionally, campaign contributions are significant predictors of lobbying (Kim *et al.* 2025). Given these advantages, it is our preferred approach and we describe it in detail below. That said, we also analyze two additional measures in Section A4.1 of the Supplementary Information— membership in ad-hoc coalitions opposed to climate policy and lobbying expenditures on climate-related issues—and our findings do not change.

Campaign contributions are a major part of US politics and companies are an important source of political funds. There is a large literature on US corporate campaign giving, with scholars having explored several explanations for why firms donate, including for quid pro quo favors and as a form of investment that secures access to legislators (e.g., Fowler, Garro, and Spenkuch 2020; Stuckatz 2022). While important, the reason for why firms donate is not directly relevant for our purposes. As mentioned, we are instead seeking a measure that can reliably reflect a firm's underlying policy position. For that, we simply assume that campaign contributions reflect a company's support for the policy positions of the political party to whom they are donating.

The first step in developing our measure is to examine the climate policy positions of the Democrats and Republicans. The two parties have inhabited opposite policy positions with the Republicans largely opposing mitigation policy since the late 1980s and the Democrats tending to support it (Mildenberger 2020, Ch.4-5). To confirm this, we measure each party's position using their presidential election year manifestos. We extract every sentence in each party's manifesto that mentions a climate change-related keyword. We then code the stance of each extracted sentence as either pro-climate policy (if it would decrease GHG emissions), anti-climate (if it would increase GHG emissions), or neutral (e.g., if it is a statement of fact) (Carter *et al.* 2017). A full list of keywords and detailed explanation of the coding is available in Section A6 of the Supplementary Information.

Figure 1. Party positions on climate change policy



Note: Difference between the number of pro- and anti-climate policy sentences in each presidential election year manifesto normalized by the total number of sentences in each manifesto from 1992 to 2020. Positive values indicate a pro-climate policy position. Negative values indicate an anti-climate policy position. The vertical line indicates the 2012 election year. See Section A6 of the SI for method and data.

Figure 1 presents party positions for the Republicans and Democrats between 1992 and 2020. The Republicans are less pro-climate than the Democrats throughout the entire period. Though in 2008 the gulf between the parties begins to widen as polarization on the issue sets in. The Democrats become increasingly pro-climate, while the Republicans become more opposed. By 2020, there is substantial divergence. The parties are over three times further apart on the issue than they were in 1992.

We leverage the hyperpolarized political environment surrounding climate policy between 2012 and 2020 for our analysis. A brief timeline of climate policymaking during this period puts the differences between the parties in stark relief. The second Obama administration (2013-2017) enacted the Clean Power Plan to reduce emissions from electricity generation, adopted tougher vehicle emissions standards and new standards for methane emissions, signed the Paris

Agreement, and banned offshore oil and gas drilling in some waters. However, all of these policies were either repealed or weakened during the first Trump administration (2017-2021).

Given each party's manifesto positions and the real-world policymaking of party leaders, firms concerned about climate policy during this period would have two very clear choices about who to support at election time. Those that oppose action should prefer that Republicans are (re)elected, while those that support climate policy should prefer that Democrats are (re)elected, all else equal. This conceptualization straightforwardly yields a parsimonious measure of climate policy opposition as campaign giving to Republicans as a percent of each firm's giving to Democrats and Republicans (see Equation 1 below). Note that while the focus is on giving to Republicans, this conceptualization also accounts for each firm's giving to Democrats.

While our approach is related to Kennard (2020) who uses campaign contributions by Fortune 500 executives to relevant Democratic and Republican committee members to measure firm-level preferences toward the 2009 Waxman-Markey cap-and-trade bill, there is an important difference. Our conceptualization is not about lobbying around one particular policy, but rather supporting the election or reelection of a political party and their broader climate policy platform. In this way, it is similar to Bonica (2014) who uses campaign contributions to estimate firm-level ideal points.

An important threat to the validity of our approach is that firms may make campaign contributions in support of or opposition to a bundle of policies, not only one. If this is the case, our variable would measure preferences over a wider set of policies than climate. We take two steps to attenuate this type of measurement error.

First, we restrict our analysis to companies in energy- and emissions-intensive sectors or sectors reliant on these (hereafter called "polluting sectors"). Polluting sectors would have borne direct and concentrated short-term costs from climate policies that were adopted or proposed during the sample period. As a consequence, climate policy should be very salient for firms in these sectors; and these firms should have the strongest material incentive to seek to influence climate policymaking, including via campaign contributions. By focusing on polluting sectors, we also limit our analysis to a set of industries that face an intertemporal tradeoff. As mentioned above, clean technology sectors are not exposed to short-term policy costs.

Second, we validate our measure using two other variables related to firms' opposition—membership in anti-climate ad-hoc business coalitions and lobbying expenditures on climate-related issues. We compile the coalition data from (Cory *et al.* 2020) who identify all firms that are, or have been, members of anti-climate business coalitions. It is the only other firm-level measure of the climate policy position of US firms of which we are aware. For lobbying, we use the Lobby View dataset (Kim 2018) to collect firm-level expenditures on three climate-related issues: environment, energy, and fuels. As mentioned, lobbying data is not our preferred measure because it does not reveal firms' policy positions. Still, because our sample is limited to polluting sectors, it is plausible to assume firms in it will be generally opposed. In which case, lobbying expenditures can measure the intensity of opposition. Given their theoretical relationship, our measure should predict both membership in anti-climate coalitions and lobbying expenditures, and vice versa. In Section A1 of the Supplementary Information we find robust associations in the expected directions.

Employing these strategies together should reduce concerns that our measure includes substantial measurement error. To further assuage such concerns, we perform supplemental analyses using membership in anti-climate coalitions and lobbying expenditures as alternative dependent variables (see Section A4.1 of the Supplementary Information). Our findings do not change. Lastly, it is important to mention that measurement error in the dependent variable should not necessarily bias our estimates but rather make them less precise by inflating the standard errors. As such, any residual measurement error in our dependent variable should reduce the likelihood that we recover statistically significant estimates below.

Next, we provide an overview of how we construct our measure. For full details, please see Section A2.1 of the Supplementary Information. We utilize data from the Center for Responsive Politics (CRP). Because we are interested in measuring the preferences of firms, we focus on firms' soft money donations and their donations to 527 groups, which represent the direct use of corporate funds for political ends (Aggarwal *et al.* 2012). We collect data for all firms coded as energy-related ("RealCode E") by CRP, which includes firms in energy sectors (energy producers and electric utilities), but also energy-intensive manufacturers, fuel retailers, and companies that provide services to the energy sector. We next identify polluting sectors for our sample inductively, choosing the most energy- and/or emissions-intensive industries. These are: oil and gas, mining, utilities, utility construction, petroleum wholesalers, and manufacturing (food, paper, petroleum and coal products, and chemicals) (see Figure 2 for a list of sectors at the 4-digit NAICS code). Once a firm has made a campaign contribution, it enters our dataset. We code any year that the firm did not contribute as 0.

The resulting dataset contains the soft money and 527 political giving by US firms in polluting sectors for each year from 2012 to 2020. It consists of 744 companies and 5,278 firm-year observations. We refer to this sample as 'giving' firms.

We generate a measure of climate policy opposition using the following formula

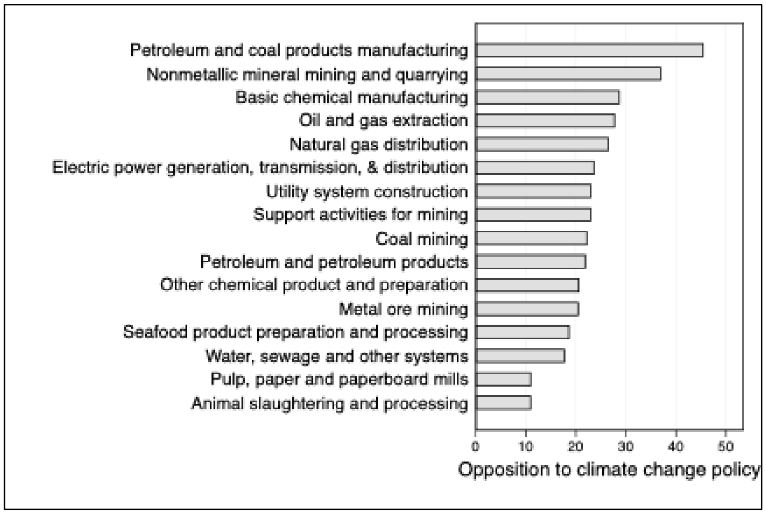
$$\frac{\text{Giving to Republicans}_{i,s,t}}{\text{Giving to Republicans}_{i,s,t} + \text{Giving to Democrats}_{i,s,t}} \tag{1}$$

to calculate the percent of two-party campaign giving by firm *i* in polluting sector *s* in year *t* that is directed to Republicans. We multiply the quotient by 100 for ease of interpretation.

