International Economic Competition and Public Support for Climate Policy*

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Abstract

Green industrial policy requires popular support to be politically sustainable, but electorates are uneasy about expansive climate spending. This paper introduces a new dimension to theories of climate preferences, one which policymakers have been leveraging for rhetorical frames: international economic competition. Competition generates support for green spending by activating deeper preferences for national economic security. This is especially true for the individuals most opposed to climate policy, namely conservatives and nationalists. Two survey experiments of Americans validate this theory. A framing vignette shows individuals, and especially Republicans and nationalists, more highly approve of electric vehicle tax credits when they are pitched as internationally competitive. A conjoint experiment varying green industrial policy attributes extends these results, demonstrating that traditional climate opponents are supportive of competitive climate policy. These findings offer vital insights into public support of green industrial investments, as well as how growing international competition is shaping mass policy demands.

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The archetypal green industrial policy is the Inflation Reduction Act (IRA), which in 2022 ushered in the largest climate spending package in American history—estimated to be over $1 trillion. The legislation famously nearly died at the hands of moderate Democrats; to escape that fate, the final package housed compromises to increase support from climate opponents, including measures such as spending indirectly through tax credits and targeting industries that would benefit Republican districts (Siegel, Tamborrino, and Blaser 2022). To maintain public backing for its unprecedented climate expenditures, the IRA's proponents have pitched green spending as good for both the environment and the economy, such as the Special Presidential Envoy for Climate averring that "clean energy jobs will be good jobs" (Young 2024). Still, despite these potential economic benefits, the IRA remains publicly controversial. Republican elites lined up to rail against the climate spending (e.g. Smith 2023) and the most conservative voters remain opposed to the IRA (Leiserowitz et al. 2023). These debates over green industrial policy are not localized to the United States; green investment is a core pillar of the European Commission's recent report on inclusive economic growth (*EU Competitiveness* 2024), even though right-wing Europeans have lashed out at climate policies (Voeten 2024).

Industrial policy has become a popular climate approach (Meckling 2021), but much of the literature on its use focuses on relationships between governments and interest groups (e.g. Allan and Nahm 2024). However, the opinion of the public, especially on such massive expenditures, is also an essential element of sustainable climate coalitions. Individuals are receptive to climate policy frames (Brulle, Carmichael, and Jenkins 2012), but there are stark limits to how willing they are to change their opinions about green policy based on proposed economic benefits (Mildenberger and Leiserowitz 2017) and survey respondents consistently dislike policies with huge fiscal costs (Bechtel, Scheve, and van Lieshout 2020). Yet despite the prior inefficacy of economic frames, politicians are pitching green industrial policy based upon its potential economic benefits. This raises an important question: under what circumstances will the public, and especially climate skeptics, support green industrial policy?

We argue that policymakers can generate support for climate policy by framing it as internationally competitive. Individuals possess sociotropic mental models through which they evaluate the effect of large government spending upon national welfare (Mutz and Lee 2020). However, individuals are also more likely to think of environmental policy as a global good (Prinzing 2023), leading to a perceived trade-off of national spending for global resources. Yet in practice, countries are competing to be the drivers of key supply chains in green production (Meckling and Nahm 2019). When individuals are cued to consider foreign economic competition, they will be more likely to consider the benefits that green spending can offer their national economy. Thus, politicians can frame their green spending as internationally competitive to generate mass support for climate policy.

Most importantly, the frame's effect is largest for the people most skeptical of climate policy, namely conservatives and nationalists. Both of these groups are subject to motivated reasoning when considering climate policy—conservatives are skeptical of major government interventions in the market and nationalists are virulently opposed to national spending on global goods. For both of these groups, however, anti-globalization attitudes and policies have become central to their ideology (Ballard-Rosa, Goldstein, and Rudra 2024). In particular, competition has become a central means of sustaining national self-sufficiency and buttressing national welfare against global forces. Framing climate policy as internationally competitive will be especially convincing for these climate skeptics.

We test this framing experimentally with a pair of pre-registered survey experiments fielded in the United States.[1] We first employ a vignette experiment with a two-arm factorial design. In the first treatment arm, we present respondents with information on a hypothetical tax credit designed to encourage the creation of new automobile manufacturing jobs, randomizing whether the jobs will be for either generic production or environmentally-friendly electric vehicles. In the second treatment arm, we randomly present some respondents with information framing the tax credits within the context of economic competition with China.

[1] An anonymized version of our pre-registered analysis plan is located on OSF registries.

This design allows us to test the effect of the green spending on the economy as a baseline, then examine the effect of competition upon approval for that same green policy. We can also compare the magnitude of the green competition effect against the baseline competition effect to determine if climate policy dilutes the efficacy of competition cues.

Respondents overall are more likely to support the electric vehicle climate spending when framed within the context of economic competition. They are not on average strongly supportive of the electric vehicle policy by itself, but the green element of the credits does not diminish the competition treatment's efficacy. Most importantly, the framing is particularly effective at moving respondents who were ex-ante opposed to climate action: Republicans and nationalists. These respondents punished green policy without a competition cue, but became much more supportive when climate spending was framed as economically competitive internationally. Mechanism tests suggests this is a result of sociotropic concern about the American economy, not about material or local considerations.

We follow the vignette with a conjoint experiment expanding the scope of possible climate policies to explore the generalizability of our vignette's treatment effects. We randomize across a variety of attributes relevant for green industrial policy. We find that while our overall pool of respondents prefer climate policy that provides climate tax credits directly to consumers and is primarily focused on addressing the effects of climate change (both domestically and internationally), there are key heterogeneous effects. Most pertinently, climate opponents were more likely to prefer climate policies that are framed as economically competitive. This suggests that the framing of climate as competitive travels well for climate skeptics, though its mileage may vary for climate supporters.

Our paper makes several contributions. First, we introduce a new component to the study of climate preferences: international economic competition. Whereas most prior literature begins with climate as a public good (e.g. McGrath and Bernauer 2017) and demonstrates a public interest in multilateral climate cooperation (Bechtel, Scheve, and van Lieshout 2022), we build on the political economy implications of climate change (Aklin and Milden-

berger 2020). Given that there will be distributional consequences in any green transition, we demonstrate that climate policies which are seen as economically competitive internationally will be popular, especially with economically-nationalist climate opponents. As we discuss at the conclusion of the paper, we do not claim this a normatively good finding.

Second, we contribute to the literature in international political economy about how competition changes individuals' political preferences. We find that the cued presence of a foreign competitor alters the climate preferences of even those who are ex-ante opposed climate action. This finding adds to a body of work supporting the effect of competition frames upon political economy preferences (Ashok and Gaikwad 2021; Mansfield and Mutz 2013), particularly by emphasizing the importance of individuals' perspectives on national economic security. Given the increasingly uncertain international system, in climate policy and other domains, it is especially important to analyze the effects of international competition upon voters' political desires.

Third, we contribute to the broader conversation in international relations about the future of the liberal order and international cooperation (Lake, Martin, and Risse 2021). Much of international trade is built on norms which disavow market intervention, which had led to an increasing number of disputes over green industrial policy, whether between the U.S. and Europe over the market distortions in the IRA or the burgeoning global competition around electric vehicles. If these policies and the competition they engender prove domestically popular, this suggests high levels of green spending will continue to degrade long-held norms of economic interaction.

Public Opinion and Green Industrial Policy

Climate change creates distributional conflict and is thus a problem of political economy (Aklin and Mildenberger 2020). As such, policymakers attempting to enact green policies must first wrestle with the conflict amongst interest groups. Unlike unorganized masses of vot-

ers, interest groups have both a concentrated stake in climate politics and a commensurately greater ability to influence policy design (Finnegan 2022). For instance, regardless of how popular a redistributive carbon tax might be, opposition from carbon-intensive industries has rendered such a punitive policy moot (Stokes 2020).

Governments have been resolving this problem of policy design by relying more on green industrial policy (Meckling 2021). Green industrial policy entails major fiscal expenditures on investments and incentives that bolster pro-climate interest groups, obviating the push-back from anti-climate organizations (Meckling et al. 2015). Rather than offering the broad regulatory stick of carbon taxation, green industrial policy proffers narrower carrots to foster sectoral investments that support renewable energy (Allan and Nahm 2024).

For policymakers who have opted for green industrial policy, the core problem becomes selling massive climate spending to the public. A grand majority of Americans believe that climate change is occurring and needs to be addressed; a much narrower majority believe that climate change should be a top priority for policymakers (Leiserowitz et al. 2023). The bare numbers are encouraging for politicians interested in green industrial policy: there is a critical mass of people who are open to supporting green legislation. The numbers also suggest, however, significant disagreement over what that policy should look like. This rift between recognized problem and palatable solution undermines the stability of green agendas (Fairbrother 2022).

If climate policy is to genuinely address the problem of climate change, it must be politically sustainable across mass audiences. While targeted material compensation can work for some individuals directly affected by climate change, it is not necessarily supported on a broad scale (Gaikwad, Genovese, and Tingley 2022). Even when some individuals are materially compensated, the rest of the citizens still need to be convinced to support costly fiscal expenditures—something they are far from assured to do even before considering green preferences (Bansak, Bechtel, and Margalit 2021). Political cues are powerful tools to shift opinion on climate policy (Brulle, Carmichael, and Jenkins 2012), but there is mixed evidence

about the best way to frame climate policy to generate support for spending through green industrial policy.

One avenue for policymakers is to frame climate policy as good for the economy. Transitioning away from carbon-based production will radically change the structure of the economy, leading to a perceived trade-off between environmental and economic well-being (Scruggs and Benegal 2012). Concern about the well-being of the economy has long been considered a central element of how the mass public determines its support of policies (Erikson, MacKuen, and Stimson 2002). In theory, green industrial policy is perfect for this framing. It is often described as spurring “green growth" and is perceived as less costly by the public than carbon taxation because it primes people to think of the benefits of investment and consumption (Allan and Meckling 2023).

However, research consistently shows that people are not moved by such economy-versus-environment frames. Although individuals are often asked in surveys to pick between one or the other, reifying the perceived trade-off, their answers are still motivated by climate beliefs (Kenny 2021). Furthermore, people do not respond to their individual economic circumstances by changing climate policy beliefs (Kachi, Bernauer, and Gampfer 2015). They also do not change opinions in the aggregate about green policy during economic downturns (Mildenberger and Leiserowitz 2017). Priming on green growth—as many American and European policymakers are attempting to do—may be seem appealing but has not been politically successful.

Economic Competition Changes Climate Policy Preferences

We argue that politicians can leverage an economic frame to generate support for green spending by cuing audiences to think about international economic competition. Climate change has distributional consequences for countries as well as for individuals (Kahn et al. 2021). Much of the focus of the international political economy of climate change has justifiably

been on the countries who will be climatic losers, but there will also be economic winners who capture renewable energy markets and control vital links in green industry (Meckling and Nahm 2019). This creates potential for trade conflicts over where important production points will locate (Wu and Salzman 2014). Though the green transition does not need to be zero-sum, climate investment is nonetheless occurring in a context of fragmented trade norms (Ballard-Rosa, Goldstein, and Rudra 2024). The United States, European Union, and China are already gearing up for competition over green goods like electric vehicles (Mathiesen and Colman 2022; Thomas 2022).

Politicians can wield extant country-level competition to lean into individuals' demonstrated sociotropic concern for national economic well-being, which is especially active in the face of external threats. National sociotropic attitudes encompass mental models by which people evaluate the effects of government policies upon the well-being of the country as a whole, not merely upon their narrow individual interest (Mutz and Lee 2020). People are especially invested in how policy affects their home country's jobs (Hiscox 2006) and take a dismal view of policies that are perceived to cost their country's jobs to foreign competitors, in absolute or in relative terms (Mansfield and Mutz 2013). When these sociotropic anxieties over national job creation are cued by elites, people change their policy preferences drastically in order to make their country more competitive internationally (Ashok and Gaikwad 2021).

Foreign economic competition will shift individuals' mental models for climate policy. People are accustomed to thinking of the environment as a public, global good (Prinzing 2023). It is precisely the all-encompassing nature of climate politics that dilutes framing effects of economic benefits. When information about economic competition is included, however, respondents will consider less the global gains from climate policy and consider more the threat that green production poses to narrow, national well-being. Economic competition will activate sociotropic economic anxieties that are present when individuals' national unit is perceived to be under duress from international actors, and which have been demon-

strated most acutely in trade politics (Mansfield and Mutz 2009). Green industrial policy is at the core of modern trade conflicts and legitimately relates to the economic dislocations people fear from trade (Colgan, Green, and Hale 2021). People on average value the economic well-being of their national polity and perceive international competitors as potentially harmful to their country if they are not addressed. Thus, they will be more supportive of a competitively-framed climate policy.

This theory reflects how some elites involved in the creation of the IRA have framed its benefits. U.S. President Joe Biden has pitched green spending to potential voters as a bill about economic competition for work, declaring in a speech at a green manufacturing plant, "When I hear climate, I think jobs... all across of America, instead of exporting jobs, companies both foreign and domestic are creating jobs here in America and exporting American-made products" (Biden 2023). Treasury Secretary Janet Yellen has also taken up this tone, using a speech at a solar power plant in Georgia to explicitly argue that the IRA was "bolstering our country's economic security and creating economic opportunity" by "protect[ing] our industries from unfair competition" originating in Chinese excess capacity (Yellen 2024).

Thus, our first hypothesis reflects the effects of an international competition frame upon climate policy preferences:

Hypothesis 1. *Individuals will be more likely to support a climate policy that is framed within the context of international economic competition.*

We expect this to be true on average, yet the above discussion elides a major source of subgroup variation in climate beliefs—partisan ideology. Globally, public opinion concerning climate policy is polarized: right-wing groups and individuals are much more skeptical of both climate change and climate action (Egan and Mullin 2024). This divide is particularly strong in the United States, where overt cues from right-wing leaders have increased climate polarization (Brulle, Carmichael, and Jenkins 2012). Finding ways to convince right-wing partisans to support green spending is essential to durable climate policies.

There's good evidence to suggest that partisan ideology is another reason why framing

climate spending as economically beneficial does not change individuals' opinions. One of the most important connections between right-wing politics and climate skepticism is motivated reasoning (Palm, Lewis, and Feng 2017). Climate policy obviously requires extensive government intervention in markets, and conservatives traditionally prefer limited government and free markets. Right-wing individuals are less likely to prioritize climate policies because they find the technical solutions antithetical to their core economic beliefs (Campbell and Kay 2014).

