Greening in Groups: Firm Concentration and Lobbying on Green Industrial Policy*

Ryan Pike†

25 August 2025
Word Count: 11000

Abstract

Productivity is key to the economic and political behavior of firms. Green industrial policy is an increasingly common intervention to improve domestic firms' green productivity. Whereas existing explanations of firm political behavior take productivity as given, I argue that inter-firm geographic concentration provides insights into how firms have reacted to this increasing green interventionism to shape future productivity. Concentrated firms receive more *proximate* policy benefits, those that cannot be limited to a single firm but are shared among neighbors. Expansions to green industrial assistance funding enable transformational decarbonization innovations, such as infrastructure projects, laden with proximate benefits, leading concentrated firms to lobby more during implementation. Using French lobbying data, I assess how manufacturing firms responded to an expansion of green assistance in the COVID-19 stimulus package: France Relance. Using this exogenous funding shock in a difference-in-differences design, I find that more concentrated firms increasingly lobby on green industrial policy. This holds when I consider intra-industry trends, suggesting concentrated firms lobby alongside their sector associations. Qualitative evidence of policy developments provide further evidence of a geographic cleavage shaping the politics of industrial decarbonization.

*This paper has benefited from helpful feedback from numerous individuals, in particular Sarah Bush, David Cerero, Isabela Mares, Didac Queralt, Melissa Pavlik, Luke Sanford, and members of the Comparative Politics Working Group at the University of Konstanz, the CP Workshop at Yale University, the Environmental Politics and Governance Online Working Group, and audiences at Money in Politics Conference 2024, EPSA 2024, and APSA 2024.

†PhD Candidate, Yale University. ryan.pike@yale.edu

Highly productive, or superstar, firms are increasingly important economic and political actors in many post-industrial societies. More productive firms have a comparative advantage over their peers providing them with increased profits, market share, and in some cases export status (Melitz, 2003). Politically, these same firms are more likely to lobby for trade liberalization (Kim and Osgood, 2019; Osgood, 2017) and climate regulation (Kennard, 2020). If productivity is so essential to a firm's survival, it follows firms have an interest in shaping political processes that may enhance productivity. Green industrial policy (GIP) is a policy intervention aimed at smoothing transition costs for emissions intensive firms (Allan, Lewis and Oatley, 2021; Allan and Nahm, 2024), one that has sharply increased in usage following the COVID-19 pandemic.[1] These funds serve to assist in the reduction of emissions per unit of output, or improve a firm's green productivity, while also attempting to address national-level concerns regarding competitiveness and net-zero.[2] For firms facing growing climate regulation or looming carbon tariffs, green productivity progressively factors into overall productivity.

A recent example of GIP is France Relance: The COVID-19 recovery package with which the French government quintupled the amount of green state assistance to industry, up to 1 billion Euros annually to "accelerate the green transition of the economy and its [our] industrial base."[3] In contrast to a longer standing tradition

[1]Other prominent examples of GIP include the U.S. Inflation Reduction Act, as well as portions of similar COVID recovery plans partially funded by the EU. For example, Spain's Plan de Recuperación, Transformación y Resiliencia and Germany's Aufbau- und Resilienzplans.

[2]GIP's role in boosting competitiveness can be found in, for example, the Draghi Report. https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en.

[3]Original: "*France Relance* vise à accélérer la conversion écologique de notre économie et de notre tissu productif." (p. 3) Author's translation.

favoring price-based or regulatory approaches to decarbonization, the climate policy regime today is markedly more diverse than in the past, with policy carrots complementing sticks. How, then, have industrial firms responded to this increase in green subsidy assistance? Existing research on firm preferences and political behavior related to climate policy stresses the importance of sector (e.g., brown versus green) (Brulle, 2018), supply chains (Cory, Lerner and Osgood, 2021), or (relative) emissions intensity (Kennard, 2020; Meckling, 2015). Jointly, these arguments suggest that firms with more emissions are more likely to lobby for assistance to reach net zero. This focus on emissions, while providing a baseline for lobbying behavior, is unlikely to explain to firm responses to policy change for two reasons.

First, industrial decarbonization assistance targets emissions-intensive firms by definition, meaning there is less of an incentive to engage in costly lobbying to further shape policy following passage along this dimension of firm difference, as emissions-intensive firms have already won a portion of the budget against low-emission firms. Second, the innovations required for many emissions-intensive firms to fully decarbonize require the provision of infrastructure that is unlikely to be feasible for a single firm to provide alone. These two insights serve as the basis for a novel theory of climate assistance lobbying focused on an additional inter-firm cleavage: geographic concentration.

Geographic concentration to other emissions-intensive firms decreases the cost of decarbonization innovations with spatial externalities, such as carbon capture or hydrogen pipelines. These infrastructure projects are transformational in their decarbonization potential, providing firms with large gains to green productivity; but

require ample resources that surpass those of even the largest firms. They provide what I call *proximate* benefits: decarbonization gains that cannot be limited to a single firm. In contrast to other forms of GIP assistance providing *exclusive* benefits to a single firm, firms whose production sites are more geographically concentrated with other emissions-intensive production sites stand to receive a greater share of proximate benefits than their more isolated peers. Expansions to the green industrial assistance budget make such transformational projects and proximate benefits from policy feasible. Together, this suggests that more geographically concentrated firms are more likely to lobby on green industrial assistance following budget expansions. Lobbying following policy passage here serves as a means of shaping implementation (You, 2017), in the present case this suggests an increasingly geographic and infrastructure-based approach to industrial decarbonization.

I assess this argument with the universe of French industrial firms that lobbied the government between 2017 and 2022. Collecting original location data on roughly 1,200 industrial production sites, I generate a measure of geographic concentration for firms directly lobbying the French government. Using the disclosed policy area to measure lobbying on assistance, I assess how firms responded to the shift in climate policy funding due to France Relance in a difference-in-differences design, in doing so I control for firm-level characteristics and assess reaction to a shift in the climate policy paradigm. I then consider how firms and business associations interact over the course of the lobbying process. Given the passage of policy often confers vague, collective benefits, whereas lobbying on the implementation of policy may provide firms with more particular benefits (You, 2017), I assess the relative lobbying on GIP

between firms and their sector associations over the same time period.

In isolation, I find that more concentrated firms increasingly lobbied on green industrial assistance following the passage of France Relance. A standard deviation increased in a firm's concentration predicts an 18% increase in the number of GIP-related disclosures. Furthermore, these concentrated companies are more likely to speak to government about infrastructure projects such as hydrogen and carbon capture. Firms do not, however, shift their aggregate amount of lobbying disclosures or expenditures, suggesting a reallocation of effort. That is, concentrated French firms shifted lobbying resources away from other issues towards industrial decarbonization following the budget shock. Comparing firms to their sector associations, I find similar results. While sector associations lobby more on average than an individual firm, firms with above average concentration relative to their within-industry peers sharply narrow this gap. This finding is line with a division of labor between firms and sector associations in terms of lobbying across the entire policy process, albeit one in which the passage of policy introduces a novel cleavage: geography. Finally, I trace the development of industrial decarbonization assistance in the years since France Relance which provides evidence of a policy shift focusing on infrastructure projects such as carbon capture and storage and incentives to firm coordination along a geographic rather than sector basis. This geographic policy focus complements direct coordination between the state and the production sites with the highest emissions.

This article makes three contributions to the study of politics. First, I build on a growing literature studying firm preferences and behavior towards climate policy (Baehr, Bare and Heddesheimer, 2023; Cory, Lerner and Osgood, 2021; Eun, Lee

and Jung, 2023; Genovese and Tvinnereim, 2019; Green et al., 2022; Kennard, 2020; Lerner and Osgood, 2023; Meckling, 2011, 2015) and the politics of (green) industrial policy (Allan, Lewis and Oatley, 2021; Allan and Nahm, 2024; Mahdavi, Martinez-Alvarez and Ross, 2022; Meckling, 2021; Juhász and Lane, 2024; Rickard, 2018; Rodrik, 2014). I demonstrate the relevance and importance of firms in the policy process extending previous accounts privileging sectors. Dichotomizing sectors or economic actors as brown versus green or considering emissions intensity alone is insufficient to understand how firms are adjusting to an increasingly interventionist climate policy regime.

Second, my focus on the economic geography of firms, as organizations composed of multiple production sites, extends earlier work on the role of sector concentration in trade and subsidies policy (Alt et al., 1999; Busch and Reinhardt, 1999; Rickard, 2018; Zahariadis, 2001). This likewise complements the extensive literature studying patterns of employment as one facet of economic geography (for a recent review see Rickard (2020)) by providing an explanation rooted in the distribution of production both within and between firms. This focus on production sites extends an approach in the IPE literature centered on firms rather than sectors that has generated important insights on the development of economic policy, in particular trade liberalization, in recent years (Kennard, 2020; Kim, 2017; Kim and Osgood, 2019; Osgood, 2017, 2018). Rather than take productivity as given, I consider how firms approach productivity gains in the context of the ecological transition. In the case of industrial decarbonization, it is production sites not just firms that we need to consider, as the characteristics of the former, which vary within the firm, shape

decarbonization decision-making and consequently future productivity.

Lastly, I provide evidence from a novel case to the literature on lobbying and special interest politics (see De Figueiredo and Richter (2014) and Bombardini and Trebbi (2020) for reviews calling more work beyond the U.S.), with quantitative lobbying disclosure data to my knowledge unused in social science research. My findings on the role of firms complements work highlighting their growing importance at the EU-level (Hanegraaff and Poletti, 2021; Hanegraaff, Poletti and Aizenberg, 2023), as well as research investigating how firms lobby in relation to their sector associations (Albareda, Coen and Saz-Carranza, 2025; Toenshoff, 2024).

Geography as an Asset on the way to Net Zero

Existing green industrial policy research often highlights two key characteristics when considering whether a given policy is GIP: (1) the intention to develop green industries or the sustainable economy writ large (Allan, Lewis and Oatley, 2021; Allan and Nahm, 2024; Rodrik, 2014), and (2) the myriad forms GIP can take, for example "investments, incentives, regulations, and policy" (Allan, Lewis and Oatley, 2021, fn. 1). Taking these broader definitions of GIP into account, I motivate additional characteristics that provide discriminating power when considering whether a given climate mitigation policy is also GIP.

First, industrial policies provide benefits, be they financial or via favorable status designation. By status designation, I refer to those policies which might designate certain actors (e.g., firms, sectors, communities) as receiving benefits, such as reduced-red tape, increased access to bureaucracy, or eligibility to certain funding

opportunities. Broadly, the benefit is not immediately accountable. Grants, soft loans, or conditional tax incentives offer, in contrast, immediate financial benefits. What is essential is that those firms affected by policy receive a benefit rather than a direct cost, that is an explicit, accountable increase, to their production production.[4]

Second, industrial policies are targeted or selective, typically conditional on an application or shift in behavior. That is, in contrast to regulation, the direct consequence of policy is not economy-wide.[5] Compared to a carbon tax, economic actors often apply for assistance or change behavior to qualify for a tax credit. A change in behavior under a carbon tax, for example reducing emissions, does not change the reach of the regulation–the firm is still regulated or eligible for coverage.

Taken together, I consider green industrial policy or aid as a climate policy that provides public financial assistance or status designation with the goal of easing innovation challenges related to industrial emissions abatement on a non-universal basis.[6] To be clear, green industrial assistance does not strictly fund R&D, that is the attempt to invent novel production technologies to reduce climate impacts. It can also reduce the investment risk faced by firms to pursue changes to the production process thereby abating emissions–that is green *innovation* not necessarily *invention*.

For example, a grant to facilitate the uptake of electric arc furnaces from traditional blast furnaces at steel plants would fit the criteria–the technology in question

[4]Direct costs can facilitate indirect benefits as Kennard 2020 demonstrates, the difference here is that the benefit is not accompanied by explicit costs to others.

[5]I stress the temporal dimension here as one could reasonably expect any policy to have spillover effects.

[6]I use the terms aid, assistance, and industrial policy interchangeably throughout the remainder of the paper. Likewise, both decarbonization and emissions abatement refer to industrial decarbonization.

exists, but commercial risks reduce the likelihood of innovation to reduce decarbonization. Alternatively, upstream grants to fund product innovation related to improved cement carbonation, the chemical reaction in which alkaline metals (e.g., calcium) bind with carbon dioxide thereby acting as an emissions sink, would be closer to invention as the production innovation is not immediately obvious. Both are instances of green industrial assistance, but not necessarily via a strict attempt to eliminate the market failure of innovation.[7]

Firm Preferences and Behavior

I consider firms to be organizations composed of multiple production sites that to reach net zero need to invest in decarbonization innovations at each site. Under a regulatory regime that penalizes higher emissions (e.g., a carbon tax), these innovations provide firms with an advantage over their competitors via the resulting improved green productivity, or emissions generated per unit of output. This competitive market mechanism motivates firm decision-making, in the same way that firms formulate preferences for climate regulation (Cory, Lerner and Osgood, 2021; Kennard, 2020). Generally, production sites with higher emissions are more relevant for a given firm's decarbonization journey as they encompass a greater portion of total emissions. Green industrial assistance reduces the cost of these innovation investments, meaning that the passage and implementation of assistance policy is

[7]Concrete examples of R&D type GIP abound in the climate literature, see Allan and Nahm (2024) for several examples. The Inflation Reduction Act contained provisions for tax credit bonuses for "energy communities", whereas the United Kingdom's Industrial Decarbonization Challenge has provided greater funding to clusters of firms collaborating on decarbonization projects. These latter examples are cases of status designation blended with financial incentives, they are not catch-all regulation. Economic actors still need to shift behavior to possibly receive benefits.

relevant for firms' decarbonization efforts and consequently their green productivity. To understand how firms have responded to the shift in climate mitigation policies away from a predominantly stick-based approach to one that mixes assistance alongside regulation, I begin from the premise that lobbying is not strictly ex ante to policy, but also ex post (You, 2017).[8]

Ex post lobbying on green industrial assistance can be thought of as actors attempting to shape the implementation of assistance so that their likelihood of receiving particular benefits improves. Any policy is likely to have both collective and particular benefits; the cost of ex post lobbying, then, is balanced against any potential benefits during implementation. The passage of green industrial policy is broadly a collective benefit, it improves the likelihood of any assistance for emissions-intensive actors. Given that any lobbying is costly, understanding when firms pursue ex post lobbying requires a characterization of the particular benefits firm can expect to derive from the refinement of the implementation process.