Mean opposition for giving firms is 25.21 and the standard deviation is 42.65 (see Table 1). In around 23% of firm-years, all giving goes to Republicans, while in around 7%, all giving goes to Democrats. In around 4%, giving goes to both parties in varying proportions. Finally, no giving is done in around 66% of firm-years.

This distribution indicates substantial variation in climate policy position across our sample of polluting firms. As we might expect, these companies are more likely oppose by giving exclusively to Republicans. Across sectors, average opposition is generally higher for fossil fuel-related sectors, followed by electric utilities (see Figure 2). Energy-intensive manufacturing (e.g., food and pulp and paper) is lower. By conforming to expectations, this variation provides evidence against the presence of severe measurement error, and therefore helps to further validate our measurement approach.

Figure 2. Average climate policy opposition across polluting sectors



Note: Polluting sectors are disaggregated at the 4-digit NAICS code.

3.2. Generating a comparison sample

The CRP data allow us to observe only firms that make campaign donations. To generate inferences about the population of US companies as a whole, we need to also include in our sample firms that do not give. To do this, we use Bureau van Dijk's Orbis to generate a random sample of 'non-giving' firms stratified by sector and size. To produce a deep pool of control units for our matching method (described below), we draw 11,881 firms from emissions- and energy-intensive sectors (see Section A2.2 of the Supplementary Information for full details). Because the non-giving sample is randomly drawn, it should be representative of the population of US firms within each selected sector and firm size category, and therefore balanced across unobserved covariates.

Adding so many non-giving firms introduces many zeros for climate policy opposition. As a result, mean opposition for the combined sample of giving and non-giving firms decreases to 1.19 (see Table 1). Since this is the sample we analyze, the estimates we recover in our empirical analysis below should be interpreted in relation to this mean.

3.3. Measuring firm ownership

We measure four dimensions of firm ownership (see Section A2.3 of the Supplementary Information for full details). First, we use Orbis to measure whether a company or its global ultimate owner (GUO) is publicly listed in each year. Second, we measure ownership concentration using Orbis' 'Independence Indicator'. We code companies in which one shareholder owns over a 25% stake (those rated 'B', 'C', or 'D' by Orbis) as having a blockholder.

Third, we measure ownership by impatient investors using data from S&P Capital IQ on the percent of shares owned by active investment managers (short "active investors"). These are the prototypical impatient investor since they are under intense pressure to generate quarterly financial gains (Deeg and Hardie 2016; Jackson and Petraki 2011). Last, we measure passive asset managers (short "passive investors") to test mixed theoretical expectations and evidence as to the effect of these types of owners. We collect data from S&P Capital IQ on the combined percentage of shares owned by the Big Three passive asset managers, BlackRock, Vanguard, and State Street, who together manage 80-90% of all passive equity fund assets (Fichtner *et al.* 2017). Data for both active and passive investors is only available for publicly-traded companies.

See Table 1 for descriptive statistics. In all cases, our measures of ownership vary little within firms over time. For this reason, our empirical analyses below rely primarily on cross-sectional variation across firms.

Table 1. Descriptive statistics

Sample	Giving firms			Non-giving firms			Full sample		
	N	Mean	Std. dev.	*N*	Mean	Std. dev.	*N*	Mean	Std. dev.
Climate policy opposition	5,278	25.21	42.65	106,653	0	0	111,931	1.19	10.69
Publicly listed	5,278	0.39	0.49	106,653	0.19	0.39	111,931	0.20	0.40
Blockholding	3,916	0.44	0.50	66,450	0.71	0.45	70,366	0.70	0.46
Active investor ownership	1,531	54.79	22.35	12,643	56.32	22.56	14,174	56.15	22.54
Passive investor ownership	1,461	15.79	7.75	11,832	16.06	7.47	13,293	16.04	7.51
Payout	1,950	1.52	4.07	17,781	0.22	1.88	19,731	0.35	2.22
Size									
Small	5,278	0.24	0.43	106,653	0.61	0.49	111,931	0.59	0.49
Medium	5,278	0.20	0.40	106,653	0.05	0.21	111,931	0.05	0.23
Large	5,278	0.14	0.34	106,653	0.25	0.43	111,931	0.24	0.43
Very large	5,278	0.42	0.49	106,653	0.09	0.29	111,931	0.11	0.31

3.4. Method

The ideal identification strategy would be to randomize ownership structure and then analyze its effect on firms' climate policy opposition. However, this strategy is not feasible for obvious reasons. Because ownership is not randomly assigned, selection bias is the primary threat to valid inference in our case. If the reason behind a firm's ownership is correlated with its climate preferences, then the analysis of the association between ownership and opposition would be confounded.

To attenuate selection bias and confounding, we use entropy balancing to preprocess the control group data (Hainmueller 2012). Entropy balancing is similar to other matching methods in that it seeks to identify a control sample that is as similar as possible to the treatment sample. To do this, it estimates non-negative weights for each observation in the control sample such that the covariate distribution of the weighted control group is nearly identical to that of the treated group. One drawback of the method is that it is suited for a dichotomous treatment. We therefore use it to analyze the influence of public listing and blockholders on climate policy preferences. For the analysis of specific owner types and our mechanism, which are continuous variables, we do not employ entropy balancing.[1] We balance treated and control groups based on variables that are likely to predict assignment into treatment (Gangl 2014). In our case, that means variables that influence whether firms are publicly listed and whether they have blockholders.

The corporate governance literature identifies several key predictors of an initial public offering (IPO), including firm size (Pagano *et al.* 1998), cost of capital (Ewens and Farre-Mensa 2020), and mimicking peers (Aghamolla and Thakor 2022). We measure firm size using Orbis' four category size classification (very large, large, medium and small). Costs of capital vary year to year depending on interest rates and the corporate tax rate. We balance on year to account for national changes in interest and tax rates and on the state in which each company is headquartered as corporate tax rates vary across states. Including year as a predictor also accounts for the secular decline in IPOs in the US since 2000 (Ewens and Farre-Mensa 2020). We also balance on sector at the 4-digit NAICS codes to account for peer effects. In the case of blockholding, the literature

[1] We are aware of entropy balancing methods for continuous variables (Tübbicke 2022). However, given the large number of variables in our models, these methods are unable to achieve convergence and therefore cannot generate weights.

has not, to our knowledge, identified a key set of predictors (Edmans and Holderness 2017). For this reason, we balance on the same covariates for blockholding as we do for public listing.

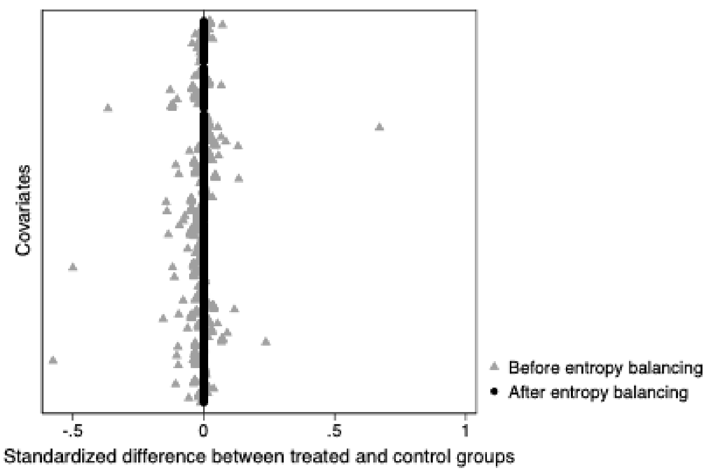
In addition to the variables mentioned, we use sector-year fixed effects at the 4-digit NAICS code and state-year fixed effects to balance on time-varying unobserved heterogeneity at the sectoral and state levels that could affect ownership. This could result from common features to all firms in a particular sector (e.g., changes in capital intensity over time) or all firms in a particular state (e.g., changes in tax or corporate governance policy over time). In total, we balance on over 700 covariates.

Such a large battery of covariates reduces the likelihood that we are omitting potential confounders—factors that predict both ownership and policy opposition—from the analysis. Our extensive set of fixed effects controls for all time-invariant and time-varying state- and sector-level heterogeneity across firms, as well as common factors that affect all firms over time. In this way, we can account for many of the predictors of business preferences identified by previous research, including sectoral differences in GHG emissions intensity (Cory *et al.* 2020) and trade exposure (Genovese 2019), and state and national climate policy stringency (Genovese and Tvinnereim 2019; Meckling and Trachtman 2024). Moreover, our approach controls for sector specific trends in technology, markets, and policy that are likely to shape the magnitude of each sector's intertemporal tradeoff as it grows over time.