At first glance, conservatives' economic reasoning might appear to militate against their support for a competitive climate policy, but this overlooks the fact that the ideology of right-wing parties has been mutating rapidly for the past decade. Rather than espousing traditional neoliberal beliefs about free markets, they have become much more economically nationalist (Colantone and Stanig 2019). Global economic shocks producing local dislocations have contributed to the rise of right-wing populism, which endorses an interventionist state protecting the nation from the vagaries of the international economy (Broz, Frieden, and Weymouth 2021). The aversion of these right-wing groups to economic interdependence contributes to burgeoning economic conflict between sovereign states that threatens to destabilize the liberal international order (Lake, Martin, and Risse 2021).

We argue, then, that when a climate policy is framed as making their country more competitive economically, right-wing individuals will become more likely to support the policy precisely because they perceive it as beneficial for their national unit. Right-wing partisans' economic ideology has become more animated by feelings of national sociotropism; national well-being is defined less in terms of material wealth than by domestic control over production and insulation from global forces. Given this shift, economic competition becomes an important tool for promoting right-wing national interests. Framing a climate policy as internationally competitive should activate this core ideology of economic nationalism that will drive support for the policy, regardless of conservatives' pre-existing climate skepticism or demonstrated willingness to oppose green policy.

Our second hypothesis emphasizes that conservatives, who are more skeptical of climate policy on average, will be especially swayed by international competition frames.

Hypothesis 2. *The increase in support for environment policy will be more positive for conservative individuals.*

As noted above, there are also reasons for climate skepticism that exist outside of party affiliation and economic ideology (Fairbrother 2022). We also expect that the competition framing should function similarly for climate skeptics defined more broadly. In particular, although conservative parties have become more economically nationalist, it is not the case that all nationalists are right-wing (Ballard-Rosa and Ditmore 2024). We anticipate this framing to be especially effective for nationalists, regardless of partisanship.

Nationalism comes in several flavors, ranging from mild patriotic pride to acidic jingoism (Bonikowski and DiMaggio 2016). Across a variety of measurements and definitions, nationalists globally have long been shown to distrust climate policy because it is perceived to be a product of international coordination and an imposition from foreign elites (Kulin, Johansson Seva, and Dunlap 2021). The most ardent nationalists are especially opposed to large-scale climate policy because is perceived to be a national contribution to a global good (Ruser and Machin 2019).

By definition, however, the most extreme nationalists have the deepest sociotropic attachment to their country. They are more willing to engage in national competition because they see international relations as zero-sum games (Mansfield and Mutz 2013). These nationalists have also been found to punish basic economy activity like trade because it might benefit foreigners (Mutz and Lee 2020). They may dislike climate policy relative to non-nationalists, but when primed to think of international economic competition, they will become more supportive of green spending because of the way it protects the country from a perceived foreign threat.

Therefore, our third hypothesis is that nationalist individuals will also be especially swayed by international competition frames.

Hypothesis 3. *The increase in support for environment policy will be more positive for nationalist individuals.*

There is a crucial implication from the three hypotheses: emphasizing economic competition may not lose support from left-wing and non-nationalist supporters. We do not make this an explicit hypothesis because there are theoretical reasons that push in both directions. On the one hand, although sociotropic feelings vary greatly in these groups, pure cosmpolitanism is rare. Pro-climate individuals still possess boundaries to their perceived in-groups and out-groups, which often contain some measure of interest for national well-being. It may be, then, that groups with high levels of climate support will continue to support climate policies framed as economically competitive. However, more pro-climate groups may more centrally perceive climate policy as a public good, and thus see the competition framing as less effective at addressing climate change. Their motivated reasoning then will push in the opposite direction of conservatives and nationalists. Ultimately, if it is the case that they do not waver in their support of competitively-framed climate policy, then from a public opinion perspective green industrial policy may be especially favorable, with upside to convince skeptics without the downside of losing supporters.

Research Design

To test the effect of economic competition cues upon support for climate policy, we designed a pre-registered online survey experiment. The survey was fielded on Lucid Theorem in early 2024 on a sample of 2,337 American adults, with quota sampling on age, gender, race, and region.[2]

We focus on Americans because the United States is both a large emitter of carbon and plays an outsized role in the global economy. The IRA is perhaps the most important instance of green industrial policy. It was designed to attract climate opponents into its coalition, but

[2]See Section B for discussion of the validity of social science research conducted via online samples like Lucid and additional information about Lucid.

has been politicized by right-wing politicians (Siegel, Tamborrino, and Blaser 2022). Understanding how Americans feel about green industrial policy without specifically cuing on this legislation should provide an important sense of how individuals perceive the policy approach. The U.S. is also one of the most polarized countries on climate politics, making it both politically important and practically difficult to convince American climate skeptics to support green investment.

We conducted two experiments in the same survey with all respondents responding to both. First, we presented respondents with a vignette experiment to narrowly test the effects of competition while holding other features constant. We use a realistic scenario with a salient topic—electric vehicle manufacturing—to maximize the fit of the vignette with existing elite cues. Second, we extend the results by fielding a conjoint that varied other relevant policy features, thus allowing us to generalize our treatment to broader green industrial policy designs. We discuss the vignette and its results first, and then turn to the conjoint.

Study 1: Vignette Experiment

In the primary experiment, we anchor potential policy features based on extant research and theoretical importance to create a realistic climate competition cue. Green industrial policy is vast and multitudinous, covering potential technical topics that respondents may not easily grasp. We provided a comprehensible vignette with multiple frames that were realistic, both to maximize respondent comprehension and to mirror existing policy debates. Thus, we anchor respondents on three attributes of green industrial policy that might affect respondents' beliefs: fiscal mechanism, industry target, and competitor country.

First, we focus on green spending via corporate tax credits. Even if people do not know exactly how corporate tax incentives work, they still approve of them (Jensen and Malesky 2018). This suggests that individuals have a pre-existing mental model regarding corporate tax credits, whereas they may have more limited expectations about other green industrial

policies such as loan guarantees and green national banks. Most importantly, green corporate tax incentives are important tools used widely by policymakers, as evidenced by them making up the grand majority of the Inflation Reduction Act's spending.

Second, we root the vignette in electric vehicle (EV) manufacturing. Industrial policy is narrowly targeted and automobile manufacturing is highly salient for respondents in the United States, both because of its traditional association with American economic prowess and because of the industry's power to influence policy. EV production is a prominent example of green industry and is highly divisive in the rhetoric of American elites, meaning it is important to experimentally explore individual opinions about EV production as part of climate policy. Thus, this should be a sector of relevance to individual beliefs and an important and realistic policy for which both climate and competition matter.

Third, we anchor our respondents to consider economic competition with China. Respondents racialize generic countries given in vignettes and thus should be provided with clear frames (Rathbun, Parker, and Pomeroy 2024). Individuals are particularly likely to bring their external perceptions of Chinese climate policy to this experiment (Beiser-McGrath and Bernauer 2022). Additionally, Americans are steeped in rhetoric emanating from political elites across the spectrum about competition with China. We cue specifically on China to both set those expectations and to maintain the realism of the vignette. We will allow each of these elements—fiscal policy, industry, and competition—to vary later in the conjoint experiment in order to explore treatment generalizability.

We present this information in a 2x2 factorial experiment that independently varied both the greenness of tax credits and the presence of economic competition. Respondents first read a preamble about a hypothetical policy involving corporate tax credits to create manufacturing jobs in the United States and then were asked to evaluate the policy. Respondents then viewed one of four possible vignettes. In the *Tax Credit* arm, respondents were presented with either a generic business tax incentive to automobile manufacturers that would create jobs ("Generic Autos" treatment) or a clean energy tax incentive to electric

vehicle manufacturers that would create environmentally-friendly jobs ("Electric Vehicles" treatment). In the *Competition* arm, respondents were presented either with a neutral condition possessing no further information about the policy, thus making it purely domestic ("No Competition" condition) or were given additional information emphasizing the importance of the tax credits to strengthen the American business environment against Chinese competition ("Economic Competition" treatment).[3].

Prior to the vignette treatment, all respondents answered questions to measure their partisanship, nationalism, and climate preferences, along with a series of demographic questions and additional controls. After viewing the vignette, respondents were asked the extent to which they supported the proposed policy on a scale ranging from 1 (Strongly oppose) to 7 (Strongly support), along with comprehension checks designed to measure the effectiveness of the treatment.[4]

With a 2x2 factorial design, we have seven potential estimands: the two average treatment effects (ATEs) of Electric Vehicles and of Economic Competition for all respondents and five conditional average treatment effects (CATEs).[5] We can most effectively drill down on the cause of respondent outcomes by estimating the CATEs of one treatment holding the other treatment constant. For our analysis we are interested in the CATE of "Economic Competition | Electric Vehicles," meaning we exclude from the analysis any respondent not in the treatment arm with a climate policy. This estimand directly gives us the effect of competition upon approval for a green industrial policy, which is precisely what we have theorized.

The other estimands offer further validation of our theory and benchmarks against which to compare the magnitude of the main treatment effect. In particular, **H2** and **H3** specify that

[3]An example of a single treatment (Electric Vehicles x Economic Competition) is shown in Figure C1; all four treatments are summarized in Section C

[4]The wording of the dependent variable question is in the appendix and responses to the comprehension check are shown in Section C. 88.4% of respondents sorted into the China competition condition correctly identified China from a list of countries in competition with the U.S. to attract investment. 79% of respondents randomized into the clean energy tax credit condition correctly identified the purpose of the proposed tax credits, and 64% of those in the business condition did the same.

[5]We will denote CATEs by signifying "*Treatment* | *Treatment*," meaning the treatment to the left of the pipe is being varied while the treatment to the right is being held constant.

right-wing partisans and nationalists are climate skeptics. We offer evidence of this with the CATE of "Electric Vehicles | No Competition." This is vital, as we can demonstrate that even though these climate opponents punish pro-climate policy in general, they will change their views when cued to consider economic competition. We can also compare for all three hypotheses the main CATE of interest against the CATE of "Economic Competition | Generic Autos." This provides us a sense of whether or not competition policy is generically popular, as we've posited, and if attaching it to climate policy attenuates its approval.

Vignette Average Respondent Results (H1)

To investigate **H1** we ran an ordinary least squares (OLS) model regressing support for tax policy on the *Tax Credit* arm interacted with the *Competition* arm. If our theory is correct, we should find that "Economic Competition" increases the support for "Electric Vehicles" tax credits.

In Figure 1, we present the marginal effects with 95% confidence interval of the three CATEs of interest. First, we point out that presenting an EV corporate tax credit to individuals without a competition cue is not popular on average—we cannot reject a null of no effect. This fits with our intuitions that climate policy is not necessarily popular, even when framed as economically beneficial. Though this is not our central aim of the paper, this finding should not be ignored—despite this being a policy about the economic benefits of green investment, we do not see any additional support for it. Second, economic competition is quite popular for generic automobiles, as expected. This fits with extant literature on tax incentives and competition for investment.[6] By extending existing results, these estimates provide a robust baseline for us to examine the estimate of interest for **H1**.

Third, and most importantly, the effect of "Economic Competition | Electric Vehicles" is positive and both statistically and substantively significant (0.35, $p < 0.000$). The average ef-

[6]On average, support for all of the policies are relatively high. In all four treatment arms, the average support well above the outcome median of 4. Even given that high level of support, we observe positive and statistically significant treatment effects.

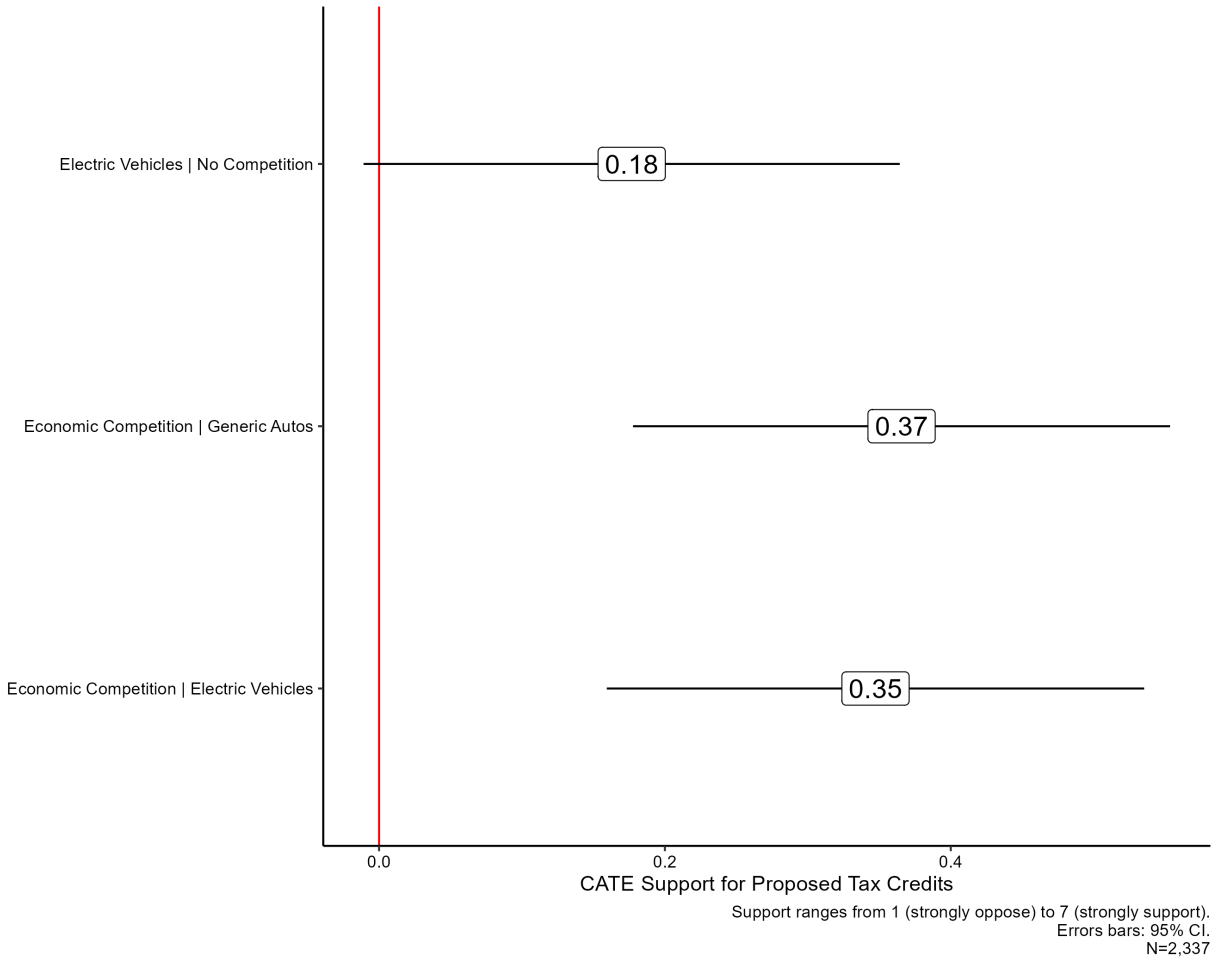

FIGURE 1. *CATE of Economic Competition Framing on Policy Support*

fect is twice the size of the EV credit alone, and is indistinguishable in magnitude from the generic effect of economic competition (p=0.893), suggesting that competition drives support for the tax credit policy regardless of the stated social goal. Moreover, this increase in support is substantively large. "Economic Competition" increased the support for the "Electric Vehicles" policy by 10.14 percentage points (95% CI: 4.46, 15.81).[7] Similarly, "Economic Competition" increased support for the "Generic Autos" tax credit by 6.90 percentage points (95% CI: 1.23, 12.57). Overall, we find the "Economic Competition" treatment successfully cued respondents to increase their support for tax incentives, with no discrimination for

[7]To report percentage changes in level of support we collapse the primary measure of support into a binary, with responses "Slightly support," "Support," or "Strong support" coded as supporting the policy and all other responses as opposing.

green spending.