I conceptualize two types of particular benefits firms may potentially receive from green industrial assistance: (1) exclusive and (2) proximate.[9] To be clear, whereas

[8]While You (2017) conceptualizes lobbying as a quid pro quo transaction building on earlier work (Groseclose and Snyder Jr., 1996), I consider lobbying to be more of an informational process (Austen-Smith, 1993, 1995) or as a type of subsidy to bring government actors together (Hall and Deardorff, 2006). What is essential is that lobbying not be explicitly conceived of as ex ante, thereby making policy a direct output of lobbying (Grossman and Helpman, 1994).

[9]In Appendix A, I situate these two types of benefits into a 2×2 to better motivate the focus on a subset of possible policy benefits from GIP. In brief, low-potential non-exclusive benefits are unlikely to generate sufficient benefits to offset the cost of lobbying. Likewise, high-potential, exclusive benefits while desirable from the perspective of a firm's green productivity and bottom line less likely to drive firm lobbying behavior for two reasons. First, such policy assistance would generate substantial audience costs for governments, appearing to bail out firms responsible for climate change. Second, in many industrial sectors, capital constraints would still emerge be they pecuniary or human that limit the ability to fully decarbonize from isolated instances of assistance. If a focus on exclusive, high potential benefits were driving firm behavior, this would imply that

collective benefits are non-excludable, for benefits to be particular they do not need to benefit a *single* firm, rather they cannot benefit *all* firms. Exclusive benefits are those which accrue to a single firm alone. Such benefits are often more marginal in their decarbonization potential and smaller in absolute size. Some typical forms of assistance providing exclusive benefits are grants or loans for energy efficiency upgrades or product R&D. Upon *successful* completion these grants provide firms with marginal increases to their green productivity, that is the environmental impact (e.g., carbon emissions) per unit of profit earned. Emissions-intensive firms derive exclusive benefits from the provision of these types of green industrial assistance.

In contrast, proximate benefits do not go exclusively to a single firm, but rather to several simultaneously, by virtue of their geographic proximity. Policy outputs containing proximate benefits are often larger in size and transformational rather than marginal in their decarbonization potential. Large-scale decarbonization infrastructure projects are perhaps the most emblematic example of proximate benefits with spatial externalities making them more cost-effective to deploy in areas with industrial production agglomerations. These infrastructure projects have the capacity to transform a firm's production process, reducing emissions to zero at innovating production sites, but are outside the investment and expertise capabilities of even the largest firms. In contrast to more isolated firms, geographically concentrated firms stand to benefit more as proximate benefits become more likely, offsetting the additional costs of lobbying.

What shapes the distribution of potential particular benefits from green indus-

the firms with the most emissions would increase their lobbying following passage. I directly test for this alternative explanation in the empirical analysis below.

trial policy? I argue the size of the green industrial aid budget is essential. Under smaller budgets, aid projects and assistance programs that facilitate exclusive benefits are more likely as large-scale resource-intensive projects are prohibitively expensive. Building off earlier work on firm climate politics (Brulle, 2018; Cory, Lerner and Osgood, 2021; Kennard, 2020), this suggests that emissions-intensive firms are more likely to lobby on green industrial assistance in general. However, budget expansions enable larger, more transformational assistance programs and with them proximate benefits. Whereas under smaller assistance budgets, a firm's concentration is unlikely to factor into its lobbying behavior, as the assistance budget increases, this previously latent trait becomes more salient. The potential proximate benefits of large scale industrial decarbonization projects backed by ample state funding broaden firm preferences and behavior to incorporate a geographic dimension rather than being focused on emissions alone. Ex post lobbying by more concentrated firms in these circumstances can be considered an attempt to shift policy toward an implementation with a greater share of proximate benefits. In practice, this suggests a greater geographic and infrastructure-based approach to industrial decarbonization. Taken together, the above argument can be summarized in the following hypothesis:

H1. Lobbying on green industrial aid is increasing with firm concentration follow expansions to the green assistance budget.

Thus far, I have motivated a novel cleavage to explain firm behavior towards a diversified climate policy regime. Before proceeding, I briefly elaborate why alternative explanations based on emissions-intensity are unlikely to predict reactions to the policy paradigm in recent years. First, given that policy passage generally

provides collective benefits to emissions-intensive firms, further carve outs by emissions status are unlikely. Put differently, green industrial assistance, by its nature of directing assistance at industrial firms with emissions, diminishes the likelihood of any additional possible benefits to be gained in the implementation stage. Ex post lobbying cannot further exclude non-industrial firms for example as they are already ineligible from decarbonization assistance. Second, the transformational nature of assistance suggests why explanations based on marginal market share gains are unlikely to explain firm reactions: to date industrial firms, even climate leaders, still have ample remaining emissions hence executives at these companies would not pass over the opportunity to decarbonize. The discrete jump provided by infrastructure projects, for example, breaks down the current distinction between climate leaders versus laggards within industries. Firms are still driven by competition to secure market share, but the asset driving their potential comparative advantage under expanded budgets is predominantly geographic, not emissions-based. Lastly, while supply chain accounts are theoretically plausible, it is unclear the extent to which downstream firms are aware of the concentration of their upstream counterparts compared with their emissions intensity, unless they were jointly co-located across several production sites.[10]

[10]Given the importance of these explanations in the existing climate literature, the empirical analysis provides tests for a green capital argument, as well as emissions intensity argument. In the case of extended supply chains, given that further downstream firms are often unregulated, the measurement of concentration would bias against a result in line with my argument if an extended coalition dynamic were at play. That is firms with low concentration scores likewise lobbying following budget expansion. Finally, as robustness, I consider all firms in the dataset: Firm emissions interacted with Relance is not a significant predictor of increased lobbying, suggesting my selection of sectors is not biasing the substantive results.

Direct and Indirect Channels of Influence

Firms looking to shape the policy process have several possible channels through which they can lobby the government. Generally, firms weigh the access of their lobbying behavior against its cost. Indirect lobbying efforts, while cheaper, are unlikely to provide the same level of access as in-house lobbying.

This trade-off is most salient with indirect lobbying via the sector association. An influential firm within a given industry may be able to shift the average position of the association, however it is unlikely to be able to explicitly control the representative organization's message.[11] This does not mean that some firms are in continual opposition to their sector organizations. Sector trade associations may be beneficial to firms when intra-industry preferences are relatively homogeneous or through the provision of collective benefits, for example in unlocking policy passage.

In terms of the latter, building on the intuition above, policy passage provides collective benefits to emissions-intensive firms – improving the likelihood that a given firm receives assistance, all else equal. Beyond these collective benefits, policy passage also provides greater certainty about the possibility of funding for types of decarbonization projects. Policy passage, broadly, clarifies the potential distribution of collective versus particular benefits (You, 2017). This suggests that firms may defer lobbying costs to their sector associations in the presence of collective benefits and more intra-industry agreement prior to policy passage. Firms, then, avoid the full costs of lobbying, by reducing ex ante lobbying, instead expending their lobbying

[11] More generally, we might consider business associations to vary in their means of representation from oligarchical to pluralistic. See Egerod, Libgoder and Thieme (2024) on business associations and Dahl (1961) in general.

efforts on shaping implementation. For those firms for which the potential particular benefits are greater than the cost of ex post lobbying, a division of labor emerges across the policy process with respect to lobbying–following passage they increasingly lobby *alongside* or in parallel to their sector associations.

Combining this division of labor argument with the logic of proximate benefits above, this suggests that more concentrated firms, especially compared to their intra-industry peers, are more likely to lobby at the same time as their sector association following policy passage. With collective benefits secured via policy passage, these firms rather than substituting their lobbying effort with that of their association, increasingly lobby to secure particular benefits. Hence, lobbying is at best complementary to sector association efforts, for example in more concentrated sectors, or at worst against it, as concentrated firms in low concentration sectors attempt to capture a greater share of particular benefits.[12] This suggests the following hypothesis:

H2. Simultaneous lobbying is increasing with firm concentration following expansions to the green assistance budget.

Context: Climate Politics in France

Under what regulatory context did French firms find themselves and how did France Relance alter this status quo? In this section, I briefly discuss the French climate context and the key components of the Relance policy, before motivating France as

[12] Albareda, Coen and Saz-Carranza (2025) provide four rationales as to why a firm might lobby in parallel to its sector association: amplifying existing information or adding new information, monitoring, and providing alternative information. The former two I consider broadly as collaborative forms of parallel lobbying, whereas the latter two are combative.

a case to study the politics of industrial decarbonization.[13] At the European level, two policies structure firm climate decision-making: (1) the legally binding 2050 net-zero target and (2) the EU ETS, a cap and trade regulation that imposes a cost on emissions. Together, these policies provide firms with a target for decarbonization as well as clear costs for failing to innovate. Domestically, France passed the Climate and Energy Law in 2019 which enshrined in national law a 2050 net-zero target. Alongside this target, the National Low Carbon Strategy (NLCS) outlined various sector pathways for industrial decarbonization, however the method remained via small-scale public support. A regulatory approach, based in the EU-ETS, was still privileged. Published in March 2020, the NLCS provided meager public assistance towards industrial decarbonization.

Following the economic turmoil caused by the COVID-19 pandemic, the national government passed France Relance in September 2020, facilitated by relaxation of balanced-budget requirements by the European Commission. A recovery plan to stimulate the economy,[14] it targeted three general areas for heightened public assistance: (1) the ecological transition, (2) economic competitiveness, and (3) social cohesion. For the green transition, key aims included an increase in state industrial aid from 200 million to 1 billion euros per year for industrial decarbonization. The development of clean hydrogen infrastructure received separately 2 billion euros. Together, assistance towards industrial decarbonization accounted for more than 10% of the total policy package (100 billion euros) and more than a third of the funding

[13] I provide further details on the supranational and domestic climate context in Appendix F.

[14] Several areas of funding initiated by France Relance were subsequently continued, if not expanded, under the France 2030 5 year investment plan aiming to prepare the economy for the challenges of 2030.

directed towards the ecological transition.

Beyond environmental funding, spending on competitiveness and social cohesion totaled 34 and 36 billion euros respectively. Cuts to corporate tax rates, aid to sectors affected by the pandemic, increased funding for employment insurance and public health infrastructure were major earmarks. The Relance stimulus was not simply a measure targeting the green transition, nor one particularly focused on industrial decarbonization. It does, however, represent a shift to the green funding status quo– with much larger assistance outlays now making possible transformational projects. Given the speed of its development and the resulting generality of the proposal, the document is relatively vague in terms of the actual implementation of the investment plan. This window of opportunity for firms to shape implementation permits of assessment of how firms' lobbying behavior adjusts in response to shifting policy paradigms.

France is an apt case to study firm behavior towards green industrial assistance for three reasons. First, French electricity, in large part due to an aggressive expansion of nuclear power following the OPEC oil crises of the 1970s, is comparatively low-carbon. Although electrification of some industrial procedures will increase energy demand, the primary challenge facing France is reducing emissions in other areas such as industry, buildings, and transportation. Whereas many other countries in Europe are still greening their power generation sectors, France is a forerunner, hence it provides insights into the potential challenges for states and industrial realignments we may observe in the coming years.

Second, France and strong state-led industrial policy often go hand in hand (Dob-

bin, 1994), suggesting a rather muted role of firms in shaping policy.[15] While recent work on green industrial policy challenges the "national-type" model of economic policymaking (e.g., Hall and Soskice (2001)), this work focuses on sectors as key to shaping the development and implementation of green industrial policy, *regardless of national type* (Allan and Nahm, 2024). France, then, compared to, for example, the United States, another country with available lobbying data, is a harder case to assess the role of firms in the politics of industrial decarbonization.