We use the `ebalance` package from Hainmueller and Xu (2013) in Stata to balance sample means and variance for each covariate. After balancing, covariate means and variances are nearly identical across the treated and control groups (see Figure 3). The maximum weight assigned to one observation is 15.3 for the publicly listed analysis and 53.2 for the blockholding analysis. Neither value is extreme, indicating that our results are unlikely to overly rely on any one observation in the control sample (McMullin and Schonberger 2022).

To estimate the association between ownership and climate policy opposition, we use OLS models that include the weights for each control-unit observation from the entropy balancing algorithm. Because we analyze the same firms over time, we cluster standard errors at the firm level to correct for potential correlation of the error terms.

Figure 3. Covariate balance plot



Notes: This balance plot is for the publicly listed treatment. The plot for the blockholding treatment is virtually identical and reported in Section A3 of the SI. Covariate names are omitted because their large number makes them unreadable when plotted on the y-axis.

4. Results: Ownership and climate policy opposition

4.1. Public versus private markets

We first analyze differences between publicly-listed and privately-held companies (Table 2 – Model 1). As expected, we see that opposition is 0.90 points higher on average for publicly-listed companies than for observably similar private firms (Model 1). When considered in the context of sample mean opposition of 1.19, we see that the coefficient is large. Publicly listed companies oppose climate policy much more than otherwise similar privately-held firms.

To supplement our main results, we conduct two additional analyses in Section A4 of the Supplementary Information. First, to ensure our results are not reliant on our measure of firm position, we consider two alternative measures: membership in anti-climate coalitions and lobbying expenditure on climate-related issues (Section A4.1). As expected, we find that public listing is a significant and positive predictor of both behaviors.

Second, we explore heterogeneity by dividing polluting firms into fossil fuel and non-fossil fuel sectors (Section A4.2). While we argue that all polluting firms can ultimately decarbonize, we expect this to vary over time by sector as technology, markets, and policy shifts. Given these trends in fossil fuel sectors during our sample period, they are likely to be less willing and able to decarbonize compared to non-fossil fuel sectors. As a result, managers of fossil fuel-related companies are more likely to see climate policy as an existential threat and oppose it outright, regardless of ownership. Our empirical tests confirm that ownership plays little role in driving opposition in fossil fuel sectors; suggesting that our main results may be driven primarily by polluting firms in non-fossil fuel sectors.

As a last step, we investigate the robustness of our main results (see Section A5 of the Supplementary Information). First, we add additional controls, including the covariates that were used to balance the samples, total political giving (to further control for firm size), and more granular sector fixed effects at the 6-digit NAICS level, including sector-year fixed effects at this level. Second, we estimate simple OLS models without entropy balancing. Last, we expand our sample beyond the narrow focus on emissions- and energy-intensive sectors to include all energy-related sectors as identified by CRP. Importantly, this approach also tests the broader external validity of our findings. In all cases, the results do not change: publicly-listed firms oppose climate policy significantly more than private ones.

Table 2. Corporate ownership and opposition to climate policy – entropy balancing models

	(1)	(2)	(3)
Publicly listed	0.90*		11.42***
	(0.35)		(1.57)
Blockholding		-1.09***	-0.75**
		(0.28)	(0.26)
Blockholding*Publicly listed			-10.44***
			(1.58)
Constant	1.68***	1.95***	1.26***
	(0.28)	(0.26)	(0.25)
R^2	0.001	0.002	0.031
N	111,931	70,366	70,366
Firms	12,595	7,917	7,917

Notes: OLS models with weights from entropy balancing. The dependent variable is opposition to climate change policy. Covariates for entropy balancing are: firm size, state in which firm is headquartered, year, 4-digit NAICS sector code, sector-year fixed effects (at 4-digit NAICS), and state-year fixed effects. Sample period is 2012-2020. The number of observations declines in models 2 and 3 due to missingness in the blockholding data. Robust standard errors in parentheses clustered at the firm level. $^{*}p < 0.05$ $^{**}p < 0.01$ $^{***}p < 0.001$

This result is not only predicted by our theory, but also points in the same direction as previous research. For example, in their study of emissions intensity and business opposition, (Cory *et al.* 2020) include public listing as a covariate, and it is a reliably positive and statistically significant predictor of opposition. Similarly, in a recent study from management, Shive and Forster (2020) find that publicly traded US firms exhibit less pro-climate behavior—they have higher GHG emissions and incur more Environmental Protection Agency (EPA) penalties—than otherwise similar privately-held companies.

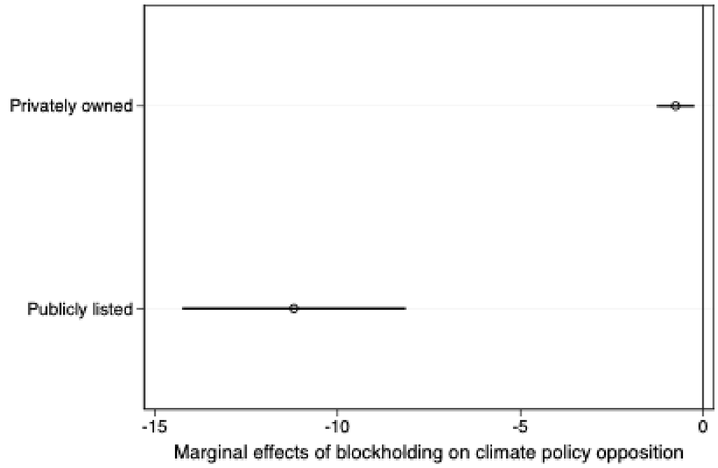
4.2. Ownership concentration

We next examine the effect of ownership concentration. The benefit of analyzing blockholding is that it varies across public and private firms, allowing us to explore heterogeneity within both groups. We expect that blockholding will reduce opposition across all firms, as well as amongst public and private firms separately (i.e., private firms with blockholders should be less opposed than private firms without blockholders, and similarly for public firms).

Model 2 in Table 2 presents the results. Firms with blockholders oppose climate policy less than observably similar firms with dispersed ownership, as our theory predicts. The coefficient suggests that firms owned by blockholders are around 1 point less opposed to climate policy. Again, it is a large coefficient when compared to sample mean opposition of 1.19.

We next investigate heterogeneity across public and private firms. In our sample, around 85% of public companies and 64% of private ones have blockholders according to our definition. We expect both types of firms to be less opposed to climate policy when owned by blockholders. To test this, Model 3 includes an interaction between blockholding and public listing. The coefficients for blockholding and for the interaction term are negative and significant at conventional levels. Plotting the marginal effects of blockholding for public and private firms separately reveals a negative and statistically significant coefficient for public and private firms, as expected (Figure 4). Both private and public firms are less opposed to climate policy when they are owned by blockholders. However, the coefficient magnitude varies considerably for each type of company. The coefficient for public companies is more than 10 times the size of that for private firms, suggesting that blockholders play a larger role in shielding publicly-listed companies from short-term market pressures than privately-held companies.

Figure 4. Marginal effects of blockholding for private and public firms with 95% CIs



We perform the same supplemental analyses using alternative measures of opposition—membership in anti-climate coalitions and lobbying expenditure—and carry out the same robustness tests as those described above (see Sections A4 and A5 of the Supplementary Information). Across all analyses and robustness checks, the main finding does not change: firms with concentrated ownership oppose climate policy less than those with dispersed ownership.

4.3. Type of owner

For the next step in our analysis, we analyze variation by owner type amongst publicly-listed companies. We examine two types of owners: active investors and passive investors. Firms with larger ownership stakes by active investors should be more opposed to climate policy. In the case of passive investors, our expectations are indeterminate.

To carry out our tests, we rely on OLS models, as our continuous measures of ownership are not suited to entropy balancing (as described above). We estimate models of the form

$$Y_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 \Theta_i + \beta_3 \gamma_i + \beta_4 A_i + \beta_5 \Omega_t + \beta_5 \lambda_{i,t} + \beta_5 \mu_{i,t} + e_{i,t} \quad (2)$$

where Y is climate policy opposition for firm i in year t; β_0 is the Y intercept; $X_{i,t}$ is our measure of ownership; Θ_i is firm size; γ_i are sector fixed effects at the 4-digit NAICS code; A_i are state fixed effects; Ω_t are year fixed effects; $\lambda_{i,t}$ are sector-year fixed effects at the 4-digit NAICS code; $\mu_{i,t}$ are state-year fixed effects; and $e_{i,t}$ is the error term. As mentioned above, by controlling for all unobserved time-invariant factors at the sector and state levels, all time-varying factors common to all firms, and all time-varying heterogeneity at the sector and state levels, this large battery of controls holds constant many factors that could plausibly affect climate policy opposition. Last, and similar to the analysis above, our approach here relies primarily on cross-sectional variation in ownership across firms.