Subgroup Analysis for Climate Skeptics (H2 and H3)

Next, we turn to exploring heterogeneous treatment effects for individuals who oppose climate policy. Recall that our expectations were that emphasizing economic competition would lead to a larger increase in support for climate policy among those who were *ex-ante* less likely to support climate action. Specifically, we expect that conservatives (**H2**) and nationalists (**H3**) to be opposed to climate policy generally but be especially moved by economic competition cues. We confirmed that both groups are less likely to support climate investments than their counterparts (see Table F1), but are not perfectly correlated with each other ($\rho = .29$; see Figure F1). We examine each in turn.

In Figure 2 we report marginal treatment effects for our three estimands, broken down by partisanship.[8] We also report mean treatment responses in a figure inset. Because respondent characteristics may be endogenous to both partisan affiliation and their support for the proposed policy, we include a standard set of demographic control variables (gender, race, education, income, employment status, age, and region) in the model.[9]

We find support for **H2**. For face validity of partisanship as a proxy for climate opposition, we find that Republicans heftily punish "Electric Vehicles | No Competition" while Democrats are highly approving.[10] Yet the effect of "Economic Competition | Electric Vehicles" is largest among Republicans (0.49, p=0.001). Comparing this to the effect of "Economic Competition | Generic Autos" for Republicans (0.49, p=0.001) suggests a similar effect size for competition regardless of the type of tax credit. Despite their pre-existing aversion to climate policy, Republicans are still moved by economic competition to support green

[8]Here and throughout, we analyze both self-identified partisans and leaners. Results are similar if we exclude leaners. We also analyze the results using conservative economic and social ideology scales; these results available upon request.

[9]All covariates were measured pre-treatment, per Sheagley and Clifford 2023. Note that we present point estimates with outer error bars at 95% CI as before, and inner bars that represent the 83.4% CI. This is in order to better facilitate visual comparison of statistically significant differences between groups.

[10]See also Table F1. Republicans (and nationalists) reported lower pre-treatment support for green investment to reduce the effects of climate change.

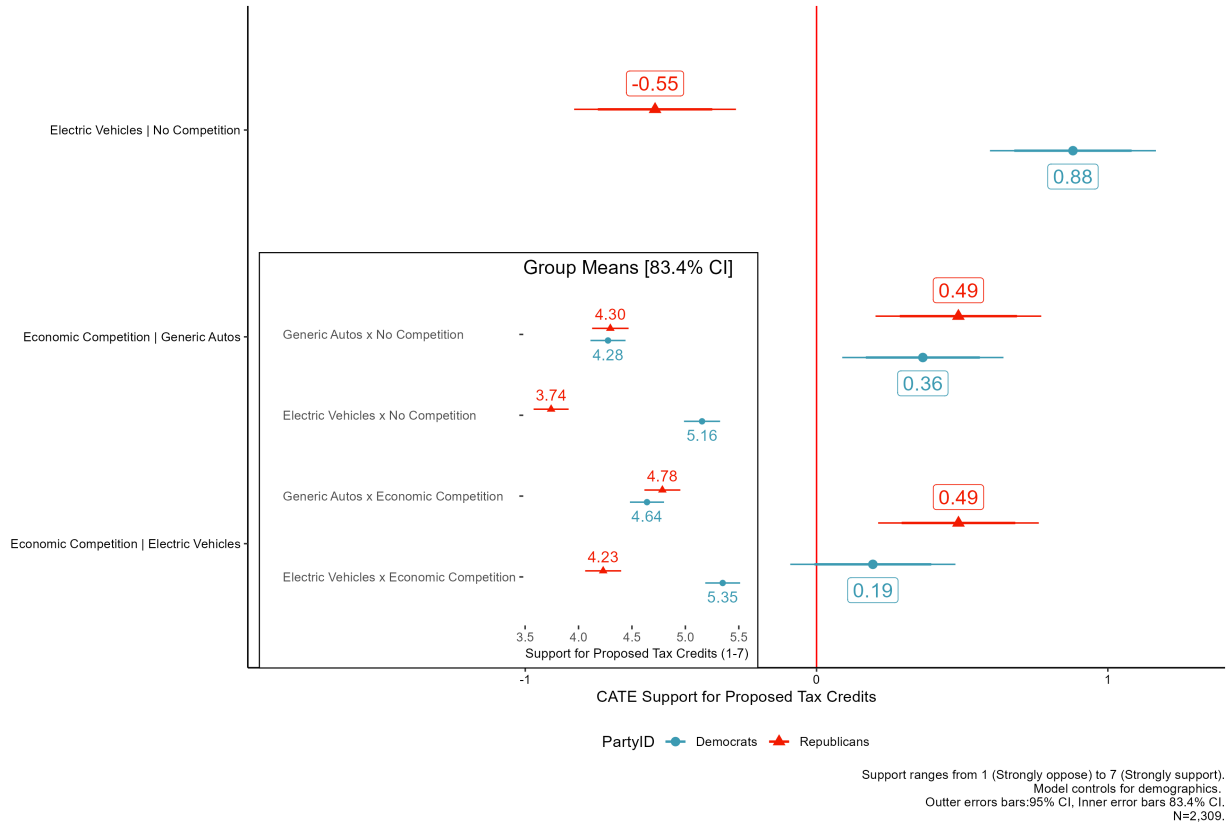

FIGURE 2. *CATE of Economic Competition Framing on Policy Support: By Party Affiliation*

Notes: In-set panel: Mean value of policy support in each condition in our experimental design.

spending. There is no attenuation of the effects of economic competition.

Notably, framing green energy tax credits alongside economic competition serves to narrow the partisan preference gap without reducing support among Democratic respondents. As anticipated, while the estimated effect of "Economic Competition | Electric Vehicles" among Democratic respondents is positive, it is substantively smaller and statistically insignificant (0.19, p=0.18). Despite the large positive effect from the "Electric Vehicles | No Competition" for Democrats, it is unlikely that the null effect among Democratic respondents for climate competition is due to ceiling effects. Only 12.9% of Democratic respondents answered the max of "strongly agree" in the "Electric Vehicles | No Competition" condition. This percentage was 17.5% in the "Electric Vehicles | Economic Competition" condition, indicating there was room for approval to grow.

These effects are substantively large and meaningful. Crucially, among Republican respondents the mean support for climate tax incentives framed in terms of international competition was over the midpoint of 4 (neither support nor oppose), meaning competition framing moved Republicans from opposing the climate policy (38.4% without the competition cue) to indifferent towards it (53.8% with economic competition). That marks a 15.5 percentage points increase in Republican support (95% CI: 7.18, 23.7). This increase, and the lack of corresponding decrease among Democrats (support for the climate tax policy was a statistically insignificant 3.16 percentage points higher among Democrats), results in a sizable 12.3 percentage point (p=0.04) narrowing of the partisan preference gap in approval for green energy tax incentives.

These effects are particular visible in the inset Figure 2, which displays the mean value of policy support of each of the four possible treatments. Republicans and Democrats both start as highly approving of generic tax incentives and move somewhat more positively when they are framed in terms of economic competition. Yet a massive polarization occurs as soon as green cues are introduced. The gap narrows when international economic competition is introduced, to the point that Republicans are now indifferent between the green credits they would otherwise punish and the generic autos credits they would otherwise support.

Next, we consider the effects of treatment by nationalism. We measured nationalism pre-treatment using five questions listed in Table F2. There are several potential definitions of nationalism and thus many means of measuring it. We chose items meant to capture an individual's "hubristic nationalism," meaning their perception that their country is superior to others (Bonikowski and DiMaggio 2016). These people should be especially likely to view economic interactions as zero-sum, which has been found with a smaller subset of these items in previous research (Mansfield and Mutz 2013). As a reminder, in **H3** we anticipated that the effect of the competition framing would be larger among nationalists than non-nationalists.

We constructed a nationalism index score by coding each response to the questions from

1 to 7 in 1 point increments (where 4 is neutral) then summing and dividing the total by 5 (the number of questions) to make a scale with ranging from 1 (minimum nationalism) to 7 (maximum nationalism). The median nationalism score across respondents was 4.4. We binarize nationalists as people above the median, but find similar results using alternative codings.[11]

We should first note that this measure of nationalism is weakly correlated with identifying as a Republican in our sample (Pearson correlation coefficient =0.29). 63.6% of Republicans are coded as nationalists, compared to 37% of Democrats, and 37.9% of those with no party preference. Overall, 55.3% of those coded as nationalists are Republicans (623 respondents) with 44.7% of Democrats and Independents (504 respondents) coded as nationalists.

We interact our treatments with the binary variable for nationalism, along with standard demographic covariates. The resulting marginal effects and response averages displayed in Figure 3 provide evidence in favor of **H3**. For respondents who registered high levels of nationalism, "Electric Vehicles | No Competition" drives down support for the policy, as expected. Once "Economic Competition" is introduced, however, nationalists become dramatically more supportive of the proposed policy. Interestingly, nationalists' support for purely economic tax credits when primed to think of economic competition is not distinguishable from 0. However, nationalists are much more approving of the tax credits policy to begin with (see inset figure).

Most importantly, the "Economic Competition" cue significantly shifted their support for electric vehicle tax credits spending (0.60, p <0.000). Again, in line with our expectations, respondents with an below-median level of nationalism did not respond to the "Economic Competition" cue by significantly changing their support for the green tax incentive (0.18, p.value=0.18). The difference between these two sub-group estimates is large (0.42) and statistically significant (p=0.03).

[11] To investigate how the items performed, we use confirmatory factor analysis. Table F3 displays parameter estimates and model fit indicating that the items capture the underlying concept of nationalism well. Additionally the the Cronbach's α is 0.85 suggesting high internal consistency of the scale.

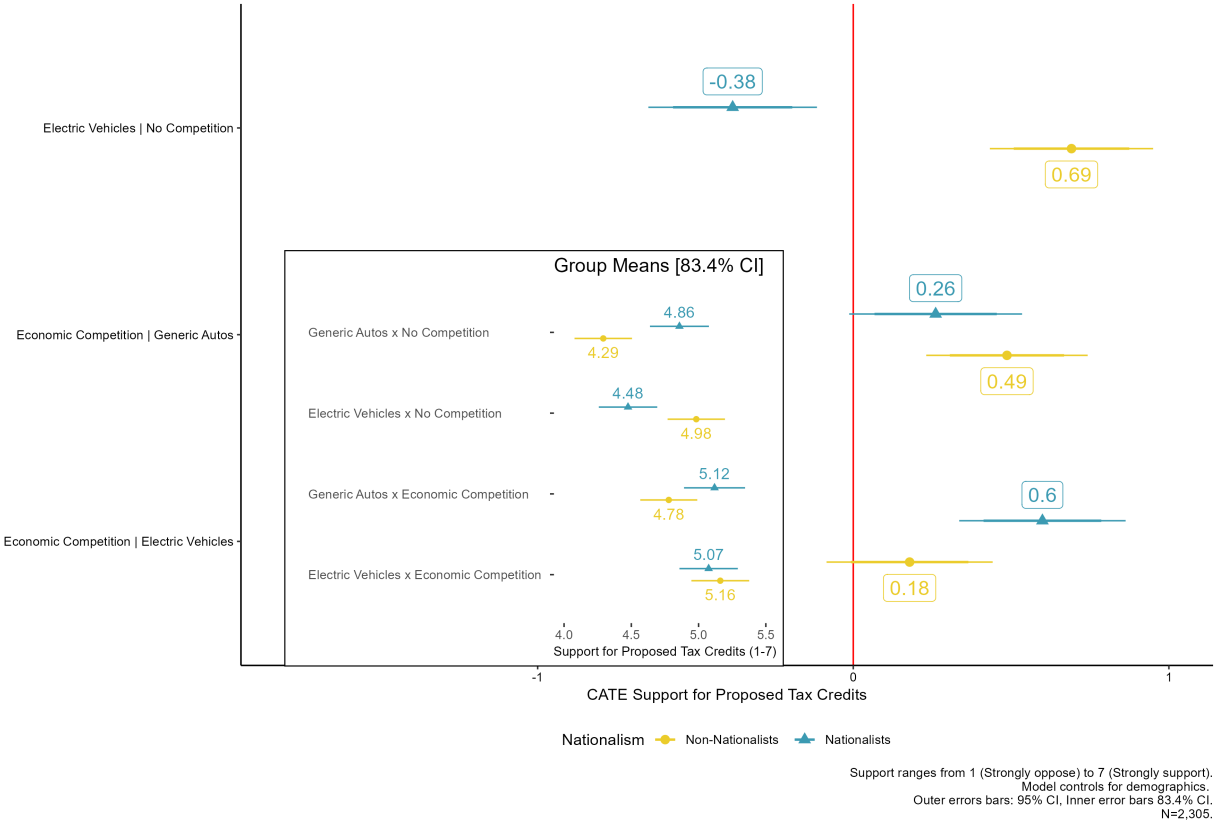

FIGURE 3. *Effect of Cues on Policy Support: By Nationalism*

Notes: In-set panel: Mean value of policy support in each condition in our experimental design.