Lastly, as alluded to above, France has transparent lobbying disclosures available over an extended period of time (2017-present). Compared to other countries in Europe, the region arguably most ambitious in its climate policy, this data availability facilitates a more rigorous empirical evaluation of the argument above compared to other regional peers.[16] This regulatory framework faced by firms is a scope condition of the theory, as it shapes the incentives faced by firms. Absent a policy stick, the incentive to transition should be lower in line with models of the green transition (Besley and Persson, 2023) The absence of such regulation does not eliminate the

[15]The extent and dominance of the French state in economic policy making alongside the role of *dirigisme* as an alternative to liberal versus coordinated market economies is a common theme in the comparative political economy literature focusing on France. For example, Hall (1986, pp. 168-171) stresses the direct interaction of French bureaucrats with large firms in economic policymaking. Berger (1981) notes the shifting role of the French state in the final years of the *Trente Glorieuses*, rather than actively building and supporting national champions it focused on assisting the "lame ducks" of industry. More recently, Levy (2017) underscores the path dependence of earlier liberalization reforms in the final decades of the twentieth century and the inability of bureaucracy to assume a fully *dirigiste* response to the Great Recession. Extending Culpepper's (2010) logic suggests that climate and decarbonization assistance is a loud policy domain, and hence leaves less room for private interests. While not omnipotent, it is clear the state plays a continued role in French economic policy, arguably more than some of its peers.

[16]For example, Germany has required mandatory lobbying disclosures since 2022 or the United Kingdom which mandates a small number of officials to disclose meetings with non-government actors.

positive externalities arising from geography, but weakens their incentivizing potential.

Data and Design

Measuring Concentration

To assess changes in lobbying behavior, I rely on mandatory disclosures submitted to the French Ministry of Transparency.[17] Actors engaged in lobbying efforts at the national level must disclose their lobbying activities annually, separately for each issue on which they have spoken to government.

These data provide me with the universe of lobbying firms and sector associations as well as the issues on which they lobbied the government. I focus on firms within the manufacturing and construction sectors as these are the primary industrial sectors facing regulatory pressure from the EU-ETS. In total, there are roughly 900 firm-year observations from just under 200 unique firms between 2017 and 2022. To collect relevant explanatory variables, I link firms national business identification numbers to financial and emissions data from ORBIS and the EU-ETS respectively. The latter provides me with the information about the location of production sites used to calculate the firm-level concentration measure. For the roughly 1,200 production sites under EU-ETS regulation, I manually collected geographic coordinates to assess robustness to the concentration measure described below using a plant's postal code

[17] In 2014, the French legislature passed a transparency law mandating the disclosure of influence activities at the level of the national government. Effective 2017, disclosures are submitted to the Haute Autorité pour la Transparence de la Vie Publique (HATVP).

as the relevant geographic unit.[18] Details on these grid cell analyses can be found in Appendix E.

To measure a firm's concentration to other firms, I start by calculating each of its production sites' densities. That is, for each production site I generate count variable which denotes the number of production sites operated by other firms co-located in its geographic area. This measure is sector agnostic given that proximate benefits are not strictly specific to certain sectors, but available to emissions-intensive firms (i.e., those regulated by the EU ETS). This count variable is then weighted by the plant's share of the firm's total emissions.[19] That is, for a plant j in firm i,

$$\text{Plant Density}_j = \text{count}_j \times \frac{\text{emissions}_j}{\text{emissions}_i}$$

The intuition behind this measurement strategy is twofold: First, the count measure captures the likelihood that a given firm receives proximate benefits. More concentrated areas increase the likelihood of a large decarbonization grant and with it proximate benefits materialize. Second, a given production site's proportion of emissions to the firm's total provides a sense of its relative importance. For intra-firm operations, a production site's importance is likely composed of several variables, in the present context emissions are arguably the most relevant for considering de-

[18]Reliance on Google Maps API is partially unreliable for this task given an idiosyncratic feature of the French postal system. Recipients of large mail (e.g., a factory) receive a CEDEX code which is used in place of the geographic postal code. Given that regulatory data asks for the postal address, firms naturally provide this information for their plants. These CEDEX codes are not reliably searchable however, as the postal code geographically does not exist, rather it is an identifier for a large mail recipient.

[19]To address concerns of reverse causality, I construct a time-invariant measure using 2017 data. Analogous analyses using density measures that vary year-by-year produce similar results, albeit with slightly more noise.

carbonization.

This individual production site measure is then averaged at the firm level to measure a firm's average geographic concentration to other firms across its various production sites. That is,

$$\text{Concentration}_i = \frac{\sum \text{Plant Density}_j}{n}$$

Combining concentration and emissions, the measure accounts for the heightened concern with decarbonization among emitting firms, while simultaneously capturing the potential for proximate benefits due to their geographically concentrated production assets. To address the concern that emissions might be driving the results, I generate a measure of firm concentration omitting any weighting scheme. Second, I control firm's total emissions in all analyses.

The outcome variable is lobbying on green industrial policy. To measure this, I leverage the policy domain to classify disclosures with two separate dictionaries. The first measures whether a disclosure is related to climate policy with the following keywords: *renewable energy*, *fossil fuels*, *waste*, *pollution*, *freight and alternative transportation*, and *pollution abatement*. There are 2656 unique instances of climate lobbying (19%). The second measures industrial policy with the following keywords: *industrial policy*, *business support*, *infrastructure*, and *research and innovation*. There are 2279 unique disclosures under this category (16%). To measure, green industrial policy, I take the combination of these variables which returns 612 unique lobbying disclosures (5%).

I construct two outcome variables: A binary indicator and a count variable to

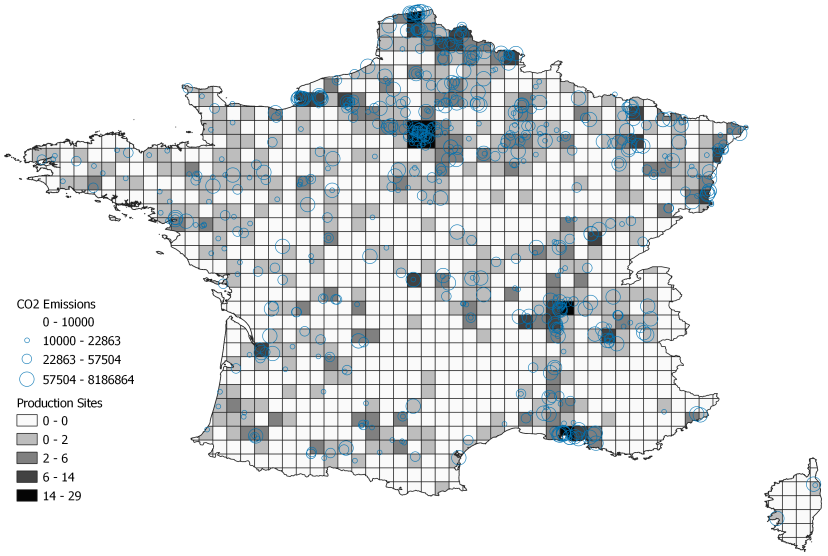

Figure 1: Distribution of Regulated Plants and Emissions

assess the extensive and intensive margins of green industrial policy lobbying respectively. Additional firm-level data comes from Moody's ORBIS database. Figure 1 visualizes the distribution of regulated production sites across metropolitan France. Table 1 presents descriptive statistics of the data for industrial firms (NACE 10-39).

To analyze trends in parallel lobbying between firms and sector associations, I manually coded the NACE-2 sector for each of the roughly 650 trade associations present in the disclosure data. This lets me link firms to sector associations that represent their industry. Given that membership data is incomplete, this is not a guaranteed representational link, as overlapping sector associations within a given 2-digit code may represent some firms and not others.[20]

[20]This introduces some degree of measurement error, a potential threat to inference if certain firms are more likely to only be a member of one association than others. The measurement strategy here would then overstate the gap between a firm and its sector representatives. It is not

Variable	Mean	SD	Max	Min
Climate Disclosures	1.24	4.44	55.00	0.00
Industrial Policy Disclosures	0.83	1.78	11.00	0.00
GIP Disclosures	0.30	1.24	10.00	0.00
Digitalization Disclosures	0.02	0.20	2.00	0.00
Total Lobbying	3.24	5.04	55.00	1.00
GIP Binary	0.12	0.33	1.00	0.00
Digitalization Binary	0.02	0.13	1.00	0.00
Non-GIP Disclosures	2.93	4.92	55.00	0.00
Emissions	281296.48	1244411.31	8183191.00	0.00
Plants	0.99	3.19	24.00	0.00
Concentration	0.25	0.76	5.00	0.00
Concentration (unweighted)	0.43	0.99	6.50	0.00
Distance Instrument	0.06	0.11	0.54	0.00
Turnover	5514989.60	14515713.01	155325000.00	0.00
Net Income	219045.25	1193515.36	14084000.00	-17940000.00
Employees	13324.43	36910.69	213684.00	0.00

Table 1: Firm-Level Descriptive Statistics

I measure relative concentration by subtracting the 2-digit sector average concentration from each firm's concentration, hence positive numbers indicate firms with above average concentration compared to their industry peers and vice versa. I perform similar operations with the remaining covariates. Relative lobbying is measured by summing the green assistance disclosures for all the national, sector-specific trade associations for a given 2-digit code. This sector total is then subtracted from a firm's green industrial assistance disclosures. In general, associations have more disclosures than individual firms, hence shifts in the outcome variable can be thought of as shrinking or expanding the gap in relatively lobbying behavior. This is even

immediately obvious how this might correlate with concentration, thereby biasing the estimation strategy. Unit fixed effects address the likelihood of a firm being misrepresented, so long as firms did not switch affiliations. Given the short time frame this is not a major concern, especially when including sector-by-year fixed effects as the emergence of an alternative sector association is likely to capture a common shift in representation among firms in a given industry.

more likely when more than one trade association represents a given 2-digit NACE sector.

Empirical Strategy

To assess whether firms responded to France Relance along geographic lines, I leverage the panel structure of the data in a difference-in-differences (DiD) design. Given the static nature of *Concentration*, I interact the variable with a binary indicator, *Relance*, that takes a value of 1 in the years following 2020. This interaction term captures the shift in lobbying behavior on green industrial assistance following France Relance. For brevity, *Lobby* denotes all operationalizations of the outcome variable described above. Below, I omit the main effects of *Concentration* and *Relance* as these are static and therefore collinear with the firm and year fixed effects:

$$\text{Lobby}_{it} = \alpha_i + \gamma_t + \beta_1(\text{Relance}_t \times \text{Concentration}_i) + \beta_i \mathbf{X}_{it} + \epsilon_i \tag{1}$$

As is standard in DiD analyses, I include unit, here firm, (α) and year (γ) fixed effects. Given that decarbonization is more challenging for certain sectors, for example with ample process emissions that cannot be eliminated via electrification, I add sector by year fixed effects to account for heterogeneity in the relationship between concentration and lobbying that may vary over time within certain sectors. Alongside these batteries of fixed effects, I include aggregate firm emissions, a firm's green productivity, turnover, and employees. A positive value for the β_1 coefficient in Equation 1 would be evidence consistent with the first hypothesis.

To assess the second hypothesis, I estimate an analogous regression to Equation

1 albeit with the relative variables. The primary difference is that I include sector by year fixed effects in all models given that common trends in sector association directly impact the relative lobbying behavior of all firms in a given sector. Similar to above, a positive value on the interaction between *Relative Concentration* and *Relance* would be evidence in support of the second hypothesis. Substantively, this positive coefficient can be interpreted as firms with above average concentration relative to their sector increasingly closing the gap with their sector associations in lobbying on green industrial following France Relance compared to their more isolated industry peers.

Identification

Given the before-after comparison, the panel analysis detailed above can take on a causal interpretation within the DiD framework, albeit with concentration as a continuous treatment variable (Angrist and Pischke, 2009; Callaway, Goodman-Bacon and Sant'Anna, 2021). This latent characteristic is activated by the France Relance budget expansion. A causal interpretation in the DiD setting requires that we find credible that beyond activation of geographic concentration via France Relance, the trend in lobbying behavior among concentrated firms would not have diverged from their more isolated peers. The COVID-19 pandemic and the subsequent relaxation of the budget constraint on state aid at face values suggests that anticipation is unlikely, but I assess threats to causal identification empirically in three ways. First, I consider pre-trends in the years prior to COVID. Second, I consider placebo outcomes, such as digitalization that also received expanded funding, but unlikely to have prox-

imate benefits. Lastly, I utilize an instrumental variables approach to guard against omitted variable bias. I provide more details on the pre-trends and placebos and IV approach in Appendices B and D respectively.

Results

Figure 2 presents general trends in lobbying across firms (dark blue), trade associations (grey), as well as other actors. The first panel visualizes total disclosures, whereas the second and third panels visualize trends in lobbying on climate issues and green industrial policy respectively. Whereas sector associations conduct a much greater share of the lobbying efforts in general, there is near parity in the more niche domains of climate change and green industrial policy. Likewise, lobbyist consultants, often representing firms, are prominent actors in these domains. While sector associations play a prominent role in special interest politics, the descriptive trends highlight the diversity of actors attempting to influencing the French government, as well as the prominent, if not equal role of firms in climate and green industrial policy.