Table 3 presents the results. Looking first at active investors, we see a positive and statistically significant relationship (Model 1). As our theory predicts, publicly-listed firms with higher ownership by impatient, active investors oppose policy more. Again, the magnitude of the coefficient is large. A one standard deviation (22.54) increase in active ownership is associated with around a 1.1-point increase in opposition, relative to a sample mean of 1.19.

Table 3. Type of owner and business opposition to climate policy

	(1)	(2)
Active investor ownership	0.05**	
	(0.02)	
Passive investor ownership		0.12*
		(0.05)
Size (ref=small)		
Medium	6.92**	7.55**
	(2.25)	(2.45)
Large	1.81***	1.88***
	(0.50)	(0.52)
Very large	11.36***	12.03***
	(1.18)	(1.27)
Constant	-2.65	0.01
	(2.39)	(2.41)
State FE	X	X
Sector FE	X	X
Year FE	X	X
State-Year FE	X	X
Sector-Year FE	X	X
R^2	0.14	0.15
N	14,174	13,293
Firms	1,806	1,660

Notes: OLS models. The dependent variable is opposition to climate change policy. Sector and sector-year fixed effects are at the 4-digit NAICS code. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

In the case of passive investors, we again find a positive and significant association (Table 3 - Model 2). Publicly-listed companies with larger shares of ownership by passive investors oppose policy more. A one standard deviation (7.51) increase in passive ownership is associated with around a 0.9-point increase in opposition. Again, a substantively large coefficient. The result is consistent with an emerging body of work that is skeptical of the willingness and ability of passive owners to encourage managers to take a longer-term perspective or adopt more ambitious climate and environmental policies (Baines and Hager 2022; Braun 2022b; Fichtner and Heemskerk 2020; Voss 2024).

Same as above, we carry out supplemental analyses using anti-climate coalition membership and lobbying expenditure as alternative measures of opposition and robustness tests using additional controls and an expanded sample (see Sections A4 and A5 of the Supplementary Information). Across all analyses, the main finding does not change: the more companies are owned by impatient active investors, the more they oppose climate policy. Similarly, the more they are owned by passive investors, the more they oppose.

4.4. Testing the mechanism

For the last step in our analysis, we test the causal mechanism—short-termism amongst managers—that we propose is driving the relationship between ownership and climate policy opposition observed above. The ideal measure for this would be firm-specific hurdle rates (i.e., the minimum rate of return managers expect for an investment) (Poterba and Summers 1995). However, this data is not readily available. As a proxy, we use shareholder payout to construct a measure of short-termism at the firm level. High shareholder payout sends money to investors instead of making investments in the long-term health of the firm, leading to what Lazonick and Shin (2019) call 'predatory value extraction'. Research finds that managers increase share repurchases to prevent declines in the stock price, and that doing so pays off, as share repurchases mitigate investor outflows (Bourveau *et al.* 2023). Furthermore, payouts are associated with indicators of short-termism like decreased investment (Almeida *et al.* 2016) and lower innovation (Wang *et al.* 2021). Based on these findings, we assume that managers that send company money to shareholders instead of using it for investment are more short-term oriented than managers not making high shareholder payouts.

Management scholars have struggled to identify a relationship between ownership and payouts due to endogeneity—investors pick companies based in part on their payouts (Crane *et al.* 2016). Our data does not enable a research design that can address this endogeneity. Therefore, to establish a link between ownership and payouts we rely on recent work in management that employs causal identification designs and finds that impatient ownership causes an increase in payouts (Bourveau *et al.* 2023; Crane *et al.* 2016; Gutiérrez and Philippon 2018).

For our analysis, we then test the relationship between payouts and climate policy opposition. We measure shareholder payout using Orbis data on annual dividends and share repurchases, which is available from 2013 to 2020. Dividends send profits directly back to shareholders, while share repurchases generate value for shareholders in an indirect way. By buying back shares in the market and retiring them, firms can reduce the supply of outstanding shares, and by doing so, increase the share price. Before 1982 share buybacks were an illegal form of market manipulation in the US. They are now a widespread corporate practice, especially since the financial crisis (Fichtner and Heemskerk 2020; Lazonick and Shin 2019).

We sum the amount of money each firm spends on dividends and repurchases in each year. We then normalize the measure by dividing this sum by total assets. Lastly, we multiply the quotient by 100 for ease of interpretation. However, much data is missing. To enable analysis, we assume that public companies with no data for dividends or repurchases in a given year did not make such transactions and code these firm-years as 0. Lastly, we drop a small number of outliers with values over 100. Because the measure of payouts is continuous, we employ the same empirical setup as the previous section—OLS model with controls (see Equation 2).

Table 4 presents the results. As expected, we observe that firms that are more short-term oriented, as proxied by their level of shareholder payouts, oppose climate policy more. Again, the magnitude of the coefficient is substantively large. A one standard deviation (2.22) increase in payouts is associated with a 0.7-point increase in opposition, relative to mean opposition of 1.19.

We carry out supplemental analyses and robustness checks in the same way as above (see Sections A4 and A5 of the Supplementary Information). The main result does not change: firms that are more short-term oriented, oppose climate policy more.

Table 4. Corporate time horizons and opposition to climate policy

	(1)
Shareholder payout	0.32*
	(0.16)
Size (ref=small)	
Medium	7.65*
	(3.27)
Large	1.07**
	(0.40)
Very large	6.10***
	(0.62)
Constant	-2.20
	(1.56)
State FE	X
Sector FE	X
Year FE	X
State-Year FE	X
Sector-Year FE	X
R^2	0.09
N	19,731
Firms	2,550

Notes: OLS model. The dependent variable is opposition to climate change policy. Sector and sector-year fixed effects are at the 4-digit NAICS code. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

5. Conclusion

In this article we set out to explain why some firms are more opposed to climate policy than others. To do so, we bring previously overlooked insights from management studies into political science to theorize how ownership shapes firms' political opposition. We argue that companies with short-term, impatient investors are more likely to oppose climate policy than their counterparts with more patient owners. Short-term investors pressure managers to maximize profits in the near term. This reduces managerial time horizons and makes firms unable to trade off the short-term costs of climate policy for the long-term gains of transitioning to cleaner operations and products. As a consequence, firms' policy preferences are tilted against decarbonization policy that is costly to them.

We theorize the effects of three categories of ownership: public versus private markets, ownership concentration, and type of owner. We expect firms to be more short-term oriented, and therefore more opposed to climate policy, when they are publicly listed, have dispersed ownership, or have high levels of ownership from active investors.

We test our hypotheses with dataset of US firms. Using an original measure of firm-level opposition to climate policy based on firms' campaign donations to Republicans versus Democrats between 2012 and 2020, we show that a firm's ownership is significantly associated with its political behavior. Using entropy balancing to match on observables, we present robust evidence that publicly-traded companies oppose climate policy more than otherwise similar private ones.

We explore heterogeneity by blockholding and by type of owner. Firms with blockholders oppose less than observably similar ones with dispersed ownership. Firms with high levels of ownership by active investors oppose policy more. Importantly, we find that ownership by passive investors is also significantly associated with opposition. Last, we provide evidence that firms' time horizons are driving the relationship between ownership and opposition. As expected, companies that are more short-term oriented, as proxied by their level of shareholder payout, are more opposed to climate policy. Supplemental analyses using alternative measures of opposition—membership in anti-climate coalitions and lobbying expenditures on climate-related issues—as well as a battery of robustness checks provide confidence that our empirical findings are robust.

This article advances our understanding of the micro-foundations of long-term policymaking by explaining why firms vary in their opposition to long-term policies that require intertemporal tradeoffs. By showing how corporate ownership affects firm preferences for long-term policy, we extend key findings in management studies and CPE. Scholars in these fields have shown that ownership shapes the market behavior of firms. We show for the first time, to our knowledge, that it also shapes their political behavior. Importantly, we identify firms' time horizons as the key mechanism. This opens up a new space in the study of firm preferences and adds to recent scholarship on ownership structure and climate politics (Bayer 2023). It suggests that the short-term distributional effects of policies—the central focus of much firm preference research—intersect with firms' ability to make intertemporal tradeoffs.