Additionally, the effect of the competition cue for climate policy is substantively meaningful. Among nationalists, the competition cue increased support from 4.48 on the 7-pt scale to 5.07. To put this increase another way, nationalists increased their support of the electric vehicle tax credits by 15.13%. These results both justify the splitting of partisanship and nationalism as different groups of climate skeptics and provide evidence in favor of **H3**. These effects are driven home further when considering group means reported in the Figure 3 inset. Nationalists punish green tax credits, but their support is indistinguishable from the support of non-nationalists for the treatment arm containing both "Economic Competition" and "Electric Vehicles."

Study 2: Conjoint Experiment

The vignette experiment establishes that the American public, regardless of ideological opposition to climate policy, broadly supports climate policy when framed in terms of economic competition. However, this first study anchors several policy features that are realistic but may not travel well to other climate policy designs.

To assess the treatment generalizability of economic competition, we turn to our second experiment. We implement a conjoint within the same survey that lets us vary other aspects of climate policy to reflect the broader suite of scenarios. Respondents were presented with two paired hypothetical climate policies six times; for each pair, respondents were asked which they would prefer to see passed into law.[12] Respondents were also asked whether they would support or oppose each individual policy on its own. Prior to viewing the comparisons all respondents saw the following preamble:

"As you may have heard, American policymakers are currently considering various policies to **address the effects of climate change**. We will now provide you with several hypothetical government policies which are intended to **accelerate the green energy transition**."

The dimensions for each attribute are displayed in Figure C2. The attributes were selected to both follow existing literature (*Partisan Support* and *Policy Cost*) and to introduce new elements distinct to green industrial policy (*Policy Tool* and *Industry Target*), which have been widely used but only studied in limited fashion. We also introduce two framing dimensions to change expectations about the purpose of the policy, *Domestic Effects* and *International Effects*. The former varies the effects of traditional climate policy against a green growth frame. The latter varies traditional international environmental behavior against economic nationalism.

Per our theory, we expect that economic competition will be preferred by respondents. We also use the conjoint to assess other elements of green industrial policy that are related to

[12]The six comparisons, asked to each respondent, gives us a total of 27,966 to analyze.

competition, particularly provision of clean energy jobs—often used in rhetoric, exemplified by quotes above—and use of corporate tax credits, which are a frequent tool of competition. We expect that clean energy jobs will be preferred by respondents, as will green growth tax credits.

Baseline Conjoint Results (H1)

The baseline results for the conjoint experiment are reported in Figure 4. Results from the dimensions drawn from existing literature confirm prior findings: people are far more likely to support bipartisan initiatives and are far less likely to support costly policies. There is also no variation of policy approval based on targeted industry.

Most importantly, compared to a pure climate policy, respondents opposed both policies that "advance U.S. national interest by prioritizing economic competition with other countries" (-3.15 percentage points p=<0.000) and "promote U.S. national interest by deepening collaboration and cooperation with other countries" (-2.33 percentage points p= 0.002). Compared to the vignette finding, the negative finding on this generic competition cue suggests that economic nationalism is less salient outside of great power competition. Additionally, here we are comparing the competition prime to information about the pro-climate effects of the policy, which may suggest the average respondent is more concerned with perceived effectiveness of a climate policy achieving the goal of reducing the effects of climate change. These results provide evidence against the treatment generalizability of **H1**.

The other competition-adjacent dimensions work more as expected, in both *Policy Tool* and *Domestic Effects*. Respondents were especially approving of tax credits for consumers. Relative to the baseline of direct government spending, tax credits for consumers increased the preference for the climate policy by 11.2 (p=<0.000) percentage points. Notably, tax credits for corporations, the policy described in our vignette, was less popular than direct government spending but the difference was not statistically significant (-1.20 percentage

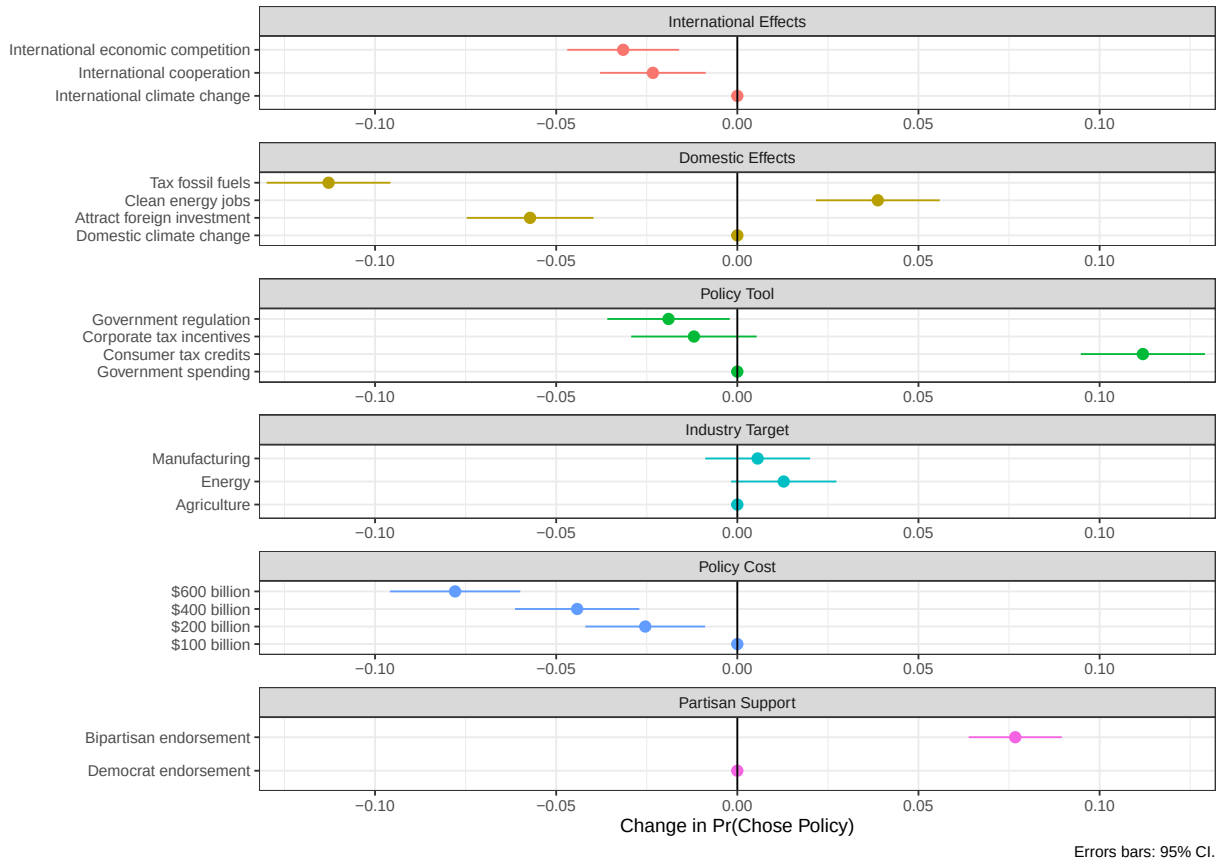

FIGURE 4. *Baseline conjoint results on climate policy preferences (AMCE).*

points, p=0.18).[13] For the framing of domestic effects, we find that compared to a pure-climate baseline, respondents preferred policies that had the domestic effect of creating clean energy jobs (3.88 percentage points increase p=<0.000). However, respondents preferred the baseline of slowing down climate change to policies that would either encourage foreign investment in the US (-5.72 percentage points p=<0.000) or increase the cost of fossil fuel compared to renewables (-11.28 percentage points p=<0.000).

On the whole, these results suggest that particular forms and frames for climate competition policies are popular. Traditional climate policies—such as increased government regula-

[13]Tax credits are obviously examples of government spending. However, one of the reasons they are popular is because they are associated with market behavior, despite inherently being governments distorting the market. We presented these dimensions expecting that “direct" government spending would signal a more overt activity, such as loans through a green bank or carbon tax redistribution. The fact that we find such a significant split, despite the fundamental similarity of these policies, validates this approach.

tion and increasing the cost of fossil fuel—are significantly less popular than green industrial policies like offering individual tax credits and creating jobs. Though among the overall pool of respondents economic competition is not popular when cued directly, unlike our expectation in **H1**, it is notable that it is not distinguishable from cooperation, which has a long history of being valued in climate policy (Bechtel, Scheve, and van Lieshout 2022).

Conjoint Subgroup Analysis (H2 and H3)

We now turn to analyzing the theorized heterogeneous effects of competition specifically: partisanship **H2** and nationalism **H3**. In Figure 5, we plot the heterogeneous results for three attributes, *International Effects*, *Domestic Effects* and *Policy Tool*. We visualize the differences between Republican/Democratic and nationalist/non-nationalist respondents scaled 0-100. Positive values indicate Republicans/nationalists preferred the attribute and negative that Democratic/non-nationalists respondents did.[14]

Crucially, as suggested by our theory, the effect of competition framing is strongest among Republicans (**H2**) and Nationalists (**H3**). Among Republican respondents climate policies that "advance U.S. national interest by prioritizing economic competition with other countries" have an estimated marginal mean of 0.52 (95% CI:0.51 0.534). Thus, competition is viewed most positively by climate opponents which, given the AMCE without heterogeneous effects, puts them at odds with climate supporters.

There is a 5.88 percentage point difference between Republican and Democratic marginal means within the international competition level (p=<0.000). Again this result is in line with **H2** and is similar to the results in our vignette experiment. Republicans prefer climate policy that emphasizes international competition. On the other hand, we observe a 6.33 percentage point difference between Republican and Democratic support for a policy with the international effect of slowing down climate change, with Democratic respondents preferring

[14]We follow Leeper, Hobolt, and Tilley (2020), who recommend plotting marginal means to demonstrate heterogeneous effects in conjoint experiments. See Figure F5 for a plot of overall marginal means by partisanship and Figure F6 for nationalism.

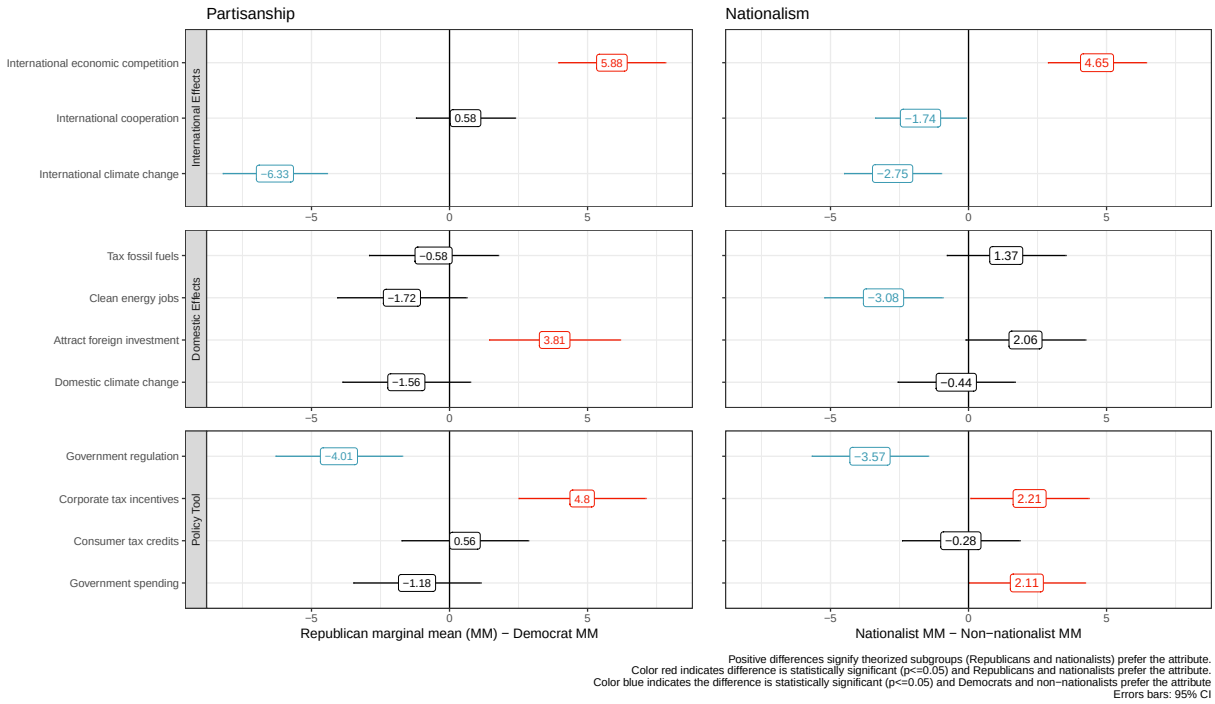

FIGURE 5. *Differences in Marginal Means: Partisanship and Nationalism*

this attribute.

This partisan divergence helps explain the negative result in Figure 4. Respondents from the two parties clearly diverge in terms of desired international effects. In fact, the distance between Republicans and Democratic respondents for international competition is the second largest, behind only the bipartisanship attribute for partisan support (7.79 percentage points p=<0.000).

We see similar, but less dramatic, results for *Domestic Effects*. There is a 3.81 percentage point distance between Republican and Democratic marginal means within the encourage foreign investment attribute. Otherwise, the partisans are broadly in agreement regarding their preferences for clean energy jobs and distaste for carbon taxation.

Finally, Republicans preferred tax credits for corporations as a *Policy Tool* by 4.80 percentage points (p=<0.000) while Democrats were more likely to prefer increased government regulation (4.01, p=0.001).

The results by nationalism are similar and in support of **H3**. Nationalists preferred cli-

mate policy that emphasizes international competition by 4.65 percentage points more than non-nationalists (p=<0.000). Additionally, non-nationalists preferred policies emphasizing cooperation and the the global effects of climate change. In terms of domestic effects, non-nationalists were 3.08 percentage points more likely to prefer climate policies that created clean energy jobs (p=0.01), although that effect largely seems to be driven by nationalists being more likely to want to attract investment into the country. Additionally, nationalists were more likely to prefer policies focused on tax credits for corporations (2.21 percentage points p= 0.043) and direct government spending (2.11 percentage points p= 0.05).