Firms in isolation

How did industrial firms respond to the increase in decarbonization assistance as a part of France Relance? Table 2 presents evidence in support of more concentrated firms increasingly lobbying on green industrial aid following this substantial expansion to the assistance budget. Models 1 through 5 consider lobbying at the extensive margin with the remaining models assessing the intensive margin. Models

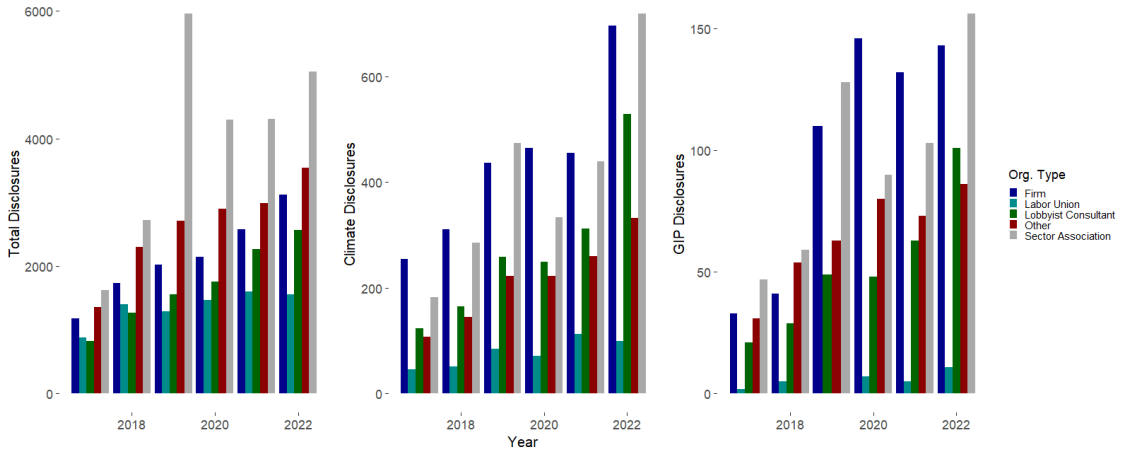

Figure 2: Aggregate Lobbying Patterns from 2017 to 2022

Note: The first panel considers all disclosures, whereas the latter two consider climate and more specifically green assistance lobbying as defined in the main text. The other category includes NGOs, government bodies, and research organizations among others.

1 and 6 present the sparsest specification, including only the interaction between *Concentration* and *Relance* and fixed effects. For both models there is a positive and statistically significant relationship between greater lobbying activity and higher firm concentration.

The remaining columns add in relevant explanations from the literature such as aggregate emissions and green capital, alongside firm financial data. These covariates, in contrast to concentration, do not consistently predict shifts in lobbying behavior following Relance. These other firm characteristics interacted with Relance likewise does not attenuate the impact of concentration on lobbying behavior, as evidenced by the positive and precisely estimated coefficients in columns 2 and 7. Substantively, using the coefficient from Model 2, a standard deviation increase in concentration leads to a 58% increase in the probability that a firm lobbies on

green industrial assistance. On the intensive margin (Model 7), the same increase in concentration leads to additional 0.66 green industrial assistance disclosures per year.

In columns 3 and 8, I subset to only include those firms with non-zero values of concentration to probe whether the results are driven by firms in manufacturing sectors without regulated emissions. The result holds for the binary outcome, but loses significance along the intensive margin. In columns 4 and 8, I include sector by year fixed effects to account for potential shifts at the sector-level not captured by the aggregate yearly indicator. As above, the interaction between *Concentration* and *Relance* remains significant, however the coefficient on the continuous outcome attenuates and drops below conventional levels ($p \approx 0.12$). In an Appendix Table, I add this battery to the model omitting covariates for which missingness reduces the number of observations, and the results in Columns 1 & 6 hold.

Lastly, in columns 5 and 10, I utilize the alternative measurement strategy that omits the emissions weights. With this raw measure, concentration following Relance remains a predictor of lobbying on green industrial assistance. Substantively, increasing a firm's average concentration by roughly 0.5 plants increases the likelihood of a firm lobbying on green industrial assistance by 84% and leads to roughly 0.9 additional disclosures per year. In Appendix Table C2, I demonstrate that more concentrated firms did not increasingly lobby writ large, suggesting these shifts in lobbying behavior can be interpreted as a reallocation of lobbying efforts, rather than an expansion of lobbying activity, in line with work considering dynamics of lobbying

over time (Kerr, Lincoln and Mishra, 2014).[21]

Table 2: Firm Concentration and Lobbying Behavior

	Binary					Continuous				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Firm Concentration × Relance	0.10***	0.10***	0.09**	0.09**	0.11**	0.28***	0.26***	0.10	0.13	0.25*
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.08)	(0.06)	(0.13)	(0.08)	(0.14)
Green Capital × Relance		0.03	0.06	−0.03	−0.04		0.55*	0.01	0.33	0.29
		(0.06)	(0.10)	(0.08)	(0.08)		(0.31)	(0.56)	(0.38)	(0.36)
Emissions × Relance		0.00	0.00**	0.00	0.00		−0.00	−0.00	−0.00	−0.00
		(0.00)	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)	(0.00)
Sector × Year FE				✓	✓				✓	✓
Subset			✓					✓		
Unweighted?					✓					✓
N	817	747	276	747	747	817	747	276	747	747
Firms	176	156	58	156	156	176	156	58	156	156
R^2	0.58	0.58	0.64	0.68	0.68	0.53	0.52	0.44	0.69	0.70
Adj. R^2	0.46	0.46	0.52	0.47	0.47	0.40	0.39	0.26	0.49	0.50

Note: The outcome is lobbying on green industrial assistance at the extensive (Columns 1-5) or extensive (Columns 6-10) margin. All models include firm and year fixed effects. Additional controls included in all models barring 1 & 5 include turnover, employees and number of plants interacted with Relance. The discrepancy in observations between the base models (1 & 5) and those models with controls is due to missingness of financial covariates. Firms denotes the number of unique firms, and hence the number of clusters in the estimation of the cluster robust standard errors. The subset considers only firms with non-zero values of concentration. Unweighted denotes the measurement of concentration that omits the emissions weighting factor in the plant density calculation, hence a plant's density is a raw count of the number of co-located plants. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Given the continuous nature of the interaction term, its interpretation is rather opaque from the coefficient alone (Kam and Franzese, 2007; Hainmueller, Mummolo and Xu, 2019), therefore Figure 3 visualizes the predicted lobbying shift across the range of non-zero values of firm concentration (Model 3). Superimposed on this continuous predicted shift is a binned regression analogous to Model 3, albeit with firms grouped into quartiles instead of the raw concentration measure. Point estimates compare the shift in lobbying behavior at different quartiles against a baseline of the first quartile.[22] In the top panel, the predicted line is positive and each of

[21] While the French authorities require that firms disclose expenditures on lobbying, this is a yearly total for all activities with wide tranches for each range of expenditure, precluding an assessment of shifts in expenditures as an alternative measurement of lobbying activity.

[22] Given the focus here, on the change in lobbying behavior rather than whether an average treatment effect exists for different subgroups in the distribution of *Concentration* the `interflex` package and method of visualization is inappropriate. My argument is not that firm concentration will have a subgroup effect at higher levels, but rather that the change will be larger at higher levels of concentration compared to lower. Figure 3 takes inspiration from Hainmueller et al's

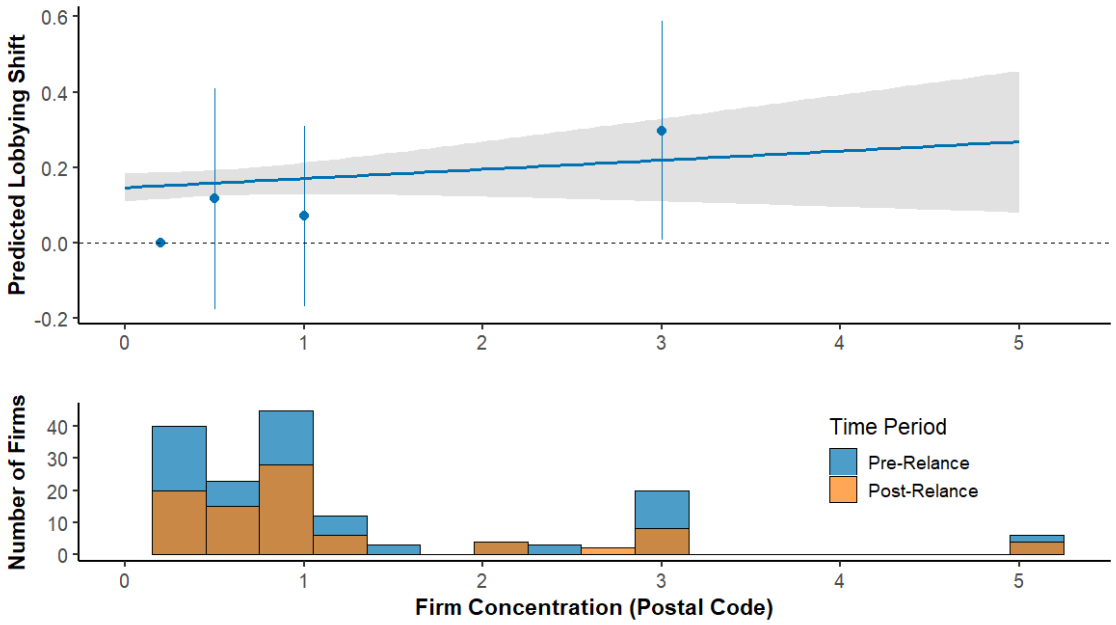

Figure 3: Firm Concentration and Lobbying Behavior

Note: The top panel visualizes the interaction coefficient from Table 2 Model 3. Substituting the continuous measure of firm concentration with a binned quartile categorical variable provides the superimposed point estimates with corresponding 95% confidence intervals. Point estimates are placed at the median value of the quartile along the x-axis. Data is subset to only include those firms with non-zero values of firm concentration. The bottom panel plots the distribution of firm concentration grouped by time period.

the three quartiles have positive point estimates meaning the shift in lobbying was larger following France Relance as concentration increased. For the second and third quartiles, this difference is not statistically distinguishable from zero, however the shift from first to fourth quartile is.

What were firms talking about with government? To further probe the geographic focus of lobbying efforts, I generate an alternative outcome that measures whether

2019 approach by displaying the raw distribution, and presenting binned estimates alongside the predicted linear trend.

firm's mentioned infrastructure projects such as hydrogen or carbon capture and storage networks in their disclosures. While perhaps the clearest example of a form of policy implementation with ample proximate benefits, its scope is much narrower than the more general green industrial assistance above. In Table C3, I find similar results to above: concentrated firms increasingly talked with the French government about CCUS and hydrogen projects following the passage of France Relance. Substantively, a one standard deviation increase in concentration is associated with an additional 0.5 infrastructure-related disclosures per year following France Relance.

In Tables C1 and C2, I assess pre-trends and placebo outcomes. There is no evidence of clear violations of the parallel trends assumption, nor does firm concentration predict lobbying on digitalization. In Appendix D, I instrument concentration with the logged inverse average distance of a firm's plants to the regional hubs in analogous models to those in Table 2 Columns 2 and 7. The results in Table D1 corroborate the findings above. Substantively, a one standard deviation increase in instrumented concentration is associated with a 10% increase in lobbying on green industrial assistance or roughly 0.2 additional disclosures per year. Finally, in Appendix E, I probe the robustness of the results to varying geographic areas to determine production site density. The effect sizes are most pronounced at grid sizes that similar to the average postal code, however the binary outcome is not consistently significant.

Taken together, these results provide consistent support for the proposition that more concentrated firms increasingly lobbied on green industrial assistance following expansions to the green industrial assistance budget. This change in behavior,

furthermore, was specifically to climate assistance as overall lobbying behavior did not shift nor did these firms increase lobbying activity on other areas with expanded funding opportunities.

Firms and their sector associations

Table 3 presents the results of the sector-relative analysis. The outcome here is relative lobbying behavior, that is the difference between the amount of lobbying on a given issue between a firm and its sector association(s). Model 1 presents the most parsimonious model: just the interaction between *Relance* and *Relative Concentration* alongside the battery of firm, year, and sector by year fixed effects. In Model 2, I add controls, before considering relative lobbying on digitalization in Column 3, and utilizing a placebo year (2018) as the beginning of the post period in Column 4. Substantively, the effect is rather modest compared with the absolute lobbying trends above: a one standard deviation increase in relative concentration reduces the gap in lobbying by about 0.05 disclosures. Similar to firm lobbying in isolation, increased concentration does not differentially shift firm lobbying on digitalization after Relance, nor is there clear evidence of anticipation as evidence in Columns 3 & 4 respectively.

In Figure 4, I visualize the predicted shift in relative lobbying behavior using the model in Table 3 Column 2. Whereas in the years leading up to 2020 there is a weakly negative association between relative concentration and lobbying, following France Relance those relatively more concentrated firms shifted to close the influence gap between themselves and their sector associations. To provide further intuition

	Rel. GIP		Rel. Digit.	Placebo
	Model 1	Model 2	Model 3	Model 4
Relative Concentration	0.13*	0.13*	0.00	−0.01
× Relance	(0.07)	(0.07)	(0.00)	(0.06)
Relative Emissions		−0.00	−0.00	0.00
× Relance		(0.00)	(0.00)	(0.00)
N	817	817	817	817
Firms	176	176	176	176
R^2	0.98	0.98	0.99	0.98
Adj. R^2	0.98	0.98	0.99	0.98

The outcome variable is the difference in disclosures between a given firm and sector associations with the same NACE2 code. Relative concentration is the difference between a firm's concentration and the sector's average using all regulated firms as the baseline, not just those lobbying firms. All models include firm, year and sector-by-year fixed effects. Robust standard errors clustered at the firm.

Table 3: Relative Concentration and Lobbying Behavior

on this shift in behavior, I consider trends for firms above and below the median relative concentration. Those firms with greater than median relative concentration shrank the gap by roughly a full disclosure, whereas the analogous shift among firms with below median concentration shrank the gap by roughly 0.15 disclosures. This is consistent with more concentrated firms increasingly lobbying in parallel to their sector associations rather than delegating following the passage of France Relance, whereas those emissions-intensive firms with less concentration did not alter their behavior. Taken together, these results provide evidence in support of the second hypothesis.