Our findings also raise a central question for future research. Firms in liberal market economies like the US, UK, Canada, and Australia tend to rely on impatient, stock market capital while those in coordinated markets economies like Germany, Sweden, and Denmark often rely on patient capital from banks, families, and industrial organizations. We suggest that domestic institutions that shape corporate ownership structures, including corporate governance rules, financial regulation, and tax law, could account for cross-national variation in long-term policymaking, including on climate change. We expect that in countries with more patient capital provision, governments are likely to face less intense business opposition as companies are better able to absorb the short-term costs of long-term climate policymaking. In countries dominated by impatient owners, we expect the opposite. Business is likely to vigorously fight costly mitigation policy as firm managers strive to maintain short-term profits for their shareholders. Initial evidence points in this direction and shows that capital patience, as proxied by stock market capitalization, is positively correlated with a country's climate policy stringency. The US, for instance, is an ideal-type liberal market economy. It has failed at multiple attempts to adopt federal climate policy that would impose short-term costs on firms, such as an energy tax or a cap-and-trade system. The US eventually adopted the Inflation Reduction Act (IRA) in 2022. However, the policy does not impose short-term costs on polluting firms, but rather provides them with carrots in the form of subsidies. Indeed, the US still does not have a federal climate policy that imposes high costs on business.

To be sure, additional research is needed to examine this question in detail. If it holds true, it would provide a complementary explanation for why countries in Scandinavia, for example, have led on climate policy since the 1980s, while liberal market economies have by and large lagged (Finnegan 2022b). Additionally, it would extend our understanding of how domestic institutions shape long-term policymaking beyond deliberative institutions and electoral rules to institutions that shape corporate ownership and firm preferences. It would thus also expand our understanding of the institutional sources of corporate political behavior (Busemeyer and Thelen 2020; Hacker and Pierson 2002; Martin 1995; Martin and Swank 2012; Woll 2008).

Our results also have important implications for politics and policy. First, they highlight the centrality of investors in shaping business opposition to climate policy. This stands in stark contrast to the predominant view that financial investors are a positive force for decarbonization. The theory of change underlying environmental, social, and governance (ESG) investment sees investors in the driving seat of corporate efforts to reduce GHGs. Our findings, however, suggest that only a subset of owners has the time horizons that are compatible with firms accommodating climate policy. This points to fundamental tensions between short-termism and corporate political behavior consistent with ESG goals. Recent findings support this: 60 percent of companies with net-zero or similar emission targets, which can improve ESG scores, use lobbying and other tactics to undermine climate policymaking by governments (InfluenceMap 2023).

Second, and relatedly, our findings raise questions about the role of institutional reform, including of corporate governance, to strengthen long-termism in corporate political behavior. Scholars, business, and civil society have called for reforms of capital markets to better incentivize firms to focus on long-term societal challenges (Jacobs and Mazzucato 2016; Lazonick and Shin 2019). In recent years, for example, US policymakers have sought the reform of corporate governance to strengthen the voice of labor, thus moving corporate governance into debates on social policy. Consistent with these efforts, our findings suggest that corporate governance reform is likely central to a broad range of long-term policy areas, including climate change.

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Fighting the Future:
Short-Term Investors and Business Opposition to Climate Policy

Supplementary Information

Table of contents

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A1. Validating our measure of firm-level climate policy opposition

As described in the main text, a key concern with our measure of firm-level climate policy opposition may be measurement error, which could result if our measure captures firm preferences over a substantially wider set of policies than climate change mitigation.

In the main text, we describe in detail the ways in which we address this concern. One way we do so is to validate our measure against two additional measures of policy opposition. The first is the only other firm-level climate policy position measure for US companies to our knowledge – membership in anti-climate ad-hoc business coalitions from Cory et al. (2020). If a firm in our sample is a member of one of these coalitions, we record the number of years of its membership. If it has never joined one, we code it as 0.

Second, for the firms in our sample, we collect data from the Lobby View dataset (Kim 2018) on firm-level expenditures in USD on three climate-related issues: environment, energy, and fuels. While there is no climate specific issue tag in the dataset, these three issue tags should include virtually all climate-related bills and policies.

We regress these two measures on our measure of climate opposition, and vice versa. If our measure is valid, it should predict membership in anti-climate coalitions and climate-related lobbying expenditures, as well as be predicted by these variables.

Table A1 presents the results. We see that our measure is indeed a positive and statistically significant predictor of both membership in anti-climate coalitions and lobbying. Similarly, we see that firms that are members of anti-climate coalitions and who lobby on climate issues are predicted to have higher scores on our opposition measure.[1]

We take this as evidence of the validity of our measure in accurately capturing firm-level opposition to climate policy.

[1] These results are consistent with recent work that finds campaign contributions to be a significant predictor of lobbying (Kim, Stuckatz, and Wolters 2025).

Table A1. Validating our measure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Membership in anti-climate coalition		Lobbying expenditure		Our measure of climate policy opposition			
Our measure	0.004***	0.003***	4627.65***	4190.97***				
	(0.0007)	(0.0006)	(1265.9)	(1222.53)				
Membership in anti-climate coalition					5.21***	4.32***		
					(0.86)	(0.81)		
Lobbying expenditure							0.000005***	0.000004***
							(0.000001)	(0.000001)
Constant	0.02***	-0.01	7241.42***	-8902.05	1.06***	0.34	1.12***	0.32
	(0.002)	(0.02)	(1657.91)	(8070.86)	(0.06)	(0.42)	(0.06)	(0.40)
Controls		X		X		X		X
R2	0.02	0.08	0.02	0.04	0.02	0.06	0.02	0.06
N	111,931	111,931	111,931	111,931	111,931	111,931	111,931	111,931
Firms	12,595	12,595	12,595	12,595	12,595	12,595	12,595	12,595

Notes: OLS models. Controls include: firm size and year, state, sector (4-digit NAICS code), state-year, and sector-year fixed effects. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

A2. Research Design – Additional information

In this section we provide further details on our research design.

A2.1. Measuring firms' opposition to climate policy

To construct our firm-level measure of climate policy opposition, we utilize data from the Center for Responsive Politics (CRP) who compile political contributions data based on records that are mandatorily filed with the Federal Election Commission by contributors and recipients. There are four channels through which firms can make political contributions (Aggarwal, Meschke, and Wang 2012). First, they can donate to Political Action Committees (PACs). PACs solicit contributions from employees, aggregate the funds, and then donate them to a party, candidate, or another PAC. Second, employees can make individual contributions. For donations over $200, contributors are asked to disclose their employer. Third, companies can give soft money – unlimited donations to national parties for party-building activities. This type of giving was banned in 2002 by the Bipartisan Campaign Reform Act. However, the Supreme Court's 2010 decision in Citizens United v. Federal Election Commission effectively reversed the ban by allowing unlimited corporate funding of broadcasts that support or oppose candidates and issue positions. Lastly, firms can donate to 527 groups which are tax-exempt organizations under section 527 of the Internal Revenue Code that raise money for political activities.

We are interested in measuring the preferences of firms. PAC and individual donations may not directly reflect these preferences since they are based on employee contributions, and as such may be driven by individual-level partisanship (Stuckatz 2022). We instead focus our analysis on firms' soft money donations and their donations to 527 groups, which represent the direct use of corporate funds for political ends. We gather soft money corporate donations from the Individual Contributions Table (coded as "Type 10") in the CRP Campaign Finance Dataset. Donations to 527 groups are collected from the 527 Committees Tables in CRP's 527 Dataset.

We collect data for all firms coded as energy-related ("RealCode E") by CRP. This includes primarily firms in energy sectors (energy producers and electric utilities), but also energy-intensive manufacturers, fuel retailers, and companies that provide services to the energy sector. See Table A2 below.