Reconciling Study 1 and Study 2

The conjoint extends the treatment effects from the vignette for **H2** and **H3**, while also demonstrating that green competitive policies are consistently popular across subgroups. While the entire respondent pool preferred climate policies emphasizing the pro-climate effects, contra **H1**, Republicans and nationalists were more supportive of American economic competition. These results provide context to our vignette findings and reinforce the potential for economic competition framing to increase support for climate action among climate opponents, as well as for green industrial policy more broadly to be a base from which to build a sustainable climate coalition. Furthermore, the more generic conjoint suggests that there may be a cost to an economic nationalism framing for pro-climate groups. Given the hyper-specificity with which green industrial policy occurs, this suggests that more targeted and explicit frames, emphasizing particular competitors (e.g. China) or industries, may be more effective at retaining these groups' support.

Accounting for Alternative Explanations

Our theory explains the findings from Study 1 and Study 2 through sociotropic concern for national welfare. The fact that the pre-specified heterogeneity analyses select for the most

economically nationalist individuals who are definitionally most concerned about the economic security of the country should lend credence to this mechanism. Still, we attempt to account for alternative mechanisms in a number of ways.

We directly asked respondents if the Study 1 policy they were shown "addresses the negative impact of climate change" and "improves the overall condition of the U.S. economy." Based on the theory, we expect that the competition frame would prompt respondents to think the policy would be more effective economically. We especially thought this would be the case for our key sub-groups, Republicans and nationalists. This is exactly what we find in Section E.1. Republicans and nationalists think "Electric Vehicles | No Competition" is bad for the U.S. economy, but find "Economic Competition | Electric Vehicles" to be better for the economy. Most strikingly, these results hold even for people who pre-treatment reported that green investment would be bad for their profession. Thus, individuals report that the policy is better for the country economically—even those who believe they materially have more to lose from the policy.

We also conduct structural topic models of open-ended responses prompting respondents to explain why they rated the policy as they did. As shown in Section E.2, we also find that people are more likely to discuss topics of Economic Nationalism and American Jobs under the "Economic Competition | Electric Vehicles" condition. Together, these suggest that sociotropic concerns are driving our results.

We also check the statistical robustness of the main results in a variety of ways. We probe for treatment heterogeneity using data-driven generalized random forests (Section F.2) and find that nationalism and Republican partisanship are consistently the most important variables explaining treatment effects. We also include an alternative Study 1 dependent variable capturing voting preferences, varied specifications of our indicators of heterogeneity, and heterogeneity by a direct measure of climate skepticism (Section F.4). Our results are consistent across these alternative specifications.

Discussion

Green industrial policy has become central to decarbonization, but remains a relatively new paradigm for political leaders. We know that it helps policymakers create interest group coalitions, but in order to make a genuine difference in the fight against climate change, it also has to be supported by electorates. Given the potential for future right-wing leaders to roll back climate initiatives, this will require winning over climate skeptics.

This is not an idle speculation — the American IRA is the largest green investment on record, but faces opposition from high-profile Republicans who view climate policy as politically profitable to attack. Democrats have responded by framing the IRA as good for the U.S. economy, but prior research demonstrates that pro-economy frames do not often move respondents on climate policy. Our study set out to examine if adding an international dimension to the economic framing, by emphasizing international economic competition, causes change in policy preferences.

Using a vignette experiment, we find that priming respondents on economic competition makes them more supportive of climate policy. The increase in support is most notable among respondents who ex-ante did not approve of climate action, including Republicans and nationalists. We generalize the majority of results with a conjoint experiment that randomizes more policy components. Here, although we find important partisan differences, we see broad support for climate policy that emphasizes job creation and consumer tax credits. Notably, we do see a penalty for climate policy emphasizing economic competition over purely positive climate effects, although the effect of economic competition for climate skeptics still persists. Thus, economic competition may be an effective frame to convince opponents but should be used carefully with climate supporters.

The finding in this survey experiment directly relates to consequential policymaking globally. In the United States, 18 Republican representatives wrote to House Speaker Mike Johnson urging him to maintain the green energy tax provisions, emphasizing the the tax in-

centives "have spurred innovation, incentivized investment, and created good jobs in many parts of the country... As Republicans, we support an all-of-the-above approach to energy development and tax credits that incentivize domestic production, innovation, and delivery" (Budryk 2024). In the European Union, the aforementioned European Commission report explicitly acknowledges the importance of harmonizing fiscal incentives for decarbonization across member states in the face of international competition, even as right-wing nationalist parties push for more disintegration (*EU Competitiveness* 2024). Taken together, our results have important implications for policymakers seeking to enact climate action that citizens will support.

However, this finding should not be confused with an enthusiastic endorsement of the competition framing. It is far from clear that inciting respondents to support climate policy by leaning on jingoistic economic nationalism is costless. Even if passing climate policy is a problem of domestic political economy, the climate itself remains a global public good. On the one hand, it may be the case that competition between economic powers spurs faster technological development which can enable quicker decarbonization. On the other hand, severing global supply chains and decimating international research networks could strangle innovation that feeds on collaborative partnerships.

It is also likely that economic competition for green technology will be linked with broader international competition. Most international rules of trade and finance explicitly disavow industrial policy. Pursuing green industrial policy at the expense of other countries could contribute to a beggar-thy-neighbor approach to international political economy more generally, and thus degrade long-held norms that have enabled much international cooperation. Indeed, the IRA has already generated fears about new forms of international competition between the United States, the European Union, and China.

Future research into public opinion of green industrial policy can build on this work and evaluate the overall benefits of government-driven green investment. Our results portend a tension between an increased support for competitive climate policy and the reality that to

address the global impacts of the climate crisis will truly take global cooperation. Studying this interplay is critical to more fully understanding how new international systems will build around domestic climate coalitions.

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Online Appendix: Contents

A Survey information

A.1 Research ethics statement

The human subject research in this study was reviewed and determined to be exempt from further review by the [AUTHOR'S] institutional review board (23-3117) and adheres to the APSA's Principles and Guidance on Human Subject Research. Lucid recruited participants through an online opt-in model. Respondents were required to give their voluntary and informed consent after being provided with a description of the survey and prior to beginning the survey. Additionally, respondents were compensated by Lucid for the approximately 10 minute survey, at a level determined by Lucid to be commensurate with the standards of other survey providers. The study did not specifically target any vulnerable groups, represent any undo risk to respondents, or utilize deception.

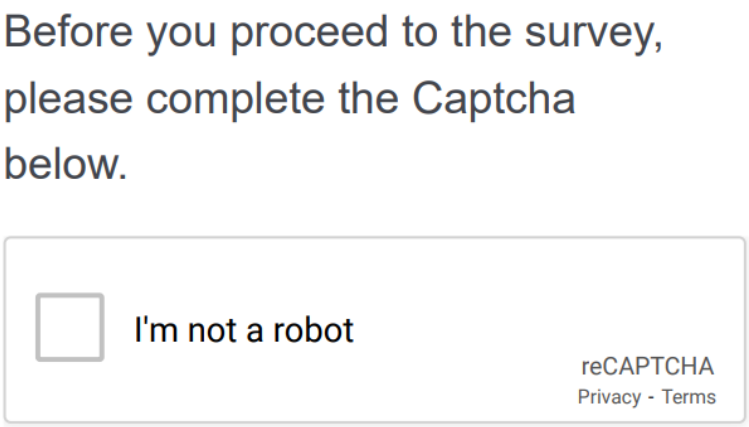


FIGURE B1. *Pre-Survey Captcha*

B Use of online convenience samples in social science research

We rely on an online convenience sample provided by Lucid in this paper. The Lucid sample includes quotas on age, gender, race, ethnicity, and geographic region.[15] Lucid has been widely used in political science and the social sciences in general. Recent work in, for example, the *American Political Science Review*, *American Journal of Political Science*, *Journal of Politics Political Behavior*, and *Political Analysis* relies on samples drawn from Lucid (Clayton et al. 2023; Gaikwad, Genovese, and Tingley 2022; Munis 2022; Simonovits, McCoy, and Littvay 2022).

B.1 Quality checks

We began our survey with a captcha designed to remove bot responses and screened out respondents with two simple attention checks designed to remove respondents who are clearly not paying attention to the survey. This is in keeping with best practices for surveys relying on Lucid samples (Clayton et al. 2023; Peyton, Huber, and Coppock 2022; Ternovski and Orr 2022). The wording of the captcha and the attention check questions is below:

Instructive attention check (1): Please choose "somewhat agree" for this question. (Strongly disagree / Somewhat disagree / Neither agree nor disagree / Somewhat agree / Strongly agree)

87.72% of respondents correctly answered "somewhat agree" and continued with the survey.

Instructive attention check (2): People are very busy these days and many do not have time to follow what goes on in the government. **We are testing whether people read questions**. To show that you've read this much, answer "Very interested". (Extremely interested / Very interested / Moderately interested / Slightly interested / Not interested at all)

96.05% of respondents correctly answered "Very interested" and continued on with the survey.

[15] Coppock and McClellan (2019) find that lucid samples match the American National Election Study on a number of key demographic benchmarks.

C Survey instrument

C.1 Treatment wording

Respondents viewed a common preamble reading:

> In the next section, we will present you with information about a hypothetical policy debate. These are general scenarios about policies the United States may consider enacting in the future. They are not about any specific policies you may have heard about in the news. Please read the details of the policy carefully, afterwards we will ask for your opinion regarding the policy.

After the preamble, respondents viewed one of four different treatment conditions concerning the hypothetical policy before evaluating the policy

- **Green X Competition**: U.S. policymakers are debating ways of encouraging the creation of new manufacturing jobs in the United States.

  To help create new manufacturing jobs that are also environmentally-friendly, some American policymakers have proposed providing clean energy tax credits to automobile manufacturers. The green tax credits would make it cheaper for those businesses to produce electric vehicles in the U.S. and would support the clean energy transition.

  Additionally, the Chinese government is competing with the United States to attract environmentally-friendly investments. The proposed clean energy tax credits would make it more attractive for companies to invest in the United States rather than China.

- **Green X Control**: U.S. policymakers are debating ways of encouraging the creation of new manufacturing jobs in the United States.

  To help create new manufacturing jobs that are also environmentally-friendly, some American policymakers have proposed providing clean energy tax credits to automobile manufacturers. The green tax credits would make it cheaper for those businesses to produce electric vehicles in the U.S. and would support the clean energy transition.

- **Business X Competition**: U.S. policymakers are debating ways of encouraging the creation of new manufacturing jobs in the United States.

  To help create new manufacturing jobs, some American policymakers have proposed providing tax credits to automobile manufacturers. The tax credits would make it cheaper for these businesses to produce vehicles in the U.S. and would support American innovation.

  Additionally, the Chinese government is competing with the United States to attract investments. The proposed tax credits would make it more attractive for companies to invest in the United States rather than China.

- **Business X Control**: U.S. policymakers are debating ways of encouraging the creation of new manufacturing jobs in the United States.

  To help create new manufacturing jobs, some American policymakers have proposed providing tax credits to automobile manufacturers. The tax credits would make it cheaper for these businesses to produce vehicles in the U.S. and would support American innovation.

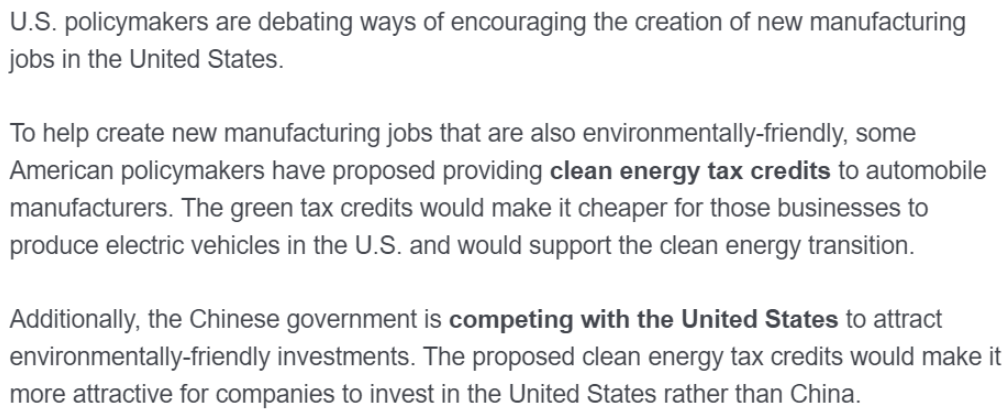


FIGURE C1. *An example of how respondents learned about the fictional policy, in the Electric Vehicles x Economic Competition treatment.*

C.2 Evaluation wording

- **DV**: To what extent would you support [providing clean energy tax credits to automobile manufacturers] \[providing tax credits to automobile manufacturers]?
  - Strongly support (7)
  - Support (6)
  - Slightly support (5)
  - Neither support nor oppose (4)
  - Slightly oppose (3)
  - Oppose (2)
  - Strongly oppose (1)
- **Open**: Briefly, could you tell us why you feel the way you do about [providing clean energy tax credits to automobile manufacturers] \[providing tax credits to automobile manufacturers]?
- **DV:Econ**: To what extent do you think the proposed policy of [providing clean energy tax credits to automobile manufacturers] \[providing tax credits to automobile manufacturers] improves the overall condition of the U.S. economy?
  - Significantly improves (7)
  - Improves (6)
  - Slightly improves (5)
  - No change (4)
  - Slightly worsens (3)
  - Worsens (2)
  - Significantly worsens (1)

- **DV:Climate**: To what extent do you believe the proposed policy of [providing clean energy tax credits to automobile manufacturers] \[providing tax credits to automobile manufacturers] addresses the negative impacts of climate change?
  - Very effectively (7)
  - Effectively (6)
  - Somewhat effectively (5)
  - Neutral (4)
  - Somewhat ineffectively (3)
  - Ineffectively (2)
  - Very ineffectively (1)
- **Compcheck1**: In the scenario you read above, the government of which country is competing with the United States to attract investments?
  - Japan (0)
  - China (1)
  - Germany (0)
  - Australia (0)
- **Compcheck2**: In the policy shown above, what was the primary reason why American policymakers were considering providing tax credits to automobile manufacturers??
  - To support American innovation (1)
  - To support the clean energy transition (1)
  - To help workers with children (0)

C.3 Conjoint design

Attribute	Dimensions
International Effects	Promote U.S. national interest by deepening collaboration and cooperation with other countries Advance U.S. national interest by prioritizing economic competition with other countries Help slow down the global effects of climate change
Domestic Effects	Create a substantial number of clean energy jobs Increase the cost of fossil fuel compared to renewable energy Encourage foreign investment into the country Help slow down the domestic effects of climate change
Policy Tool	Tax credits for corporations Tax credits for consumers Direct government spending Increased government regulation
Industry Target	Manufacturing Energy Agriculture
Government Spending	$100 billion $200 billion $400 billion $600 billion
Partisan Support	Endorsed by Democrats and some Republicans Endorsed by Democrats