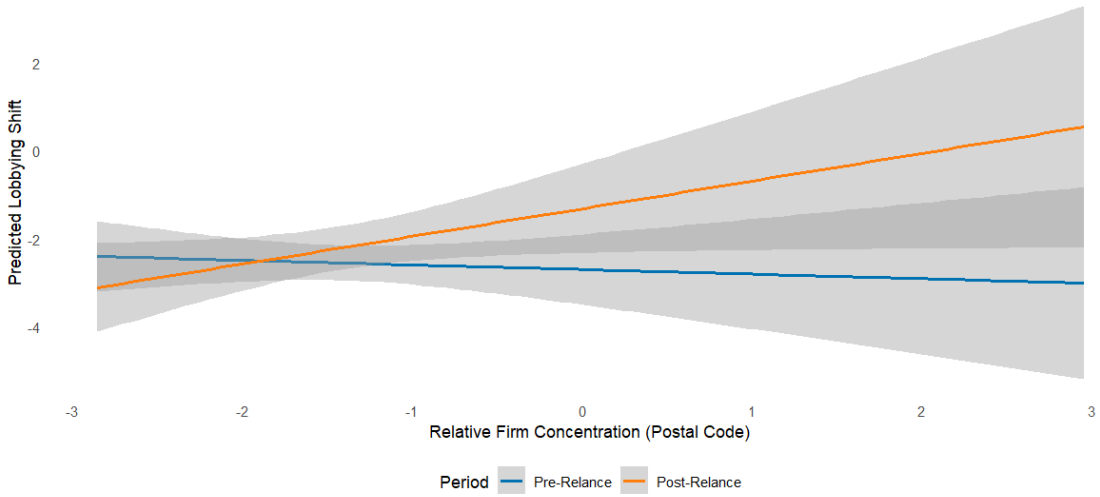

Figure 4: Relative Firm Concentration and Lobbying Behavior

Note: The x-axis is a firm's relative concentration compared to the sector average, whereas the y-axis is the relative lobbying on green industrial assistance. The predicted lines are taken from Model 2 in Table 3 with 95% confidence intervals. Data includes all firms in NACE2 codes 10 to 39.

Implementing France Relance

Given these trends in lobbying behavior, how then has industrial decarbonization assistance developed in France since Relance? In contrast to the National Low Carbon Strategy published in March 2020 which prioritized sector pathways with marginal state assistance,[23] industrial decarbonization will follow a *planification écologique*, or Ecological Plan, centered around three planning principles: (1) technology, (2) resources, and (3) geography.[24] Technological planning consists of state assistance to develop low-carbon hydrogen, biomass, electrification, and carbon capture and storage (CCUS). Related to resources, the French Ministry of Industry has engaged in a *concertation verte* with the roughly 20 firms that compose the 50 largest industrial emissions sites to assist with the planning and feasibility of decarbonization to assist France in achieving its 55% reduction target by 2030.[25] Finally, the geographic pillar of industrial decarbonization planning intends to facilitate the deep decarbonization of emissions-intensive manufacturing and utilities through regional or local plans via existing industrial zones, that is areas of high concentration. These industrial zones are now seen as key predecessors to future CCUS hubs.[26] I develop in further de-

[23] *Stratégie Nationale bas-carbone*. March, 2020. Ministry of the Ecological Transition. https://www.ecologie.gouv.fr/politiques-publiques/strategie-nationale-bas-carbone-snbc. Accessed 14 October 2024.

[24] *Transition écologique: une planification pour accélérer la décarbonation des sites industriels*. 14 December 2023. Ministry of the Economy. https://www.economie.gouv.fr/actualites/transition-ecologique-strategie-accelereration-decarbonation-sites-industriels. Accessed 15 October 2024.

[25] *Signature des contrats de transition écologique d'industrie*. 22 November 2023. Ministry of the Economy and Ministry of the Ecological Transition. https://www.ecologie.gouv.fr/presse/signature-contrats-transition-ecologique-50-sites-industriels-plus-emetteurs. Accessed 15 October 2024.

[26] *État des lieux et perspectives de déploiement du CCUS en France*. July 2024. Ministère de l'Économie, des Finances et de la Souveraineté Industrielle et Numerique. https://www.en-

tail the final two points as they are consistent with an interpretation of the benefits coming from decarbonization assistance as being either *exclusive* or *proximate*.

Identifying the top-50 sources of CO_2, the French government in November 2022, via the Ministry of Industry and the Ecological Transition, announced an intention to enter into decarbonization contracts with the firms operating these facilities. These contracts, finalized in November 2023 after six months of negotiations, provide general targets for 2030 and 2050 for the firms' production sites and help to meet the French carbon budget with guarantees from the state for support in compliance with EU state aid requirements.[27] This concertation between government and industry permits the "better planning decarbonization technologies, and organizing of the geographic deployment of decarbonization infrastructure thereby better assuring the availability of needed resources for decarbonized industry."[28] It also details the growing role of hydrogen and CCUS as required (albeit as a last resort in the latter case) for industrial decarbonization. Whereas the previous hydrogen strategy and funding calls had predominantly focused on its role in local transportation (e.g., as a fuel substitute for urban bus systems), the revised plan emphasized it as a "fundamental asset in decarbonizing our industry" with a focus on clusters of deployment, thereby helping industry adapt to greater climate ambition, but also higher prices due to the

treprises.gouv.fr/la-dge/actualites/deploiement-de-la-capture-du-stockage-et-de-la-valorisation-du-carbone-ccus-en. Accessed August 13 2025.

[27]The contracts do not provide an explicit monetary amount of assistance, rather a commitment to assist firms in reaching these targets within EU guidelines.

[28]Author's translation. Original taken from preamble common to all contracts available at https://www.entreprises.gouv.fr/priorites-et-actions/transition-ecologique/decarboner-lindustrie/contrats-de-transition-ecologique. Oringal text: "Ce document renforce la capacité de l'État, en concertation avec l'industriel, à planifier la mise en oeuvre des technologies de décarbonation, à organiser le déploiement territorialisé d'infrastructures de décarbonation et a assurer la disponibilité des ressources nécessaires à l'industrie decarbonée."

energy crisis.[29]

Beyond the geographic planning of decarbonization infrastructure stressed in the state-site contracts above, the geographic cleavage in France's industrial decarbonization plan is most evident in the ZIBaC collaborative assistance program.[30] Under the purview of the Ministry for the Ecological Transition (ADEME), the funding call, announced in February 2022, permits consortia of firms to apply for status designation as a low carbon industrial zone (Zone Industrielle Bas Carbone), thereby receiving access to financial support to facilitate the development of industrial decarbonization plans and joint infrastructure projects. To date, ADEME has awarded 11 consortia with this status. Figure 5 maps the consortia. As is evident, they are focused primarily in areas with substantial concentrations of emissions-intensive firms, for example Dunkirk, Marseilles, and Lyon were early winners announced in 2023, whereas less concentrated areas such as Florange received ZIBaC status in early 2025.

To date, these consortia have engaged in planning and development of decarbonization plans for the industrial zones with the potential for further funding once more concrete projects are identified. A focus on shared infrastructure, such as hydrogen production networks and leveraging deep water ports for CCUS is a common theme among current consortia. By leveraging their close proximity, the economies of scale needed to develop these infrastructure projects become more tractable while

[29] *Stratégie nationale hydrogène*. 7 December 2022. Ministry of the Economy. Press Release. https://presse.economie.gouv.fr/07122022-strategie-nationale-hydrogene/. Accessed 15 October 2024. Author's translation. Original quote from Agnès Pannier-Runacher, Energy Transition Minister: "Dans le combat que nous menons pour sortir de notre dépendence aux énergies fossiles, l'hydrogène bas-carbone est un atout fondamental pour décarboner nortre industrie."

[30] *Favoriser le développement de Zones Industrielles Bas Carbone (ZIBaC)*. 2022. Ministry of the Ecological Transition. https://agir.ademe.fr/aides-financieres/aap/favoriser-le-developpement-de-zones-industrielles-bas-carbone-zibac. Accessed 10 June 2024.

also providing these firms with stronger projects when presenting bids to government for further support.[31] This status designation furthermore locks in future benefits: only consortia designated under the first funding call are eligible in subsequent larger funding rounds, the second of which opened in April 2025.[32] These ZIBaCs are also seen as the groundwork for future CCUS hubs by the French business ministries following discussions with emissions-intensive firms.[33] In particular, to better develop a French carbon capture value chain, there needs to be "an integrated territorial deployment strategy, in conjunction with the France 2030 'Low-Carbon Industrial Zones"'.[34] Whereas CCUS did not appear in the 2020 NLCS, the preliminary draft of the third version lists it as key lever to reach intermediate- and long-term industrial decarbonization goals.[35]

Taken together, French industrial decarbonization assistance has become increasingly geographic in its scope, complementing targeted interventions not at the firm, but production site. This cleavage provides benefits to firms with more concen-

[31] Interview with decarbonization project development firm. March, 2025. Approved under Yale IRB Protocol #200035376.

[32] *Favoriser le développement de Zones Industrielles Bas Carbone (ZIBaC) Phase 2: accompagnement.* 2024. Ministry of the Ecological Transition. https://agir.ademe.fr/aides-financieres/aap/favoriser-le-developpement-de-zones-industrielles-bas-carbone-zibac-phase-2. Accessed 13 May 2025.

[33] *État des lieux et perspectives de déploiement du CCUS en France.* July 2024. Ministère de l'Économie, des Finances et de la Souveraineté Industrielle et Numerique. https://www.entreprises.gouv.fr/la-dge/actualites/deploiement-de-la-capture-du-stockage-et-de-la-valorisation-du-carbone-ccus-en. Accessed August 13 2025.

[34] Ibid. p. 13. Author's translation. France 2030 is the funding extension for France Relance. Original: "Les travaux interministériels visant à inclure ces besoins dans une logique intégrée de déploiement territorial, en lien avec les appels à projets France 2030 'Zones Industrielles Bas Carbone' (ZIBaC) et des perspectives de déploiement de stockages souverains."

[35] *Projet de stratégie national bas-carbone n.3.* October 2024. Gouvernment Français. https://concertation-strategie-energie-climat.gouv.fr/les-grands-enjeux-de-la-snbc-3. Accessed August 12 2025.

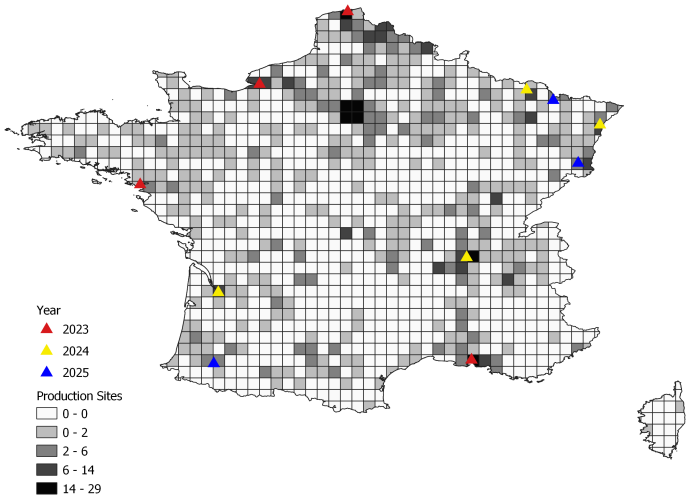

Figure 5: Location of Announced Low-Carbon Industrial Zones (ZIBaC) and Production Density

trated operations as they can accrue benefits from policy that favor consortia of firms making joint bids or status designations that permit greater cooperation between firms absent anti-trust concerns. Of course, these developments do not allow a clear measurement of the impact of concentrated firm lobbying, but they provide a test of the construct validity of proximate benefits. Joint consortia bids for up to 50% matching grants under funding programs such as the Large Industrial Decarbonization Projects,[36] in which all or none of the projects receive assistance, provide these concentrated firms with compelling projects to decarbonize large amounts of emissions, a key issue for French officials concerned with meeting their 2030 tar-

[36] *Cahier des charges "Grands Projets Industriels de Decarbonation 2024"*. December, 2024. ADEME. https://agir.ademe.fr/aides-financieres/aap/appel-doffres-grands-projets-industriels-de-decarbonation-2024. Accessed 1 April 2025.

gets. Whereas lobbying to shift implementation is relatively low-cost compared to actual implementation, especially given the evidence that firms reallocated lobbying efforts rather than expanding them, actual implementation and development of decarbonization initiatives, especially any collaborative efforts, will be much more costly.

Conclusion

In this paper, I argue that concentrated firms stand to benefit handsomely from the expansion of industrial decarbonization assistance, as larger budgets enable the possibility of transformational decarbonization projects. These possible proximate benefits encourage more concentrated firms to increasingly lobby to shape the implementation of policy, offsetting costs of lobbying, and potentially locking in future assistance for the green transition. Empirically, I provide evidence in favor of this argument from France: following the announcement of the COVID-19 stimulus bill, France Relance, concentrated firms have increasingly lobbied on green industrial assistance. This trend is likewise reflected in the distribution of lobbying activity between sector associations and firms: Those companies with greater relative concentration closed the influence gap between themselves and their sector associations.