Table A2. Energy-related sectors as coded by the Center for Responsive Politics (CRP)

Code	CRP Sector Name
E0000	Energy, Natural Resources and Environment
E1000	Energy production & distribution
E1100	Oil & Gas
E1110	Major (multinational) oil & gas producers
E1120	Independent oil & gas producers
E1140	Natural Gas transmission & distribution
E1150	Oilfield service, equipment & exploration
E1160	Petroleum refining & marketing
E1170	Gasoline service stations
E1180	Fuel oil dealers
E1190	LPG/Liquid Propane dealers & producers
E1200	Mining
E1210	Coal mining
E1220	Metal mining & processing
E1230	Non-metallic mining
E1240	Mining services & equipment
E1300	Nuclear energy
E1320	Nuclear plant construction, equipment & svcs
E1500	Alternate energy production & services
E1600	Electric Power utilities
E1610	Rural electric cooperatives
E1620	Gas & Electric Utilities
E1630	Independent power generation & cogeneration
E1700	Power plant construction & equipment
E2000	Environmental services, equipment & consulting
E3000	Waste management
E4000	Fisheries & wildlife
E4100	Fishing
E4200	Hunting & wildlife
E5000	Water Utilities

Once a firm has made a political contribution, it enters our dataset. We code any year that the firm did not contribute as 0. We drop all non-firms. We then identify polluting sectors for our sample inductively using 4-digit NAICS codes, choosing the most energy- and/or emissions-intensive industries. These are (4-digit NAICS code in parentheses):

- oil and gas extraction (2111)
- coal mining (2121)
- metal ore mining (2122)
- nonmetallic mineral mining and quarrying (2123)
- support activities for mining (2131)
- electric power generation, transmission, and distribution (2211)
- natural gas distribution (2212)
- water, sewage and other systems (2213)
- utility system construction (2371)
- animal slaughtering and processing (3116)
- seafood product preparation and packaging (3117)
- pulp, paper and paperboard mills (3221)
- petroleum and coal products manufacturing (3241)
- basic chemical manufacturing (3251)
- other chemical products and preparation (3259)
- petroleum and petroleum products merchant wholesalers (4247)

Last, we exclude pure-play clean energy firms from the analysis by identifying firms with clean energy keywords in their name and then dropping them.[2] We drop these firms as they are likely to incur short-term benefits, not short-term costs, from climate regulation. The resulting dataset contains the soft money and 527 political giving by US emissions- and energy-intensive firms for each year from 2012 to 2020. It consists of 744 unique companies and 5,278 firm-year observations. We refer to this sample as 'giving' firms.

To measure the partisanship of giving, we use the CRP recipient code (the "RecipCode" variable) to match donations to either the Republican or Democratic Parties. Firms also give soft money to PACs. In its data tables, CRP does not code the party with which each PAC is associated. However, on the CRP website they do include a partisanship measure for each PAC. We therefore hand code the political orientation of each PAC by looking up the unique recipient identification number (variable "RecipID") on the CRP website.

A2.2. Generating a comparison sample

The CRP data allow us to observe only firms that give money to political parties. To make inferences about the population of US companies as a whole, we need to also include firms that

[2] The keywords are: solar, sun, wind, turbine, nuclear, geothermal, renewable, and hydro. While this approach does not guarantee that all pure-play clean energy firms are excluded, it should substantially reduce their presence in the dataset.

do not give. To do this, we use Bureau van Dijk's Orbis to generate a random sample of US companies that do not make political contributions, stratified by sector and size.

We draw firms from four sectors in the following proportions, with the aim to broadly match the composition of the giving sample of firms: 30% from mining and quarrying (NACE Rev. 2 Section B), 30% from utilities (NACE Rev. 2 Section D), 25% from manufacturing (NACE Rev. 2 Section C), and 15% from wholesale and retail trade related to fossil fuels (NACE Rev. 2 Section G). Our aim is to draw between 10,000 and 15,000 firms (around 15-20 times our giving sample) in order to have a deep pool of control units for our matching method.

To ensure that we sample enough large companies, we draw all of the large and very large firms in the mining and electricity sectors that are not already in our giving sample. We then draw 4,000 small and medium-sized enterprises (SMEs) from each of these two sectors. For manufacturing and wholesale, we draw half the sample from large and very large companies and half from SMEs. After cleaning the data by dropping non-firms, inactive firms, and duplicates with our giving sample, we are left with 11,881 non-giving companies. Because the non-giving sample is randomly drawn, it should be representative of the population of US firms within each selected sector and firm size category, and therefore balanced across unobserved covariates.

False negatives are a concern. We do not want to include firms in the non-giving sample that have in reality made political donations. Remember that our giving sample consists only of firms categorized as energy-related by CRP. If we include a firm in our non-giving sample that is not coded as energy-related by CRP, it could have made a political contribution but not show up in our giving sample because it is categorized by CRP into a different sector. As a result, we would code it as non-giving, even though it had in fact made political contributions. To prevent this, we would ideally sample from the exact subsectors for which we have CRP data. That way, after deleting any duplicates, the non-giving sample would only contain firms in subsectors that are coded as energy-related by CRP. However, because the CRP data is based on its own sector classification, this approach is not possible. As an alternative, we sample from sectors that are the most energy-intensive, as firms in these sectors should be the most likely to be coded as energy-related by CRP. While this approach does not guarantee against all false negatives, it should substantially reduce their occurrence.

A2.3. Measuring firm ownership

We measure four dimensions of firm ownership. First, we measure whether a company is publicly listed. Because the CRP data records only the contributing firm's name, we use the name recorded by CRP to hand match all giving firms to their Orbis ID. We then collect data from Orbis on whether each company or its global ultimate owner (GUO) is listed in each year. If either are true, the firm-year is coded as 1. If not, it is 0. This strategy assumes similar behavior from firms that are themselves listed and those that are owned by listed firms.

Second, we measure ownership concentration using Orbis' 'Independence Indicator'. The variable ranges from 'A' to 'D'. 'A' indicates low ownership concentration with no shareholder having more than a 25% stake in the company. Companies rated 'B' have no shareholder with a 50% stake, but one or more with at least 25% ownership. Companies rated 'C' have shareholders with summed direct ownership above 50% and 'D' indicates one shareholder with direct ownership above 50%. Lastly, Orbis assigns 'U' to firm-years where ownership information is unknown. There is no agreed threshold for blockholding. Some argue it entails majority ownership while others put the threshold as low as 5% (Edmans 2014). We take a middling approach and use a dichotomous variable to code firms in categories B, C, and D as having blockholders, and those in A as having dispersed ownership.

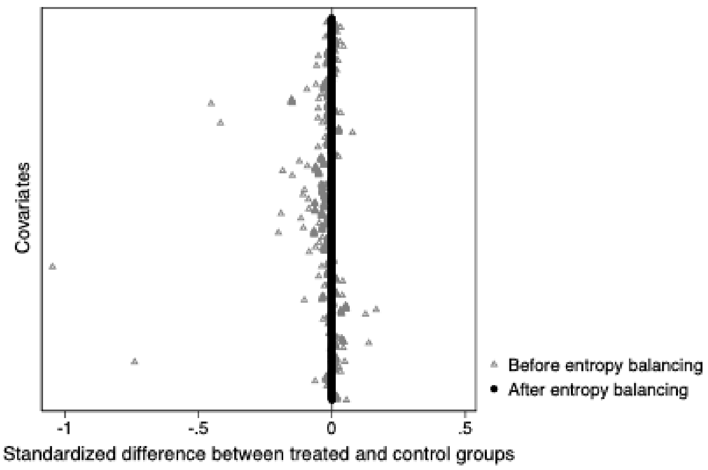
Third, we measure firm ownership by impatient investors using S&P Capital IQ. We focus on active investment managers as the prototypical impatient investor. This set of owners is widely considered to be under the most intense pressure to generate quarterly financial gains for their clients as they try to beat market returns. They are therefore the most likely to exit in the face of poor short-term financial performance (Deeg and Hardie 2016; Jackson and Petraki 2011). We collect data on the percent of outstanding shares owned by investment managers in each firm-year. Because the data is taken from financial reports, it is only available for publicly-traded companies.

Last, we measure passive asset managers (short "passive investors") to test mixed theoretical expectations and evidence as to whether passive investors are more patient than active ones, and as a result, whether firms owned by them oppose climate policy less. We collect data from S&P Capital IQ on the combined percentage of outstanding shares owned by the Big Three passive asset managers, BlackRock, Vanguard, and State Street, who together manage 80-90% of all passive equity fund assets (Fichtner, Heemskerk, and Garcia-Bernardo 2017). Similar to data on impatient investors, this data is only available for public companies.

A3. Covariate balance plot for blockholding

In the interest of space, we only show the covariate plot for the publicly listed treatment in the main text. Here we show the plot for the blockholding treatment (Figure A1). The plots are very similar. Before entropy balancing, there is a substantial difference between treated and control groups. After balancing, the samples are almost perfectly balanced on observables.

Figure A1. Covariate balance plot for the blockholding



Notes: This balance plot is for blockholding. The plot for the publicly listed treatment is virtually identical and reported in the main text. Covariate names are omitted because their large number makes them unreadable when plotted on the y-axis.

A4. Supplemental analyses

As described in the main text, we supplement our main results in two ways. First, we analyze the relationship between ownership and additional measures of firms' climate policy position. Second, we separately analyze polluting firms in fossil fuel and non-fossil fuel sectors.

A4.1. Analyzing additional measures of firms' climate policy position

As mentioned above in Section A1, we collect data on two additional measures of climate policy position for the firms in our sample. The first measures the number of years that a firm has been a member of an anti-climate business coalition from Cory et al. (2020). The second utilizes Lobby View data (Kim 2018) to measure the amount of lobbying expenditures by firms on climate-related issues in USD.