FIGURE C2. *Conjoint Attributes and Dimensions*

D Demographic Balance

TABLE D1. *Demographic Balance Table*

		Generic Autos (N=1169)		Electric Vehicles (N=1168)	
		Mean	Std. Dev.	Mean	Std. Dev.
White		0.7	0.4	0.7	0.5
Nationalism		4.3	1.4	4.4	1.3
		N	Pct.	N	Pct.
Competition	control	582	49.8	591	50.6
	treatment	587	50.2	577	49.4
Gender	Female	588	50.3	601	51.5
	Male	563	48.2	558	47.8
Educ	Associate's Degree	171	14.6	141	12.1
	Advanced Degree	129	11.0	138	11.8
	Bachelor's Degree	292	25.0	287	24.6
	Some college	261	22.3	282	24.1
	High school graduate	286	24.5	288	24.7
	Less than high school	30	2.6	31	2.7
Employment	Disabled	78	6.7	74	6.3
	Employed full time	509	43.5	533	45.6
	Employed part time	152	13.0	144	12.3
	Retired	221	18.9	226	19.3
	Student	41	3.5	37	3.2
	Unemployed looking for work	118	10.1	105	9.0
	Unemployed not looking for work	50	4.3	49	4.2
Age_bins	18 - 24	119	10.2	136	11.6
	25 - 34	222	19.0	214	18.3
	35 - 44	236	20.2	218	18.7
	45 - 54	184	15.7	195	16.7
	55 - 64	215	18.4	202	17.3
	65 - 74	151	12.9	151	12.9
	75 or older	42	3.6	52	4.5
Party ID	Independent	304	26.0	273	23.4
	Democrat	398	34.0	397	34.0
	Republican	379	32.4	411	35.2
	No preference	82	7.0	67	5.7
	Other	6	0.5	20	1.7
Social Ideology	Haven't thought much	63	5.4	64	5.5
	Moderate	347	29.7	304	26.0
	Liberal	386	33.0	386	33.0
	Conservative	373	31.9	414	35.4
Economic Ideology	Haven't thought much	61	5.2	65	5.6
	Moderate	319	27.3	296	25.3
	Liberal	350	29.9	338	28.9
	Conservative	439	37.6	469	40.2
Region	Midwest	216	18.5	225	19.3
	Northeast	247	21.1	226	19.3
	South	438	37.5	466	39.9
	West	250	21.4	242	20.7
Climate skepticism	Climate_high	548	46.9	504	43.2
	Climate_low	620	53.0	664	56.8

E Mechanism Analysis

The effect of the competition cue upon approval for the climate policy is clear: telling respondents about international competition for green investments increases their approval of climate policy. It is still feasible that the framing generates the response through a mechanism other than concern for national economic welfare, which our theory specified. Most simply, but least likely, it might be the case that individuals think that competition makes the climate policy more effective at addressing global warming. More likely, it may be that respondents are considering material self-interest (Naoi 2020). We anticipate this might happen in two ways. First, it may be that respondents see competition as especially beneficial for their job, either because they perceive that they benefit from green investment or because they benefit from automobile manufacturing. Second, it may be that individuals are more narrowly considering the benefits to their more circumscribed local economy, not the broader nation (Flaherty and Rogowski 2021). We provide evidence in favor of the theorized mechanism, concern for national welfare, in two ways: examination of alternative dependent variables and exploring variation by perceived self-interest and local economic effects.

E.1 Alternative dependent variables

First, we used alternative dependent variables to explore what respondents thought the policy would do. They were asked the extent to which the proposed tax policy "addresses the negative impact of climate change" and "improves the overall condition of the U.S. economy." Based on the theory, we expect that the competition frame would prompt respondents to think the policy would be more effective economically. We especially thought this would be the case for our key sub-groups, Republicans and nationalists.

If those ex-ante opposed to climate action view climate tax policy framed as competition with China as improving the U.S. economy, but not explicitly helping address the impact of climate change climate, tax policy may reach an audience of those who were predisposed to oppose climate action. This is exactly what we find.

Figure E1 displays the results for these alternative outcomes, grouped by treatment and separated by heterogeneous subgroup (see Table E1 for results in table form). The left-hand figure displays the results of "Electric Vehicles" given no competition—the pure green framing. The results match our expectations: nearly every single subgroup thinks the policy is better for the climate, but Republicans and Nationalists stand out in that they do not think it is better for the economy. Note that this is true for a policy which is a corporate tax subsidy explicitly framed as a way to create manufacturing jobs—all cues we think would heavily influence people's perception of economic well-being.

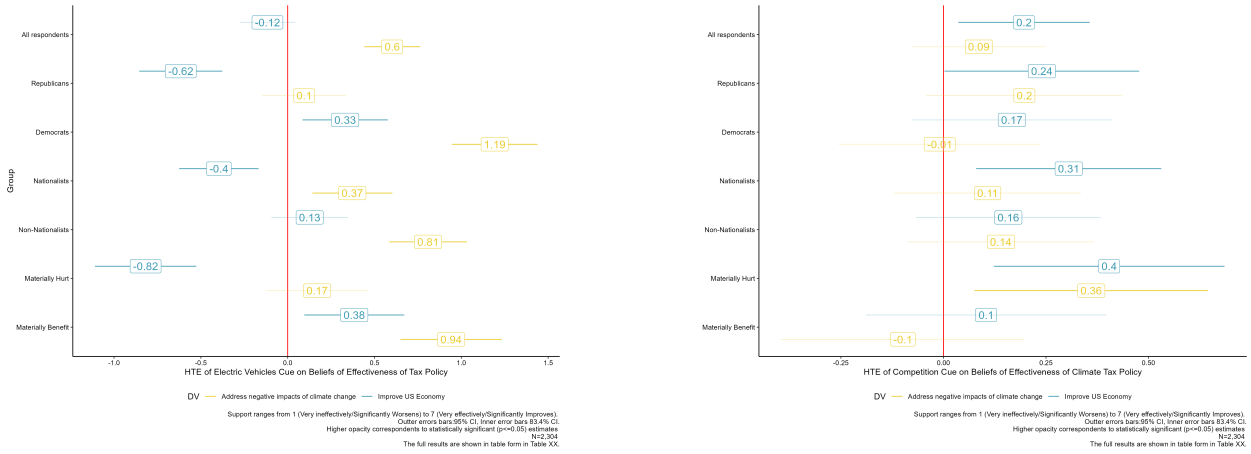
We also add a new subgroup to these results. We asked respondents pre-treatment if they thought green investment was good for their profession. We split the answers at the median and coded respondents as "Materially Benefit" and "Materially Hurt." Self-reports of material benefit are notoriously difficult to connect with economic interest. Still, as expected, the group that expects to be harmed by green investment is highly likely to think that this policy is bad for the economy of the United States.

Figure E1b displays the same outcomes, now for the treatment effect of "Economic Competition" conditional upon "Electric Vehicles". Notably, no group thinks international competition makes for a worse climate policy. More importantly, our key subgroups all think it is better for the U.S. economy. Tax incentives for electric vehicles becomes palatable when respondents are primed to consider international competition. This is especially notable for people who perceive themselves to be Materially Hurt by green investment. Nothing materially changed about the policy except for the inclusion of international economic competition, and yet respon-

TABLE E1. *Alternative DVs*

	All Respondents		PID		Nationalism	
	Climate	Economy	Climate	Economy	Climate	Economy
Tax Credit Treatment (reference= Generic Autos)						
Electric Vehicles	0.602***	−0.117	1.192***	0.331***	0.372***	−0.396***
	(0.082)	(0.082)	(0.126)	(0.125)	(0.118)	(0.117)
Competition Treatment (reference= Control)						
Economic Competition	0.169**	0.131	0.160	0.098	0.277**	0.217*
	(0.082)	(0.082)	(0.123)	(0.122)	(0.121)	(0.120)
PID (inc. leaners) (reference= Democrat)						
Republican			−0.039	−0.068		
			(0.126)	(0.125)		
No preference			−0.058	−0.296*		
			(0.163)	(0.162)		
Nationalism (reference= Nationalist)						
Non-nationalist					−0.389***	−0.309***
					(0.117)	(0.116)
Gender (reference= Female)						
Male			−0.082	−0.200***	−0.118**	−0.230***
			(0.058)	(0.058)	(0.059)	(0.059)
White (reference= Non-White)			−0.116*	−0.023	−0.251***	−0.145**
			(0.069)	(0.069)	(0.069)	(0.068)
Education (reference= Associate degree)						
Advanced Degree			0.103	0.321***	0.228*	0.432***
			(0.119)	(0.118)	(0.121)	(0.120)
Bachelor's degree			−0.078	0.096	−0.011	0.152
			(0.099)	(0.098)	(0.100)	(0.100)
Some college			−0.197**	−0.067	−0.192*	−0.064
			(0.098)	(0.098)	(0.100)	(0.100)
High school graduate			−0.094	0.002	−0.091	0.009
			(0.099)	(0.098)	(0.101)	(0.100)
No high school			0.020	0.142	−0.089	0.044
			(0.196)	(0.194)	(0.199)	(0.198)
Income (reference= Up to $29,999)						
$30,0000–$59,999			−0.033	−0.049	−0.050	−0.072
			(0.081)	(0.080)	(0.083)	(0.082)
$60,000–$99,999			−0.046	−0.051	−0.092	−0.099
			(0.089)	(0.088)	(0.090)	(0.090)
$100,000–$149,999			−0.077	0.007	−0.165	−0.076
			(0.112)	(0.111)	(0.113)	(0.112)
More than $150,000			−0.086	0.095	−0.142	0.049
			(0.129)	(0.128)	(0.132)	(0.131)
Employment (reference= Disabled)						
Full time			0.006	−0.216*	−0.031	−0.252*
			(0.131)	(0.130)	(0.134)	(0.133)
Part time			−0.027	−0.306**	−0.012	−0.298**
			(0.143)	(0.142)	(0.146)	(0.145)
Retired			−0.092	−0.206	−0.147	−0.259*
			(0.153)	(0.152)	(0.156)	(0.155)
Student			−0.178	−0.347*	−0.227	−0.392*
			(0.206)	(0.204)	(0.210)	(0.209)
Unemployed-looking			−0.126	−0.282*	−0.190	−0.357**
			(0.148)	(0.147)	(0.151)	(0.150)
Unemployed-not looking			−0.248	−0.406**	−0.244	−0.411**
			(0.181)	(0.180)	(0.186)	(0.185)
Age (reference= 18 - 24)						
25 - 34			−0.116	0.095	−0.146	0.068
			(0.115)	(0.114)	(0.117)	(0.116)
35 - 44			0.039	0.207*	−0.015	0.164
			(0.116)	(0.115)	(0.119)	(0.118)
45 - 54			−0.133	0.144	−0.199	0.099
			(0.121)	(0.121)	(0.125)	(0.124)
55 - 64			−0.182	0.243**	−0.260**	0.185
			(0.123)	(0.122)	(0.127)	(0.126)
65 - 74			−0.267*	0.217	−0.284*	0.222
			(0.153)	(0.152)	(0.156)	(0.155)
75 or older			−0.526***	−0.181	−0.617***	−0.254
			(0.202)	(0.201)	(0.207)	(0.206)
Region (reference= Midwest)						
Northeast			0.199**	0.059	0.221**	0.086
			(0.091)	(0.090)	(0.092)	(0.092)
South			0.079	−0.040	0.023	−0.084
			(0.080)	(0.079)	(0.082)	(0.081)
West			0.030	−0.007	0.042	0.015
			(0.091)	(0.090)	(0.092)	(0.092)
Interaction (reference= Control|Generic Autos)						
Green|Economic Competition	−0.082	0.066	−0.169	0.069	−0.169	0.088
	(0.116)	(0.116)	(0.176)	(0.174)	(0.167)	(0.166)
Interaction (reference= Generic Autos, Democrat, Control)						
Green X Republican			−1.097***	−0.947***		
			(0.177)	(0.175)		
Green X No preference			−0.652***	−0.211		
			(0.232)	(0.230)		
Competition X Republican			0.115	0.097		
			(0.176)	(0.174)		
Competition X No preference			−0.220	−0.074		
			(0.236)	(0.234)		
Green X Competition X Republican			0.091	−0.023		
			(0.248)	(0.246)		
Green X Competition X No preference			0.300	0.104		
			(0.336)	(0.333)		
Interactions (reference= Generic Autos, Nationalist, Control)						
Green X Non-nationalist					0.436***	0.523***
					(0.164)	(0.162)
Competition X Non-nationalist					−0.160	−0.131
					(0.165)	(0.164)
Green X Competition X Non-nationalist					0.192	−0.016
					(0.232)	(0.231)
N	2,337	2,337	2,309	2,309	2,305	2,305
R^2	0.040	0.004	0.125	0.088	0.085	0.048

*p < .1; **p < .05; ***p < .01

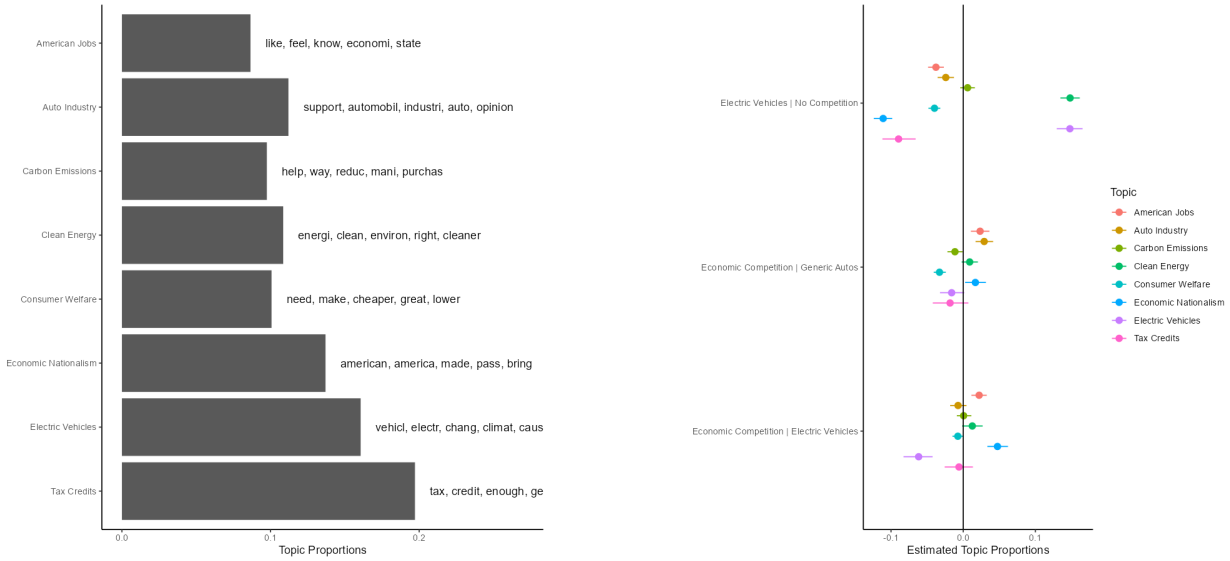


(a) *Electric Vehicles | No Competition* **(b)** *Economic Competition | Electric Vehicles*

FIGURE E1. *Treatment Effects Upon Mechanism Outcomes*

dents consider it more beneficial for the U.S. economy. We find it hard to explain this inversion as a result of how they think competition improves their jobs, instead it seems likely that the competition framing improves perceptions of the overall economic standing of the United States.