These findings contribute to our understanding of the firm politics of climate change, highlighting the relevance of the distribution of plants throughout the economy as a potential asset in benefiting from assistance for firms facing looming regulatory targets. Leveraging plant heterogeneity to understand firm dynamics, my approach extends work in international political economy that has shifted the rel-

evant source of variation from the sector to the firm (Kennard, 2020; Kim, 2017; Osgood, 2017). This approach and the findings on lobbying shed novel insights into how economic actors evaluate their assets and act on them in a political fashion with respect to the green transition. Rather than all plants in a firm being equally exposed, the geographic approach I put forward suggests variation in the existential threat of mitigation policies to address climate change along a geographic cleavage (Colgan, Green and Hale, 2021). If acted on, this explanation likewise provides insights into who the future green capital holders will be, and hence potential supporters of greater climate action (Kennard, 2020).

These results suggest several areas for future research, I highlight two. First, the extent to which geography enables and facilitates actual investment and collaboration on industrial decarbonization as noted above is an open question. In contrast to existing sector associations which provide a forum for firms facing similar challenges, the economies of scale in the types of infrastructure projects being prioritized by governments such as France suggest that alternative modes of business organization may be necessary to facilitate coordinated infrastructure projects (Martin and Swank, 2012). While the ZIBaC program is a step in this direction, it is unclear whether it is sufficient to motivate investment at the scope and scale needed to reach intermediate and mid-century targets. Furthermore, compared with existing work on innovation clusters, the development of joint infrastructure projects is less passive (Boschma, 2005; Porter, 2000).

Second, the theoretical and empirical approach above prioritizes emissions-intensive firms at the expense of adjacent actors within the low carbon value chain, given

that emissions-intensive actors are those who stand to benefit more directly from assistance provision. In a similar vein to existing research on the broader coalition against greater regulation within emissions-intensive supply chains (Cory, Lerner and Osgood, 2021), it is an open question whether and how firms in the low-carbon value chain that might indirectly benefit from this assistance (e.g., via engineering consulting or construction) might interact with government to further develop GIP. The sustained interventionist turn among many post-industrial societies suggests that GIP is unlikely to be a fleeting pandemic recovery phenomena, but part and parcel of economic policymaking going forward (Juhász and Lane, 2024).

References

Albareda, Adrià, David Coen and Angel Saz-Carranza. 2025. "The firm logic of parallel lobbying: explaining why corporations lobby directly in addition to their associations." *Journal of European Public Policy* pp. 1–24.

Allan, Bentley B. and Jonas Nahm. 2024. "Strategies of Green Industrial Policy: How States Position Firms in Global Supply Chains." *American Political Science Review* pp. 1–15.

Allan, Bentley, Joanna I Lewis and Thomas Oatley. 2021. "Green industrial policy and the global transformation of climate politics." *Global environmental politics* 21(4):1–19.

Alt, James E., Fredrik Carlsen, Per Heum and Kåre Johansen. 1999. "Asset Specificity and the Political Behavior of Firms: Lobbying for Subsidies in Norway." *International Organization* 53(1):99–116.

Angrist, Joshua D and Jörn-Steffen Pischke. 2009. *Mostly harmless econometrics: An empiricist's companion*. Princeton, NJ: Princeton University Press.

Austen-Smith, David. 1993. "Information and Influence: Lobbying for Agendas and Votes." *American Journal of Political Science* 37(3):799–833.

Austen-Smith, David. 1995. "Campaign Contributions and Access." *American Political Science Review* 89(3):566–581.

Baehr, Christian J., Fiona Bare and Vincent Heddesheimer. 2023. Climate Exposure Drives Firm Political Behavior: Evidence from Earnings Calls and Lobbying Data. Technical report Working Paper.

Bechtel, Michael M., Federica Genovese and Kenneth F. Scheve. 2019. "Interests, Norms and Support for the Provision of Global Public Goods: The Case of Climate Co-operation." *British Journal of Political Science* 49(4):1333–1355.

Berger, Suzanne. 1981. Lame Ducks and National Champions: Industrial Policy in the Fifth Republic. In *The Fifth Republic at Twenty*, ed. W. George Andrews and Stanley Hoffmann. Albany, NY: State University of New York Press.

Besley, Timothy and Torsten Persson. 2023. "The political economics of green transitions." *The Quarterly Journal of Economics* 138(3):1863–1906.

Bess, Michael. 2003. *The Light-Green Society: Ecology and Technological Modernity in France, 1960-2000*. Chicago: University of Chicago Press.

Bombardini, Matilde and Francesco Trebbi. 2020. "Empirical models of lobbying." *Annual Review of Economics* 12:391–413.

Boschma, Ron. 2005. "Proximity and Innovation: A Critical Assessment." *Regional Studies* 39(1):61–74.

Brulle, Robert J. 2018. "The climate lobby: a sectoral analysis of lobbying spending on climate change in the USA, 2000 to 2016." *Climatic Change* 149(3-4):289–303.

Busch, Marc L. and Eric Reinhardt. 1999. "Industrial Location and Protection: The Political and Economic Geography of U.S. Nontariff Barriers." *American Journal of Political Science* 43(4):1028.

Callaway, Brantly, Andrew Goodman-Bacon and Pedro H. C. Sant'Anna. 2021. "Difference-in-Differences with a Continuous Treatment.". http://arxiv.org/abs/2107.02637.

Colgan, Jeff D., Jessica F. Green and Thomas N. Hale. 2021. "Asset Revaluation and the Existential Politics of Climate Change." *International Organization* 75(2):586–610.

Cory, Jared, Michael Lerner and Iain Osgood. 2021. "Supply Chain Linkages and the Extended Carbon Coalition." *American Journal of Political Science* 65(1):69–87.

Culpepper, Pepper D. 2010. *Quiet politics and business power: Corporate control in Europe and Japan*. Cambridge, UK: Cambridge University Press.

Dahl, Robert A. 1961. *Who governs?: Democracy and power in an American city*. New Haven, CT: Yale University Press.

De Figueiredo, John M. and Brian Kelleher Richter. 2014. "Advancing the Empirical Research on Lobbying." *Annual Review of Political Science* 17(1):163–185.

Dobbin, Frank. 1994. *Forging Industrial Policy: The United States, Britain, and France in the railway age*. Cambridge: Cambridge University Press.

Egerod, Benjamin, Brian Libgoder and Sebastian Thieme. 2024. "Who governs the association?". Preprint.

Eun, Jihyun, Minjung Lee and Young Hoon Jung. 2023. "Green product portfolio and environmental lobbying." *Business and Politics* 25(3):195–214.

Genovese, Federica and Endre Tvinnereim. 2019. "Who opposes climate regulation? Business preferences for the European emission trading scheme." *The Review of International Organizations* 14(3):511–542.

Green, Jessica F., Jennifer Hadden, Thomas Hale and Paasha Mahdavi. 2022. "Transition, hedge, or resist? Understanding political and economic behavior toward decarbonization in the oil and gas industry." *Review of International Political Economy* 29(6):2036–63.

Groseclose, Tim and James M. Snyder Jr. 1996. "Buying Supermajorities." *American Political Science Review* 90(2):303–315.

Grossman, Gene M. and Elhanan Helpman. 1994. "Protection for Sale." *American Economic Review* 84(4):833–850.

Hainmueller, Jens, Jonathan Mummolo and Yiqing Xu. 2019. "How much should we trust estimates from multiplicative interaction models? Simple tools to improve empirical practice." *Political Analysis* 27(2):163–192.

Hall, Peter A. 1986. *Governing the economy: The politics of state intervention in Britain and France*. New York: Oxford University Press.

Hall, Peter A. and David Soskice. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford, UK: Oxford University Press.

Hall, Richard L. and Alan V. Deardorff. 2006. "Lobbying as Legislative Subsidy." *American Political Science Review* 100(1):69–84.

Hanegraaff, Marcel and Arlo Poletti. 2021. "The Rise of Corporate Lobbying in the European Union: An Agenda for Future Research." *JCMS: Journal of Common Market Studies* 59(4):839–855.

Hanegraaff, Marcel, Arlo Poletti and Ellis Aizenberg. 2023. "Economic globalization and the fracturing of business interest representation in the European Union." *Business and Politics* 25(4):353–369.

Inglehart, Ronaldo. 1981. "Post-Materialism in an Environment of Insecurity." *American Political Science Review* 75(4):880–900.

Juhász, Réka and Nathan Lane. 2024. "The Political Economy of Industrial Policy." *NBER Working Paper* (w32507).

Kam, Cindy D. and Robert J. Franzese. 2007. *Modeling and interpreting interactive hypotheses in regression analysis*. Ann Arbor: The University of Michigan Press.

Kennard, Amanda. 2020. "The Enemy of My Enemy: When Firms Support Climate Change Regulation." *International Organization* 74(2):187–221.

Kerr, William R., William F. Lincoln and Prachi Mishra. 2014. "The Dynamics of Firm Lobbying." *American Economic Journal: Economic Policy* 6(4):34379.

Kim, In Song. 2017. "Political Cleavages within Industry: Firm-level Lobbying for Trade Liberalization." *American Political Science Review* 111(1):1–20.

Kim, In Song and Iain Osgood. 2019. "Firms in Trade and Trade Politics." *Annual Review of Political Science* 22(1):399–417.

Lerner, Michael and Iain Osgood. 2023. "Across the Boards: Explaining Firm Support for Climate Policy." *British Journal of Political Science* 53(3):934–957.

Levy, Jonah D. 2017. "The return of the state? France's response to the financial and economic crisis." *Comparative European Politics* 15(4):604–627.

Mahdavi, Paasha, Cesar B. Martinez-Alvarez and Michael L. Ross. 2022. "Why Do Governments Tax or Subsidize Fossil Fuels?" *The Journal of Politics* 84(4):2123–2139.

Martin, Cathie Jo and Duane Swank. 2012. *The political construction of business interests: Coordination, growth, and equality*. New York: Cambridge University Press.

Meckling, Jonas. 2011. *Carbon Coalitions*. Cambridge, MA: MIT Press.

Meckling, Jonas. 2015. "Oppose, Support, or Hedge? Distributional Effects, Regulatory Pressure, and Business Strategy in Environmental Politics." *Global Environmental Politics* 15(2):19–37.

Meckling, Jonas. 2021. "Making industrial policy work for decarbonization." *Global Environmental Politics* 21(4):134–147.

Melitz, Marc J. 2003. "The impact of trade on intra-industry reallocations and aggregate industry productivity." *Econometrica* 71(6):1695–725.

Osgood, Iain. 2017. "Industrial fragmentation over trade: the role of variation in global engagement." *International studies quarterly* 61(3):642–659.

Osgood, Iain. 2018. "Globalizing the supply chain: Firm and industrial support for US trade agreements." *International Organization* 72(2):455–484.

Porter, Michael E. 2000. "Location, Competition, and Economic Development: Local Clusters in a Global Economy." *Economic Development Quarterly* 14(1):15–34.

Rickard, Stephanie J. 2018. *Spending to Win: Political Institutions, Economic Geography, and Government Subsidies*. 1 ed. Cambridge University Press.

Rickard, Stephanie J. 2020. "Economic Geography, Politics, and Policy." *Annual Review of Political Science* 23(1):187–202.

Rodrik, D. 2014. "Green industrial policy." *Oxford Review of Economic Policy* 30(3):469–491.

Toenshoff, Christina. 2024. "Collective Irresponsibility: Corporate Reputations and the Role of Associations in Lobbying.".

You, Hye Young. 2017. "Ex Post Lobbying." *Journal of Politics* 79(4):1162–1176.

Zahariadis, Nikolaos. 2001. "Asset Specificity and State Subsidies in Industrialized Countries." *International Studies Quarterly* 45:603–616.

Appendix

Table of Contents

A Decarbonization and the Potential Benefits to Firms

In the main text, I omit the off-diagonal types of policy benefits from green industrial assistance for brevity's sake. In this Appendix, I provide further details on the types of policy benefits from GIP available to firms along the dimensions of exclusiveness and decarbonization potential. I then substantiate my focus on exclusive and proximate benefits discussed in the main text.

Decarbonization assistance can broadly differ along two dimensions: the number of recipients, or *exclusiveness*, and the extent of its decarbonization potential, or how *transformational* it is. For simplicity, I assume that the relationship between the monetary amount of assistance and the decarbonization potential is increasing. This builds off the two intuitions. First of low-hanging fruit: the easiest emissions-abating innovations are typically the cheapest and firms will self-provide these given consumer demand or a regulatory signal. Second, following from the first, as emissions reductions approach net-zero, they will be increasingly expensive. Together, this implies that the final emissions eliminated from the production process prior to carbon neutrality will be the most costly. This second facet motivates my argument for current relative green productivity being insufficient to predict lobbying on potentially transformational green industrial assistance – provided the opportunity to better secure assistance for the most costly innovations, firms will not neglect it regardless if they are current climate leaders.

In Table A1 I provide four ideal types of policy benefits from green industrial assistance. I elaborate the two alternative types below. Rather than consider these as

strict categories, I consider the two dimensions as broadly distinguishing the different ways that GIP benefits firms. The ideal types serve to ground intuition and provide a contrast between benefits that contain multi-firm benefits. Regardless of the benefit type, my focus is predominantly on the lobbying behavior of emissions-intensive firms given my focus on decarbonization assistance.