We use the same empirical approach as for our main results – entropy balancing and OLS models. Table A3 presents the results. The findings are predicted by our arguments. Impatient ownership—public listing, active investor ownership, and passive investor ownership—is positively and significantly associated with membership in anti-climate coalitions and lobbying expenditure on climate-related issues. Conversely, blockholding is negatively and significantly associated with these behaviours. Last, short time horizon (as proxied by shareholder payout) is a positive predictor.

The results provide confidence that our main findings do not rely on our measure of climate policy generated from campaign contributions. Indeed, across three measures of firms' climate policy position and four measures of ownership our main finding does not change.

A4.2. Analyzing polluting firms in fossil fuel versus non-fossil fuel sectors

As described in the main text (Section 4.1), we explore heterogeneity by dividing polluting firms into fossil fuel and non-fossil fuel sectors. Fossil fuel sectors are (4-digit NAICs code in parentheses): oil and gas extraction (2111), coal mining (2121), natural gas distribution (2212), petroleum and coal products manufacturing (3241), and petroleum and petroleum products merchant wholesalers (4247). All else equal, we expect fossil fuel sectors to be less willing and able to decarbonize during our sample period compared to non-fossil fuel sectors.

Again, we use the same empirical approach as for our main results – entropy balancing and OLS models. Table A4 presents the results. While the direction of the coefficients for the fossil fuel sample are as expected, they are not statistically significant. On the other hand, the coefficients for the non-fossil fuel sample are in the predicted direction and significant. This suggests that our main results may be driven by polluting firms in non-fossil fuel sectors.

Table A3. Analyzing additional measures of firms' climate policy position

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Membership in anti-climate coalition					Lobbying expenditure				
Publicly listed	0.05**					62636.99***				
	(0.02)					(14271.09)				
Blockholding		-0.03*					-30269.81**			
		(0.01)					(10431.53)			
Active investor ownership			0.002**					2032.08**		
			(0.0006)					(674.13)		
Passive investor ownership				0.004*					6108.02**	
				(0.002)					(1908.82)	
Shareholder payout					0.01+					15210.88*
					(0.007)					(7649.21)
Size (ref=small)										
Medium			0.08	0.10	0.08			55503.33	75158.18	39796.69
			(0.75)	(0.08)	(0.05)			(48469.85)	(50267.90)	(26997.36)
Large			0.14**	0.15**	0.11***			92547.80**	98312.78**	54401.76**
			(0.04)	(0.05)	(0.03)			(33803.83)	(35884.11)	(23167.22)
Very large			0.50***	0.53***	0.32***			386313.80***	422061.20***	185991.20***
			(0.07)	(0.08)	(0.04)			(96611.47)	(107905.30)	(46713.18)
Constant	0.05***	0.05***	-0.20**	-0.08*	-0.15*	1699.35	35555.87***	-137815.6*	-34807.27	-46791.32
	(0.01)	(0.01)	(0.07)	(0.04)	(0.07)	(1685.92)	(10043.33)	(63205.48)	(47282.36)	(47802.75)
Year FE			X	X	X			X	X	X
State FE			X	X	X			X	X	X
State-year FE			X	X	X			X	X	X
4-digit NAICS sector FE			X	X	X			X	X	X
Sector (4-digit)-Year FE			X	X	X			X	X	X
Entropy balancing	X	X				X	X			
R^2	0.002	0.001	0.17	0.18	0.14	0.003	0.001	0.08	0.08	0.05
N	111,931	70,366	14,174	13,293	19,731	111,931	70,366	14,174	13,293	19,731
Firms	12,595	7,917	1,806	1,660	2,550	12,595	7,917	1,806	1,660	2,550

Notes: Covariates for entropy balancing are: firm size, state in which firm is headquartered, year, 4-digit NAICS sector code, state-year fixed effects, and sector-year fixed effects. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. $^{+} p < 0.10$ $^{*} p < 0.05$ $^{**} p < 0.01$ $^{***} p < 0.001$

Table A4. Analyzing fossil fuel versus non-fossil fuel sectors

	Fossil fuel sectors					Non-fossil fuel sectors				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Publicly listed	1.19					0.74*				
	(0.80)					(0.29)				
Blockholding		-0.87					-0.78**			
		(0.57)					(0.28)			
Active investor ownership			0.06					0.06***		
			(0.04)					(0.02)		
Passive investor ownership				0.13					0.10+	
				(0.10)					(0.06)	
Shareholder payout					0.23					0.56*
					(0.17)					(0.26)
Size (ref=small)										
Medium			24.17*	26.32*	31.02+			2.86	3.46*	2.98*
			(11.85)	(12.58)	(11.85)			(1.53)	(1.70)	(1.51)
Large			1.33	1.33	0.08			2.20***	2.25***	1.56***
			(1.05)	(1.13)	(0.88)			(0.56)	(0.59)	(0.35)
Very large			13.27***	13.80***	6.61***			10.01***	10.82***	5.33***
			(2.08)	(2.24)	(1.05)			(1.40)	(1.50)	(0.73)
Constant	2.77***	2.37	-5.41	-1.80	-3.93*	0.96***	1.35***	-1.95	0.70	-4.18
	(0.68)	(0.53)	(2.96)	(2.27)	(1.71)	(0.19)	(0.27)	(4.07)	(4.28)	(1.96)
Year FE			X	X	X			X	X	X
State FE			X	X	X			X	X	X
State-year FE			X	X	X			X	X	X
4-digit NAICS sector FE			X	X	X			X	X	X
Sector (4-digit)-Year FE			X	X	X			X	X	X
Entropy balancing	X	X				X	X			
R^2	0.001	0.001	0.18	0.19	0.12	0.001	0.002	0.14	0.15	0.10
N	33,439	21,407	5,222	4,811	7,690	78,492	48,959	8,952	8,482	12,041
Firms	3,797	2,433	679	614	999	8,799	5,485	1,127	1,046	1,551

Notes: The dependent variable is our measure of opposition to climate change policy. Covariates for entropy balancing are: firm size, state in which firm is headquartered, year, 4-digit NAICS sector code, sector-year fixed effects (at 4-digit NAICS), and state-year fixed effects. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. $^{+}$ $p < 0.10$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

A5. Robustness tests

As mentioned in the main text, we subject our results to a battery of robustness tests. We detail each test below. Across all tests, our main findings do not change.

A5.1. Additional controls

First, we test whether our results are sensitive to the inclusion of additional controls. To do this, we add the covariates that were used for entropy balancing back into the model as controls (Table A5 – Models 1 and 3). Next, we add the additional controls of total political giving and more granular sector fixed effects at the 6-digit NAICS code, as well as 6-digit sector-year fixed effects (Table A5 – Models 2 and 4-7). Total political giving is the absolute amount of combined giving to Democrats and Republicans. It should act as an additional control for firm size, since larger firms are likely to give more. The 6-digit sector fixed effects offer a very granular control for sectoral heterogeneity.

The coefficients are similar in direction, magnitude, and statistical significance to our main findings. Though the one exception is the coefficient for shareholder payout. It is smaller than our main result but with a similar magnitude standard error, which means it loses statistical significance here.

A5.2. Alternative specification

As we describe in the main text, our preferred specification for our publicly listed and blockholding models is to use entropy balancing to match treated and control groups on observables. Here we test whether our findings are sensitive to this specification by estimating a set of alternative models – simple OLS models without entropy balancing.

Table A6 presents the results. Across both models, the direction and statistical significance of the coefficients are the same as our main results. The magnitude, however, changes. Both coefficients are smaller than our main results, which indicates that the OLS model results may be biased downwards because of covariate imbalance.

A5.3. Expanded sample

Last, we test whether our results are sensitive to our sample. As we describe in the main text, our preferred approach is to analyze a narrow set of energy- and emissions-intensive sectors since they are the ones most likely to be steered in their political giving by climate policy concerns. Here we test whether our main findings hold up when we analyze the full sample of energy-related firms as coded by the Center for Responsive Politics (CRP). Additionally, this approach tests the external validity of our analysis to a broader set of energy companies. Examining this larger sample adds around 500 to 5,500 additional firms to our analysis, depending on the model.

Table A7 presents the results. Across all models, the coefficients are similar in direction, magnitude, and statistical significance to our main findings.