In summary, these additional tests provide further grounding that international competition as a cue primes people to consider economic welfare of the national unit. They clearly do not consider it to be a more effective climate policy. Republicans, nationalists, and the people most likely to report as being harmed by green investment think climate policy is a negative for the national economy, but all three consider climate competition to be economically better.



(a) *Topic Proportions* **(b)** *Treatment Effect Upon Topic Proportions*

FIGURE E2. *Results of Structural Topic Models on Open-Ended Responses*

E.2 Structural Topic Models

To supplement our primary outcome item from Study 1, we asked respondents to provide us with an explanation for why they gave us their answer on our main dependent variable. We analyzed these open-ended responses using structural topic models (STMs) to explain variation in topic frequency by our treatments. STMs split a corpus of text documents into a pre-determined number of topics using covariates of interest in the prior distributions for document-topic proportions and proportion-word distributions. They are particularly useful in causal inference using survey data, as they allow us to determine the effect of treatments on the content and distribution of open-ended responses (Roberts et al. 2014). Based on model diagnostics, we run models with eight topics (diagnostics available upon request): American Jobs, Auto Industry, Carbon Emissions, Clean Energy, Consumer Welfare, Economic Nationalism, Electric Vehicles, and Tax Credits.

Figure E2 displays the main results of these models. On the left, we display the overall proportions of the topics, along with top word stems for each topic. Unsurprisingly, Electric Vehicles and Tax Credits are the most discussed, given that they are the core of the vignette. The next most discussed was Economic Nationalism, which emphasized precisely what we expected: the importance of the American economy, especially compared with the potential for jobs to relocate elsewhere. Representative responses for this topic included explanations such as, “Because I would rather see American automobile manufacturers getting credits so that American workers can have jobs than to see those jobs go overseas to other countries" and “Tax credits would allow more American founded companies to stay in America instead of outsourcing plants to countries like China. Having manufacturing facilities in America also helps provide more jobs for Americans helping the economy." The other topic most closely associated with national economic well-being, American Jobs, had similar answers, but not framed in terms of international threat.

On the right of Figure E2, we display changes in proportions across all eight topics in response to the treatments, mirroring our results presentation in Figure 1. These coefficients are the results of linear regressions of treatments upon the topic proportion in each document; the underlying regressions are reported in Table E2.

The underlying regression models for each topic show that discussion of several climate topics increases dramatically under the EV cue with no competition, whereas Economic Nationalism and Auto Industry increase under the plain competition treatment. When the competition treatment is conditioned upon the EVs treatment, we see the pattern continue—Economic Nationalism and American Jobs become more likely to be discussed, while discussion of climate topics (and particularly Electric Vehicles) decreases. This suggests that respondents are indeed concerned about the effect of globalization upon national welfare and see the climate competition cue as addressing that economic threat, while their focus on the climate dimension decreases.

These results provide further validation of the main findings in the paper. In particular, we find that when people are told about climate competition, they become less likely compared to those in the control to consider climate and more likely to consider economic security. They are especially likely to consider security from a context of Economic Nationalism, in which they view relative gains by economic competitors as losses for their country. This suggests further that when respondents are cued to consider economic competition as part of climate policy, they support the climate policy more because of the potential economic well-being it offers to their national unit.

	Carbon Emissions	American Jobs	Tax Credits	Clean Energy	Electric Vehicles	Auto Industry	Consumer Welfare	Economic Nationalism
Electric Vehicles	0.01***	−0.04***	−0.10***	0.15***	0.16***	−0.03***	−0.04***	−0.12***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Economic Competition	−0.01***	0.02***	−0.02**	0.01*	−0.02**	0.03***	−0.04***	0.02***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
EVs x Competition	0.01***	−0.00	0.02	0.00	−0.05***	−0.04***	0.03***	0.03***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)
R^2	0.05	0.20	0.14	0.60	0.41	0.23	0.34	0.45
Adj. R^2	0.05	0.20	0.14	0.60	0.41	0.23	0.34	0.45
Num. obs.	2219	2219	2219	2219	2219	2219	2219	2219

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

TABLE E2. *Treatment Effects Upon Topic Proportions*

F Additional results

F.1 Heterogeneous effects

	Group	mean(1-7)	lower95CI	upper95CI	n
1	Democrat	5.56	5.48	5.64	987
2	Republican	3.86	3.75	3.97	978
3	Nationalist	4.48	4.37	4.58	1126
4	Non-Nationalist	4.91	4.82	5.00	1206

TABLE F1. *Mean Support for Climate Investment by Group (Pre-treatment)*

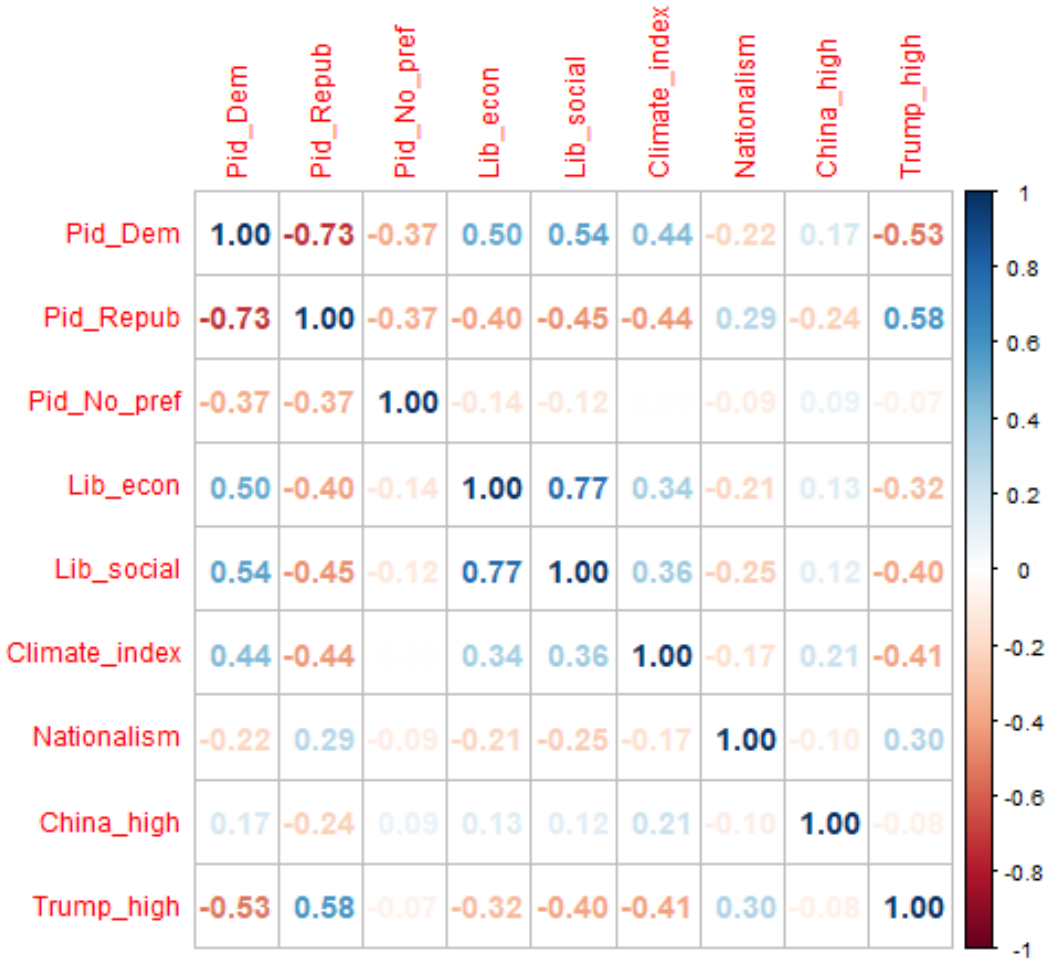


FIGURE F1. *Correlation (-1,1) between Relevant Variables*

TABLE F2. *Nationalism Index Questions*

How much do you agree or disagree with the following statements?
1. The world would be a better place if people from other countries were more like Americans.
2. In the United States our people are not perfect, but our culture is superior to others.
3. People should support their country even if their country is in the wrong.
4. Generally speaking, America is a better country than most other countries.
5. I would rather be a citizen of American than of any other country in the world.

TABLE F3. *Confirmatory Factor Analysis of Nationalism Index Items*

Item	Loading	Std. Error
America is better country	0.862	0.007
American culture superior	0.823	0.009
World would be better if people more like Americans	0.803	0.009
Rather be American citizen	0.793	0.010
People should support their country even if wrong	0.561	0.014
Comparative Fit Index	0.980	
SRMR	0.039	

NOTE: Confirmatory factor analysis of the questions used to create our index of nationalism. The standardized factor loadings indicate that each of the nationalism questions contributed to the scale. The fit indices demonstrate that our conceptualizing of the scale as a single latent dimension fits the data well (Comparative Fit Index (CFI) >0.95; standardized root mean square residual (SRMR) <0.08.

F.2 Generalized Random Forests

We probe the robustness of our findings using generalized random forests (GRFs) in a causal setting (Athey, Tibshirani, and Wager 2019). Machine learning methods allow us to relax modeling assumptions—such as linearity of effects—and random forests in particular allow us to explore heterogeneity of treatment effects from a data driven approach. GRFs, as stipulated by the above authors, split data by covariates that maximize the squared difference in subgroup treatment effects, then use forest weights to estimate the treatment effect by covariates.

We present two CATEs from our Study 1: Electric Vehicles | No Competition and Economic Competition | Electric Vehicles. The first model gives us a sense of the bifurcation in approval of green policy by our heterogeneous covariates, and thus if we are correctly identifying Republicans and nationalists as likely to punish climate policy. The second model tests all three of our hypotheses, providing an average treatment effect of competition as well as estimates of the importance of heterogeneity. We conduct the GRFs with all of our relevant demographic covariates to allow for the maximum possible information to be told to us by the data: gender, race, education, income, employment, age, partisanship, social ideology, economic ideology, geographical region, climate skepticism, and nationalism.

Table F4 displays the top ten covariates from each of the models, ranked by importance in explaining treatment effects. As can be seen from the lefthand side of the table, the demographic characteristics we expected to explain climate opposition are profoundly important. Climate skepticism, Republican partisanship, and nationalism are the three most important hetergeneous variables. However, when we move to the right-hand side, we see these variables are also the most important in explaining shift in opinion from economic competition, particularly nationalism and partisanship. The relative importance to these models is much lower, which is not surprising, but it is still vitally important that it is these climate skeptics who are moving to approve a policy because of the competition cue. This not only confirms our main results using linear models, it demonstrates that these are the most important variables in explaining climate skepticism. The atheoretical, data-driven approach validates our pre-registered hypotheses.

	Electric Vehicles | No Competition		Economic Competition | Electric Vehicles	
	Importance	Variable	Importance	Variable
1	0.29	Climate Skepticism	0.05	Nationalism
2	0.20	Republican	0.04	Republican
3	0.10	Nationalism	0.04	Income up to $29,999
4	0.08	Democrat	0.04	Climate Skepticism
5	0.04	Economic Conservative	0.04	Age 45 - 54
6	0.03	Social Conservative	0.04	Social “Haven’t thought much"
7	0.03	Economic Liberal	0.04	Midwest
8	0.02	Northeast	0.04	Democrat
9	0.01	Social Liberal	0.04	Northeast
10	0.01	South	0.04	Economic “Haven’t though much"

TABLE F4. *Most Important Variables for GRFs*

We present respondent-level predictions and “honest” confidence intervals for each model in Figure F2 and

Figure F3. We have colored respondents in each figure according to their partisan identification (on the left) or nationalism (right). The average treatment effect for the whole sample is included as a vertical bar. These treatment effects closely align with those found from our parametric linear models.

For Figure F2, it is obvious how polarized the approval of the EVs tax credits are. The strongest supporters are universally Democrats and the strongest opponents are universally Republicans. The split is less extreme for nationalism but is still quite present. In fact, despite a positive ATE, both Republicans and nationalists are clearly predicted to disapprove of the policy. This reflects the problematic climate preferences divide in the United States, even in a vignette framing that focuses on green job growth.