Recipients		Decarbonization Potential	
		L	H
	1	Exclusive	Bail Out
	> 1	Collaborative	Proximate

Table A1: Policy Benefits from GIA

Given that firms are competitive, what I term "bail out" benefits are strictly preferred. These provide firms with unique, transformational benefits. As noted in the main text, these types of policy benefits are unlikely to consistently predict lobbying behavior for a several reasons. First, bail outs generate audience costs. In the present context, this would suggest the government is bailing out those firms that are responsible for the climate crisis. Second, and somewhat relatedly, these bail outs give a stronger sense of picking winners as the large fiscal outlay limits the total number of grants, compared with smaller exclusive benefits. Third, technologically, for many sectors there are few transformational innovations without spatial externalities. One case in which transformational benefits without clear spatial externalities exists is steel: a traditional blast furnace can be replaced with an electric arc furnace. At a high level, this replaces coke, an emissions-intensive coal derivative, with electricity as the fuel used to melt ores. This can reduce the emissions of a steel mill by 60-

80%.[37] It is unsurprising then that we observe large bail outs of emissions-intensive production for precisely this innovation in the steel sector.[38]

In contrast to bail out benefits, "collaborative" benefits are those with lower decarbonization potential, but still providing benefits to several firms. A prototypical example of collaborative benefits is R&D funding that goes to several actors partaking in a joint endeavor. There are several reasons why these types of benefits are unlikely to generate a shift in lobbying behavior. First, the combination of smaller decarbonization potential and the sharing of these benefits across several firms suggests these types of benefits are insufficient to overcome the costs of ex post lobbying, rather firms are satisficed by policy provision. Second, as is the case with exclusive benefits, it is unclear how collaborative research funding can be further restricted in such a way to encourage firms in, for example research networks, to lobby to further capture benefits from policy.

[37] https://www.steelradar.com/en/steels-green-revolution-eaf-vs-blast-furnaces/. Accessed August 13, 2025.

[38] Ford Rojas, J.P. September 14, 2023. "Fears of 'jobs bloodbath' at Tata with 3,000 set to be axed at Port Talbot plant in Wales as Indian-owned steel giant makes switch to Net Zero." *Daily Mail*. https://www.dailymail.co.uk/news/article-12520391/Ministers-announce-500-million-bailout-save-Port-Talbot-steelworks-3-000-jobs-set-axed.html.

B Sample Statistics

B.1 Firms

See Table 1.

B.2 Sectors

variable_name	mean	sd	max	min
Relative GIP	-2.42	5.59	4.00	-47.00
Relative Climate	-17.19	24.36	8.00	-81.00
Relative Digitalization	-0.35	1.06	2.00	-7.00
Relative Total	-43.62	30.73	3.00	-139.00
Relative Emissions	166930.75	1115404.41	8001848.42	-462005.17
Relative Plants	-0.37	3.14	22.46	-2.33
Relative Concentration	-1.42	0.81	2.95	-2.85
Relative Concentration (unweighted)	-1.47	0.95	2.84	-3.42
Relative Distance	-126.38	175.45	0.00	-1476.12

Table B1: Firm Sector-Relative Descriptive Statistics

C Robustness Checks on Main Results

C.1 Identification

Given the before-after comparison, the panel analysis detailed above can take on a causal interpretation within the DiD framework, albeit with concentration as a continuous treatment variable (Angrist and Pischke, 2009; Callaway, Goodman-Bacon and Sant'Anna, 2021). The inferential target is the average treatment effect among treated units (ATT), substantively the average effect of concentration among units with non-zero concentration. To ground the interaction's interpretation, I relate its components to the canonical example of time and treatment variables before detailing the identifying assumptions. In a two-period, two-group DiD set up, a set of units is assigned to treatment irrespective of time period. That is, this variable always takes some non-zero value. The control group, in contrast, takes a treatment value of zero always. The time indicator denotes the period following administration of treatment. In the present context, France Relance is the activating agent for the latent treatment variable, concentration.

This interaction generates an indicator for treatment taking non-zero values only in the post-period, whereas in the pre-period both treatment and control are zero. Hence, the interaction captures the difference in the outcome variable after the latent treatment is activated against the behavior prior in comparison to the analogous difference among control units. As noted above, treatment dosage in the present context is captured by *Concentration*, whereas *Relance* is the time variable. The expansion of funding shifts the way firms weigh the potential benefits from GIP and

the increased likelihood of proximate benefits nudges concentrated firms to engage in ex post lobbying more than isolated peers.

A causal interpretation in the DiD setting requires that we find credible that beyond activation of geographic concentration via France Relance, the trend in lobbying behavior among concentrated firms would not have diverged from their more isolated peers. The COVID-19 pandemic and the subsequent relaxation of the budget constraint on state aid at face values suggests that anticipation is unlikely, but I assess threats to causal identification empirically in three ways. First, given that lobbying data exists for several years prior to the passage of France Relance, I conduct pre-trend analyses to check for violations of the parallel trends assumption.

Second, I consider whether firm concentration predicts lobbying behavior on all non-GIP issues as well as on another policy issue–digitalization–that likewise received a substantial funding increase from France Relance. Unlike large-scale decarbonization assistance, digitalization funding is less likely to have the same transformational proximate benefits that would encourage concentrated companies to differentially lobby for it after 2020. These placebos probe the theoretical uniqueness of concentration as an explanatory variable; that concentration is not capturing some broader latent firm attribute.

A final threat to inference is omitted variable bias–some common factor influencing both a firm's production and lobbying decision-making. I address this concern by instrumenting the count variable in the plant density calculation with a measure of the plant's distance to the closest of nine *métropoles d'équilibre*. The process of *aménagement du territoire*, or territorial balancing, developed under the tutelage of

Jean Monnet, sought to thwart the growing dominance of the Parisian basin through the use of economic privileges to firms locating production near the *métropoles* (Bess (2003, p. 51)).[39] A ban on further industrialization in the greater Paris region alongside ample tax incentives for location near these regional hubs was pursued for just over a decade (Berger, 1981, p. 303). The average inverse logged distance of a firm's plants to these regional hubs serves as an instrument for the concentration measure above. I elaborate in further detail the IV strategy and analysis in Appendix D.

C.2 Pre-Trends

In Tables C1 and C2, I conduct two sets of placebo tests. In the first, I leverage an event study design and assess whether firm concentration positively predicts green industrial assistance lobbying in any of the years leading up to France Relance. For the dichotomous outcome variable this is never the case, whereas with the continuous variable there is one marginally significant interaction ($p \approx 0.099$). Using an alternative year (2018) as the split between pre- and post-periods returns attenuated and imprecise point estimates on the interaction between *Relance* and *Concentration*. Together, these tests do not present clear violations of the parallel trends assumption. Second, I consider lobbying on digitalization given that it received expanded assistance under Relance, and while providing benefits to firms, is unlikely to disproportionately benefit firms that are more geographically concentrated. I find no evidence of more concentrated firms lobbying differentially on this issue since 2020.

[39]The nine cities designated in 1964 include: Lille-Roubaix-Tourcoing, Nancy-Metz, Strasbourg, Lyon, Marseilles, Toulouse, Bordeaux, Nantes, and Saint-Nazaire. This list was expanded nine years later to include Clermont-Ferrand, Dijon, Nice, Rennes and Rouen.

Alongside the lack of any overall change in lobbying behavior, this suggests concentration is particular to explaining lobbying behavior on decarbonization assistance.

Table C1: Pretrends Assessment

	Binary		Continuous	
	Model 1	Model 2	Model 3	Model 4
year::2017:firm_concentration_zip	0.03		0.09*	
	(0.03)		(0.06)	
year::2018:firm_concentration_zip	0.03		0.08	
	(0.02)		(0.05)	
year::2020:firm_concentration_zip	0.01		0.03	
	(0.01)		(0.03)	
year::2021:firm_concentration_zip	0.09*		0.28***	
	(0.05)		(0.09)	
year::2022:firm_concentration_zip	0.14***		0.31***	
	(0.04)		(0.10)	
green_capital:post	0.03		0.55*	
	(0.06)		(0.31)	
post:firm_plants	−0.02		0.00	
	(0.01)		(0.03)	
post:firm_emissions	0.00		−0.00	
	(0.00)		(0.00)	
post:turnover_first	−0.00		0.00	
	(0.00)		(0.00)	
post:employees_first	0.00		0.00	
	(0.00)		(0.00)	
placebo_post:firm_concentration_zip		0.01		0.03
		(0.03)		(0.05)
placebo_post:green_capital		−0.01		0.18
		(0.08)		(0.18)
placebo_post:firm_plants		−0.01		−0.01
		(0.01)		(0.02)
placebo_post:firm_emissions		0.00*		0.00
		(0.00)		(0.00)
placebo_post:turnover		0.00		−0.00
		(0.00)		(0.00)
placebo_post:employees		−0.00		0.00
		(0.00)		(0.00)
N	747	747	747	747
Firms	156	156	156	156
R^2	0.58	0.57	0.53	0.51
Adj. R^2	0.46	0.45	0.38	0.37

In the event study models, 2019 is taken as the reference period. Placebo-Post denotes 2018 as the final year of the pre-period. All models include firm and year fixed effects. Robust standard errors clustered at the firm. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

C.3 Placebos

Table C2: Digitalization and Total Lobbying Trends

	Model 1	Model 2	Model 3
Firm Concentration × Relance	0.00	0.00	−0.37
	(0.00)	(0.00)	(0.36)
Green Capital × Relance	0.01	0.01	−0.27
	(0.01)	(0.02)	(0.65)
Firm Emissions × Relance	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
N.	747	747	747
Firms	156	156	156
R^2	0.73	0.81	0.87
Adj. R^2	0.56	0.69	0.78

The outcome variables are a binary indicator for any lobbying on digitalization, a count variable of the same domain, and aggregate yearly lobbying disclosures respectively. All models include firm, year, and sector by year fixed effects as well as controls for plants, turnover, and employees interacted with Relance. Robust standard errors clustered at the firm. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

C.4 Alternative Outcome

In this section I probe the robustness of my results to a more narrow measure of green industrial assistance lobbying: whether firms included language related to decarbonization infrastructure projects such as carbon capture and storage or hydrogen. As noted in the main text, these infrastructure projects are perhaps the clearest example of green industrial assistance laden with proximate benefits due to the spatial externalities that drastically reduce costs when deployed in densely industrialized areas. Furthermore, the transformational nature of the decarbonization innovation inherent to these infrastructure projects makes them an attractive route to reach net zero.[40] This connection between infrastructure projects with spatial externalities and a firm's concentration provide a clear, but challenging, test of my argument. The relatively short nature of the lobbying description precludes firms from needing to elaborate in detail about their lobbying activities, for this reason I focus on the policy domain categories that are more standardized for the primary measurement strategy. Likewise, while firms may be sanctioned for failing to report their activities, it is less clear whether the degree of detail included in a disclosure would leave them liable to penalty. This measurement error would introduce noise into my estimation strategy as firms expected to mention projects with spatial externalities fail do so, thereby biasing against finding a result.

To measure mentions of decarbonization infrastructure projects, I utilize a dictionary with the following words: "capture, stockage, ccus, ccs, carbone, hydrogène, hydrogene". Roughly 3% of disclosures contain one of these words in their goal

[40]

	Binary			Continuous		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Concentration × Relance	0.06**	0.06**	0.05**	0.10**	0.10***	0.10**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Green Capital × Relance		0.02	0.01		−0.03	−0.05
		(0.05)	(0.05)		(0.06)	(0.06)
Emissions × Relance		0.00	0.00		0.00*	0.00
		(0.00)	(0.00)		(0.00)	(0.00)
Unweighted			✓			✓
N	817	747	747	817	747	747
Firms	176	156	156	176	156	156
R^2	0.49	0.51	0.51	0.58	0.58	0.58
Adj. R^2	0.35	0.37	0.37	0.46	0.46	0.46

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table C3: Lobbying on Decarbonization Infrastructure Projects

section. I then aggregate the data in an analogous fashion to the main text, generating both a binary and continuous operationalization of this infrastructure mention variable. Table C3 presents the results of this analysis. In line with the main results, there is consistent evidence of more concentrated firms increasingly speaking with government about these types of infrastructure projects following the passage of France Relance. Across the models, the standardized β is between 0.11 and 0.15, a sizable effect.

D IV Analysis

D.1 Motivation

A threat to inference on the causal effect of firm concentration and lobbying behavior is omitted variable bias, that is some third variable, Z, might be influencing both a firm's concentration, for example by its siting decision-making, and its lob-

bying behavior. Failing to include Z in the regression would lead to a biased, if not possibly spurious, estimate of the relationship between concentration and lobbying. By choosing an instrument that is predictive of a firm's concentration, but unlikely to influence lobbying behavior via alternative channels, we can be more confident that the estimates in the main text are not plagued by omitted variable bias. Put more explicitly, an instrument needs to be both relevant and exclusive (Angrist and Pischke, 2009).

In what follows I demonstrate the relevance and make a case for the exclusivity of a firm's average distance as a viable instrument for its concentration in the present context. Assessing the relevance of an instrumental variable is straight-forward: if it does not predict the endogenous variable, here concentration, it is not relevant. The F-statistics from the first stage of the IV analysis in Table D1 is above conventional thresholds for each of the models, demonstrating that it is a strong predictor of a firm's concentration.