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Table A5. Additional controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Publicly listed	0.90**	0.84*					
	(0.34)	(0.34)					
Blockholding			-1.09***	-0.99***			
			(0.26)	(0.25)			
Active investor ownership					0.05**		
					(0.02)		
Passive investor ownership						0.10*	
						(0.05)	
Shareholder payout							0.20
							(0.13)
Total political giving		5.68*		4.09**	9.76**	9.61**	10.10***
		(2.31)		(1.30)	(2.84)	(2.96)	(2.65)
Size (ref=small)							
Medium	5.08**	5.14**	3.19***	3.16***	7.17**	7.31**	7.85*
	(1.46)	(1.50)	(0.75)	(0.76)	(2.46)	(2.62)	(3.59)
Large	0.54**	0.49*	0.10	0.22	1.61***	1.71***	0.91*
	(0.20)	(0.19)	(0.22)	(0.20)	(0.44)	(0.46)	(0.36)
Very large	4.67***	4.19***	6.21***	5.72***	10.47***	11.09***	5.60***
	(0.50)	(0.49)	(0.62)	(0.63)	(1.30)	(1.40)	(0.67)
Constant	-1.51	-7.99***	0.66	-6.96***	-2.85	-2.02	-11.73**
	(0.97)	(1.83)	(0.77)	(1.24)	(2.84)	(4.42)	(3.43)
Year FE	X	X	X	X	X	X	X
State FE	X	X	X	X	X	X	X
State-year FE	X	X	X	X	X	X	X
4-digit NAICS sector FE	X		X				
6-digit NAICS sector FE		X		X	X	X	X
Sector (4-digit)-Year FE	X		X				
Sector (6-digit)-Year FE		X		X	X	X	X
Entropy balancing	X	X	X	X			
R^2	0.07	0.15	0.07	0.12	0.26	0.27	0.21
N	111,931	111,922	70,366	70,366	14,174	13,293	19,731
Firms	12,595	12,594	7,917	7,917	1,806	1,660	2,550

Notes: OLS models. The dependent variable is opposition to climate change policy. Covariates for entropy balancing are: firm size, state in which firm is headquartered, year, 4-digit NAICS sector code, state-year fixed effects, and sector-year fixed effects. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table A6. Alternative specification

	(1)	(2)
Publicly listed	0.51**	
	(0.18)	
Blockholding		-0.87**
		(0.30)
Size (ref=small)		
Medium	3.16***	2.81***
	(0.46)	(0.66)
Large	0.41**	0.22
	(0.12)	(0.23)
Very large	4.66***	5.60***
	(0.41)	(0.49)
Constant	0.20	0.71
	(0.41)	(0.69)
Year FE	X	X
State FE	X	X
State-year FE	X	X
4-digit NAICS sector FE	X	X
Sector (4-digit)-Year FE	X	X
R^2	0.05	0.06
N	111,931	70,366
Firms	12,595	7,917

Notes: OLS models. The dependent variable is opposition to climate change policy. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table A7. Expanded sample

	(1)	(2)	(3)	(4)	(5)
Publicly listed	0.83**				
	(0.29)				
Blockholding		-1. 10***			
		(0.31)			
Active investor ownership			0.04**		
			(0.01)		
Passive investor ownership				0.09*	
				(0.04)	
Shareholder payout					0.24*
					(0.10)
Size (ref=small)					
Medium			5.49***	5.86***	5.31**
			(1.43)	(1.54)	(1.97)
Large			2.60***	2.74***	1.51***
			(0.51)	(0.55)	(0.38)
Very large			10.13***	10.69***	5.60***
			(1.03)	(1.10)	(0.56)
Constant	1.58***	2.08***	-2.08	0.18	-6.67***
	(0.23)	(0.30)	(2.21)	(2.30)	(1.70)
Year FE			X	X	X
State FE			X	X	X
State-year FE			X	X	X
4-digit NAICS sector FE			X	X	X
Sector (4-digit)-Year FE			X	X	X
Entropy balancing	X	X			
R^2	0.001	0.002	0.16	0.17	0.13
N	159,408	94,998	18,326	17,245	25,131
Firms	18,076	10,766	2,339	2,166	3,270

Notes: OLS models. The dependent variable is opposition to climate change policy. Covariates for entropy balancing are: firm size, state in which firm is headquartered, year, 4-digit NAICS sector code, state-year fixed effects, and sector-year fixed effects at 4-digit NAICS code. Sample period is 2012-2020. Robust standard errors in parentheses clustered at the firm level. $^{*}p < 0.05$ $^{**}p < 0.01$ $^{***}p < 0.001$

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A5. Party manifesto coding method and data

Figure 1 in the main text shows positions on climate change policy between the Democratic and Republican Parties from 1992 to 2020. We generate the underlying data for this figure in four steps.

Step 1: Develop keyword dictionary

We first develop an extensive dictionary of climate change policy-related keywords. We generate 134 keywords in total. They cover general as well as sector-specific words and phrases. The complete list is available at the end of this section.

Step 2: Extract sentences from manifestos

The second step is to extract all sentences from Republican and Democratic Party manifestos for presidential election years from 1992 to 2020 that contain our keyword(s). To do this, we use R to access the Comparative Manifestos Project's corpus of manifestos data via an API and then extract complete sentences containing one or more of our keywords.

Step 3: Code each sentence

Next, we hand code the stance of each extracted sentence as either 'pro', 'anti', 'neutral', or 'N/A'.[3]

- We code as 'Pro' sentences that indicate support for policies that, if implemented or continued to be implemented, would reduce greenhouse gas (GHG) emissions.
- 'Anti' sentences are those that indicate support for policies that, if implemented or continued to be implemented, would increase GHG emissions.
- 'Neutral' policies are those that are climate-related, but do not indicate a clear stance. They are often statements of fact (e.g., 'Coal accounts for more than one-half of America's electric power generation capacity today').
- 'N/A' are sentences that are not relevant to climate change (i.e., false positives). They are often related to nuclear weapons.

Step 4: Generate measure

The last step is to generate a measure for each party's pro-climate policy position. We do this using the following equation:

$$\frac{\text{Count of "pro" sentences}_{m,i,t} - \text{Count of "anti" sentences}_{m,i,t}}{\text{Total number of sentences}_{m,i,t}} \tag{A1}$$

where m is manifesto, i is political party, and t is presidential election year.

[3] Our approach is adapted from Carter et al. (2017).

Keyword dictionary

- Climate change
- Global warming
- Global heating
- Carbon
- Greenhouse gas
- Net zero
- Net-zero
- Green transition
- Energy transition
- Ecological transition
- UNFCCC
- Climate agreement
- Climate negotiations
- Paris Agreement
- Kyoto Protocol
- Copenhagen Accord
- Cap and trade
- Cap-and-trade
- Emissions trading scheme
- Carbon credit
- Carbon offset
- Fossil fuel tax
- Coal tax
- Oil tax
- Gas tax
- Fossil fuel subsidy
- Fossil fuel subsidies
- Clean energy
- Clean electricity
- Renewable energy
- Renewable electricity
- Alternative energy
- Low-carbon
- Low carbon
- Wind
- Solar
- Nuclear
- Coal
- Natural gas
- Oil
- Hydropower
- Geothermal
- Tidal
- Wave
- Biogas
- Biomass
- Carbon Capture and Storage
- Carbon Capture, Utilisation and Storage
- CCS
- CCUS
- Energy storage
- Hydrogen
- Battery
- Batteries
- Flaring
- Methane
- Electric vehicles
- EVs
- Electric buses
- Electric trucks
- Electric trains
- Electromobility
- Public transit
- Public transport
- Mass transit
- Mass transport
- Walking and cycling
- Shipping and aviation / aviation and shipping
- Modal shift
- Multi-modal transport
- Energy efficiency
- Energy conservation
- Low-carbon heat
- Heat pumps
- Insulation
- Green steel
- Green aluminium
- Hydrofluorocarbons
- Deforestation
- Reforestation
- Afforestation
- LULUCF
- REDD
- REDD+
- Carbon sink
- Nature-based solutions
- Tree-planting
- Green agriculture
- Green farming
- Carbon farming
- Sustainable farming
- Organic farming
- Ecological farming
- Agroecology
- Climate smart agriculture
- Low-carbon diet
- Vegetarian
- Vegetarianism
- Vegan
- Veganism
- Blue carbon
- Zero waste
- Zero-waste
- Composting
- Green technology
- Clean technology
- Green innovation
- Clean innovation
- Green research and development (R&D)
- Clean research and development (R&D)
- Green growth
- Green economy
- Green capitalism
- Green investment
- Green finance
- Green bonds
- Limits to growth
- Degrowth
- Post-growth
- Planetary boundaries
- Sustainable consumption
- Just transition
- Climate justice
- Environmental justice
- Green New Deal
- Climate adaptation
- Climate change adaptation
- Adaptation to climate
- Sea level rise
- Extreme weather
- Climate impacts
- Climate change impacts
- Climate risks
- Climate change risks

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