The exclusion restriction, in contrast, cannot be verified empirically, rather a substantive argument is needed to justify it. As noted in the main text, the *métropoles d'équilibre* derived their preferential status from state planning objectives in the mid-1960s that sought to balance uneven economic development across metropolitan France. This consisted of a ban on new industrial development in the Parisian basin along with tax incentives to build new production facilities in the nine regional cities. There are two pathways by which these incentives might link distance to concentration. First, for those older still operating establishments, investment decisions might have been spurred by these tax incentives. Second, for newer establishments,

the existence of a strong industrial base in the vicinity of these regional hubs makes them attractive locations for more recent industrial investment. More established industrial utility provisions (e.g., electricity, gas networks, water, waste, etc.), educational and training pipelines due to the already sizable local industrial economy are possible extended impacts of this policy.

In either case, we should expect being closer to these hubs will be predictive of a firm having a higher average concentration given the direct tax incentives and/or indirect benefits of co-location. In the former case, the threat to the exclusion restriction is less plausible: the decision to locate near in the vicinity of these hubs in 1960s or 1970s, prior to any widespread concern about climate change, suggests that distance is unlikely to influence a firm's lobbying behavior on green industrial assistance through an alternative channel than concentration. In the case of the indirect influence of the *métropoles* policy, unless firms actively considered the likelihood of proximate benefits for decarbonization assistance as a realistic co-benefit of locating more recently near the *métropoles*, it is unlikely to have a *direct* effect on lobbying. Taken together this suggests that while distance has a plausible theoretical impact via concentration on lobbying behavior, it is unlikely to have an independent effect.

While distance might not have an independent effect on lobbying, it could arguably impact lobbying indirectly via emissions or workforce composition. In terms of workforce composition, it is plausible that firms closer to cities have access to a more highly educated workforce with preferences favoring greater climate action (Inglehart (1981), but see Bechtel, Genovese and Scheve (2019) for the importance of sector employment on climate preferences.). For distance to operate indirectly

via workforce composition, this would entail we find credible that lobbying activity is shaped by the general workforce or that the employees tasked with lobbying are representative of the distance of the firm. If distance was then predictive of a more pro-climate workforce, these employees would also need to be in charge of lobbying. Neither seem very likely given that French firms are either publicly owned or led by executives predominantly in Paris. Publicly-traded firms lobby with the ultimate goal of making profits thereby improving their performance in the eyes of shareholders, not employees. Even the in the case of private firms, most executives and top-level managers in France are trained in a select few institutions in Paris, a common characteristic *across* firms (Hall, 1986). Regardless, the composition of a firm's workforce is relatively static in the short-term, hence the firm fixed effect guards against any potential indirect influence of this threat to inference.

In terms of emissions, we might expect the opposite: firms with greater emissions and other noxious co-pollutants choose to be located further away from heavily populated areas. These emissions-intensive firms with greater distance might seek out greater assistance. Theoretically, as discussed in the main text, this is unlikely to be the case when considering shifts in lobbying behavior for green industrial assistance. To address this concern, I include emissions, interacted with the *Relance* indicator in all models. Additionally, I use distance as an instrument for emissions in an analogous regression. It is not a significant predictor of lobbying, nor does distance meet the relevance criteria: In the first stage it is not predictive of emissions ($p \approx 0.35$).

To calculate the distance instrument, I collected geographic data for roughly 1,200 plants in France. This consists of the universe of plants regulated by the EU-ETS.

Missingness for exact coordinates is under 2%. Using each plant's location, I then measure the distance to the closest *métropole*. I then take the average of each plants' distance to generate a firm-level distance.

D.2 Measurement & Estimation

To calculate the distance instrument, I collected geographic data for roughly 1,200 plants in France. This consists of the universe of plants regulated by the EU-ETS. Missingness for exact coordinates is under 2%. Using each plant's location, I then measure the distance to the closest *métropole*. To account for the large distances of some of the plants, I log this distance variable and take the inverse of it. I opt for the logged inverse of the average plant distance as it reorients the distance measure in align with concentration and bounds the range of the variable between 0 and 1, thereby reducing the impact of a few extreme outliers (e.g., plants on Corse)

I use this measure to then estimate a two-stage least squares regression equation of the following form:

$$\text{Concentration}_i \times \text{Relance}_t = \alpha_i + \gamma_t + \beta_1 \text{Distance}_i \times \text{Relance}_t + \beta_i \mathbf{X}_{it} + \epsilon_i \quad (2)$$

$$Lobby_{it} = \alpha_i + \gamma_t + \beta_{IV} \text{Concentration}_i \times \text{Relance}_t + \beta_i \mathbf{X}_{it} + \epsilon_i \quad (3)$$

Given the synthesis between the difference-in-differences and instrumental variables approach, I utilize similar placebo tests as in the main test to assess for vio-

lations of the parallel trends assumption. To summarize, a causal interpretation of the β_{IV} coefficient entails we find credible that distance is (1) a relevant predictor of concentration, (2) it operates exclusively via concentrations, and (3) that the trends in lobbying behavior for firms of varying distance levels would not have diverged absent the incidence of France Relance.

D.3 Results

In Table D1, Models 1 to 3 present the results of the IV analysis with the binary outcome variable, whereas the remaining columns consider the continuous outcome. Models 1 & 4 consider the weighted measure of firm concentration whereas Models 2 & 5 use the raw measure of concentration. For three of the four primary specifications, the instrumented measure of firm concentration is positive and statistically distinguishable from zero, only in the first model is it just below conventional levels of significance ($p \approx 0.11$). Models 3 & 6 provide some confidence of the absence of any clear violations of the parallel trends assumption: In both outcome measures the coefficient substantially attentuates, even switching signs in the case of the binary outcome measure. Taken together, these provide results provide additional evidence in favor of more concentrated firms increasingly lobbying on green industrial assistance following France Relance.

Table D1: Instrumental Variables Analysis

	Binary			Continuous		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Concentration × Relance	0.08	0.08*		0.43**	0.39**	
	(0.05)	(0.05)		(0.19)	(0.16)	
Firm Emissions × Relance	0.00	0.00		−0.00	−0.00	
	(0.00)	(0.00)		(0.00)	(0.00)	
Firm Plants × Relance	−0.02	−0.02**		0.00	−0.03	
	(0.01)	(0.01)		(0.03)	(0.02)	
Employees × Relance	0.00	0.00		0.00	0.00	
	(0.00)	(0.00)		(0.00)	(0.00)	
Turnover × Relance	−0.00	−0.00		0.00	0.00	
	(0.00)	(0.00)		(0.00)	(0.00)	
Firm Concentration × Placebo			−0.02			0.08
			(0.06)			(0.11)
Firm Emissions × Placebo			0.00*			0.00
			(0.00)			(0.00)
Firm Plants × Placebo			−0.01			−0.01
			(0.01)			(0.02)
Employees × Placebo			−0.00			0.00
			(0.00)			(0.00)
Turnover × Placebo			−0.00			−0.00
			(0.00)			(0.00)
First Stage F-test	524.10	705.60	656.70	524.10	705.60	656.70
N	747	747	747	747	747	747
Firms	156	156	156	156	156	156
R^2	0.58	0.58	0.57	0.52	0.53	0.51
Adj. R^2	0.46	0.46	0.45	0.39	0.40	0.37

All models include firm and year fixed effects. The first stage regresses the the inverse logged average distance of a firm's plants to a the incentivized regional hubs described in the main text on the postal code concentration measure. This fitted value is then used as the fixed characteristic in the difference in differences analysis. Robust standard errors clustered at the firm in all models.

E Grid Analysis

E.1 Measurement

Given the inconsistent size of postal codes, I assess the robustness of the results of the main text with concentration calculated at varying grid dimensions. Using GIS software, I map a grid over Metropolitan France at increasing small dimensions from 1^2 degree to 0.1^2 and recalculate the count variable in the plant density equation. All remaining aspects of the measurement and the estimation are the same as in the primary text hence I omit them here.

E.2 Results

Table E1 presents results on the effect of Firm Concentration following France Relance at varying grid sizes. For both outcome measures, there is a trend towards greater coefficient size as the area of the grid cell shrinks. Holding all else constant, this is in line with increasing concentration making clearer the potential proximate benefits contained in expanded green industrial assistance funding, as the density is increasing as the area shrinks. For the continuous outcome, the impact of concentration on lobbying is relatively consistent throughout the various grid sizes, however this is not the case for the binary outcome. At the continuous level, the results provide an additional robustness check on the postal code measure in the main text.

Table E1: Concentration at Varying Grid Sizes and Lobbying Behavior

	Binary				Continuous			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Firm Concentration × Relance	0.00	0.01	0.01	0.04	0.01*	0.02*	0.04*	0.10
	(0.00)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.02)	(0.08)
Green Capital × Relance	0.04	0.04	0.04	0.03	0.51*	0.50	0.50*	0.48
	(0.06)	(0.06)	(0.06)	(0.06)	(0.30)	(0.31)	(0.30)	(0.30)
Firm Emissions × Relance	0.00	0.00	0.00	0.00	−0.00	−0.00	−0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Firm Plants × Relance	−0.02	−0.02	−0.02	−0.02	0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)
Employees × Relance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Turnover × Relance	−0.00	−0.00	−0.00	−0.00	−0.00	−0.00	−0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Grid Size	1^2	0.5^2	0.25^2	0.1^2	1^2	0.5^2	0.25^2	0.1^2
N	777	777	777	777	777	777	777	777
Firms	163	163	163	163	163	163	163	163
R^2	0.57	0.57	0.57	0.57	0.52	0.52	0.52	0.52
Adj. R^2	0.45	0.45	0.45	0.45	0.38	0.38	0.38	0.38

Note: All models include firm and year fixed effects. Firm concentration is measured analogously to the equation in the main text albeit with a different geographic reference unit. The average postal code area sits between 0.1^2 and 0.25^2 in area. All controls variables are unchanged. Robust standard errors clustered at the firm in all models.

F Additional EU and French Climate Context

European Climate Policy

EU climate policy is guided by the legally binding 2050 net-zero target, established in the European Climate Law in 2020. Alongside this long-term target, an intermediate goal of 55% emissions reductions was set; the collection of policies aimed at meeting this goal are colloquially referred to as "Fit for 55". Together, with the European Green Deal, proposed in 2019, these policies outline various support mechanisms to industry to assist in reaching the net-zero targets. This expansion of assistance policies, partially funding national level expansions, complements a longer standing regulatory approach in Brussels.

The regulatory foundation of EU climate policy is the Emissions Trading System (EU-ETS). Beginning in 2005, the EU-ETS tracks and regulates the number of emissions on plants with more than 10,000 tCO_2e per year.[41] My measure of concentration leverages this universe of plants in France. While earlier periods featured an overabundance of free credits, this has been corrected in recent years, paving the way for high prices on emissions. For manufacturing firms, the ultimate phase-out of free credits will take place in 2026, concomitant with the full implementation of the EU Carbon Border Adjustment Mechanism (CBAM). Imported emissions protection via the CBAM permits the elimination of free credits, enabling a strong price signal within the Common Market. Proposed in 2019 and passed in 2023, its development suggests that firms were likely aware of increasing regulatory exposure via

[41] To provide a comparative sense of regulatory scope, the EPA's FLIGHT database which tracks emissions data on point sources of carbon emissions sets a lower limit at 25,000 tCO_2e.

the EU-ETS and with it a stronger market signal to pursue decarbonization.

French Climate Policy and France Relance

In 2019 France passed the Climate and Energy Law, establishing a legally-binding 2050 net-zero target. Alongside this target, it mandates the creation of five-year carbon budgets to facilitate short-term reduction goals. The 2019 National Low Carbon Strategy (NLCS) outlined various sector pathways for industrial decarbonization, however the method remained via small-scale public support. A regulatory approach, based in the EU-ETS, was still privileged. Published in March 2020, the NLCS provided meager public assistance towards industrial decarbonization in stark contrast to France Relance announced a mere six months later.

Following the economic turmoil caused by the COVID-19 pandemic, the national government passed France Relance in September 2020, facilitated by relaxation of balanced-budget requirements by the European Commission. A recovery plan to stimulate the economy,[42] it targets three general areas for heightened public assistance: (1) the ecological transition, (2) economic competitiveness, and (3) social cohesion. For the green transition, key aims include an increase in state industrial aid from 200 million to 1 billion euros per year for industrial decarbonization. The development of clean hydrogen infrastructure received separately 2 billion euros. Together, assistance towards industrial decarbonization accounts for more than 10% of the total policy package (100 billion euros) and more than a third of the funding

[42]Several areas of funding initiated by France Relance were subsequently continued, if not expanded, under the France 2030 5 year investment plan aiming to prepare the economy for the challenges of 2030.

directed towards the ecological transition.

Beyond environmental funding, spending on competitiveness and social cohesion totaled 34 and 36 billion euros respectively. Cuts to corporate tax rates, aid to sectors affected by the pandemic, increased funding for employment insurance and public health infrastructure were major earmarks. France Relance was not simply a measure targeting the green transition, nor one particularly focused on industrial decarbonization. It does, however, represent a shift to the green funding status quo– with much larger assistance outlays now making possible transformational projects. Given the speed of its development and the resulting generality of the proposal, the document is relatively vague in terms of the actual implementation of the investment plan. This window of opportunity for firms to shape implementation permits of assessment of how firms' lobbying behavior adjusts in response to shifting policy paradigms.