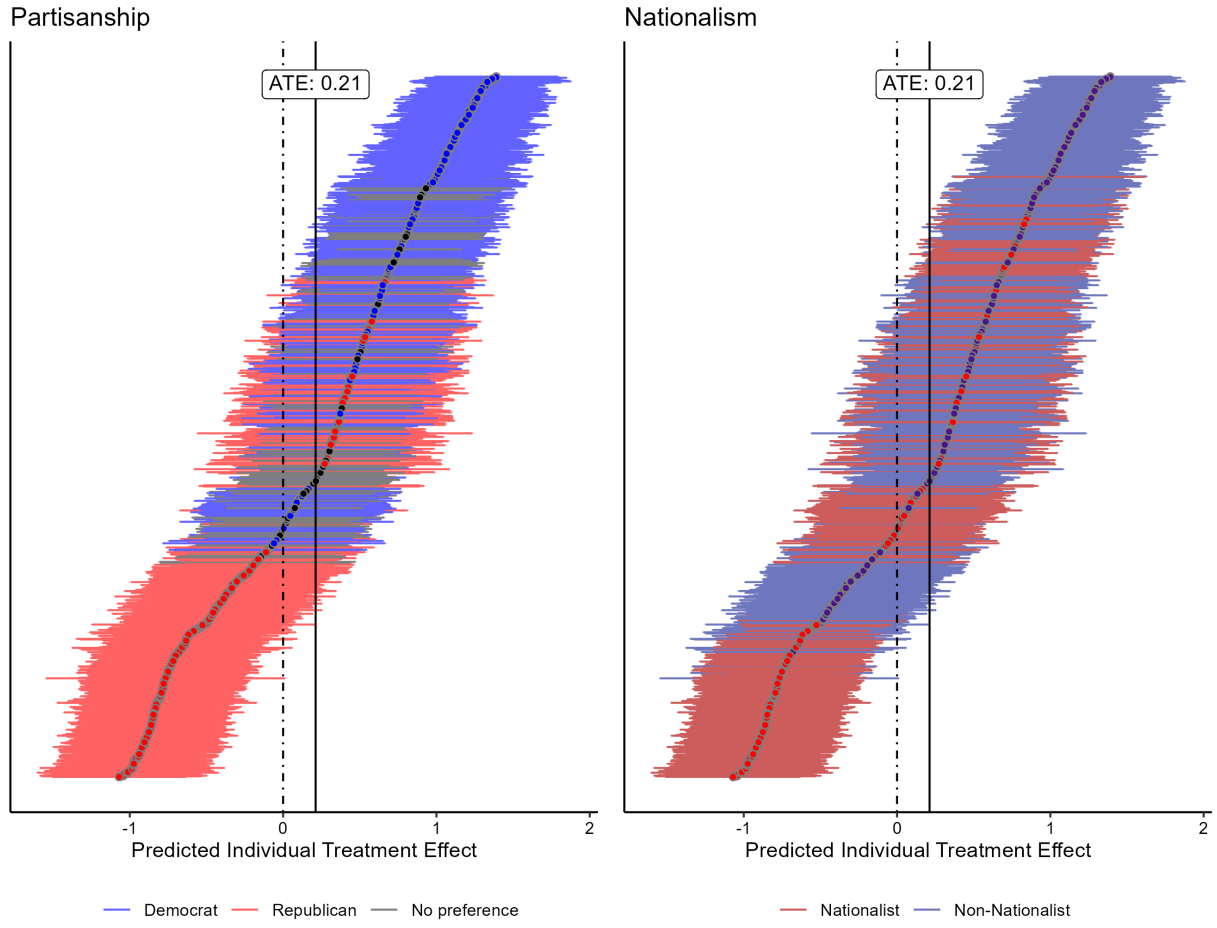


FIGURE F2. *Generalized Random Forests: Electric Vehicles conditional on No Competition*

However, as predicted by our theory, that polarization flips dramatically under the economic competition framing, as shown in Figure F3. The ATE is much larger and is almost entirely driven by these climate opponents, Republicans and nationalists. Nearly all of the individuals with the predicted largest treatment effect are these climate skeptics. Moreover, although Democrats and non-nationalists tend to gather toward the bottom, they do not start to punish the policy—there is no negative treatment effect. This confirms that there is no predicted loss of climate supporters in the economic competition frame.

These GRFs validate our main results in two ways. First, they demonstrate that even in an atheoretical,

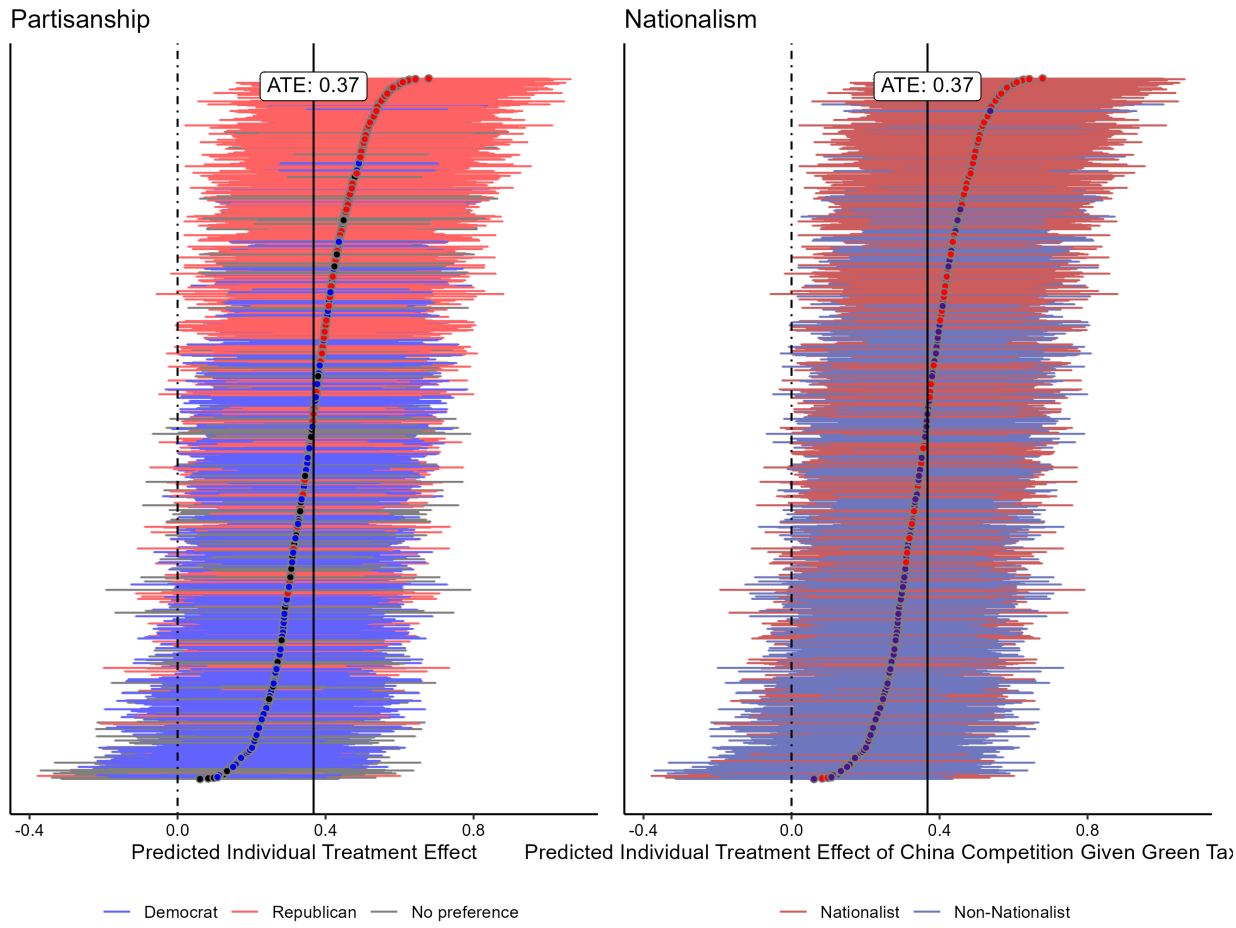


FIGURE F3. *Generalized Random Forests: Economic Competition conditional on Electric Vehicles*

data-driven approach, the main heterogeneity in results is driven by demographic characteristics that we pre-specified, namely Republican partisanship and nationalism. This confirms that not only are treatment effects statistically significant, that are of practical importance in explaining how to frame climate policy to generate durable coalitions. Second, they provide granular, individual-level predictions of treatment effects that viscerally demonstrate the polarization of climate policy. Even in a framing that emphasizes green growth and economic benefits of climate investment, Republicans and nationalists are at the opposite ends of the spectrum from Democrats and non-nationalists. Yet these poles reverse when we introduce economic competition, without punishment from climate supporters, demonstrating that this frame is effective at winning over climate opponents without losing the original pro-climate base.

F.3 Additional conjoint analysis

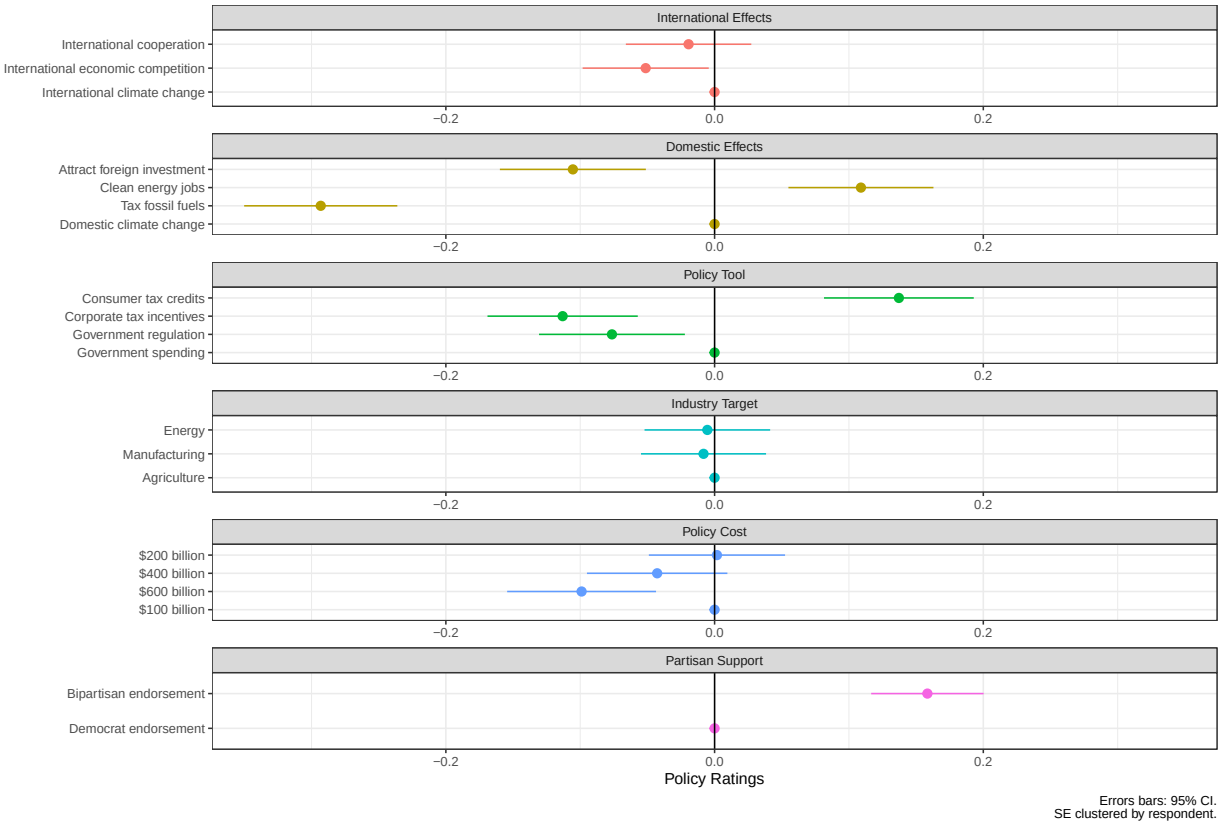


FIGURE F4. *Policy Ratings*

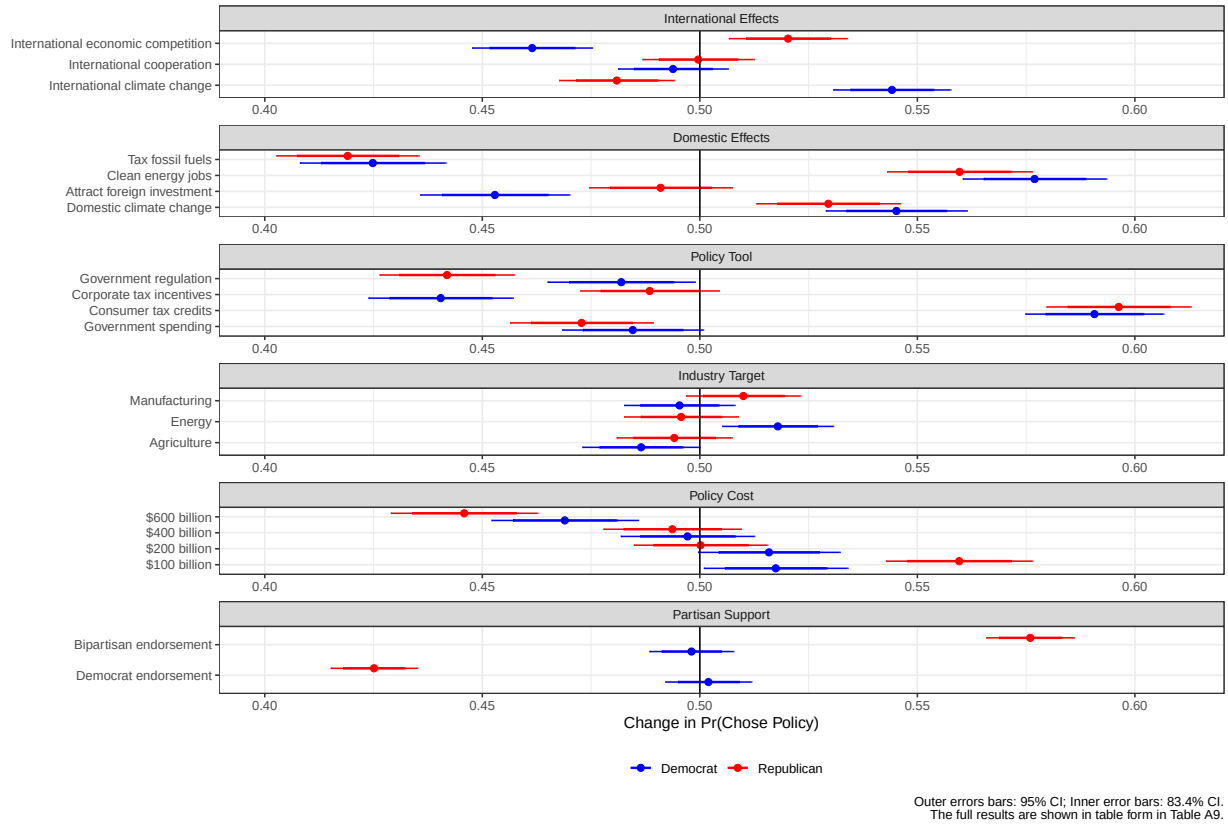


FIGURE F5. *Marginal Means: Partisanship*

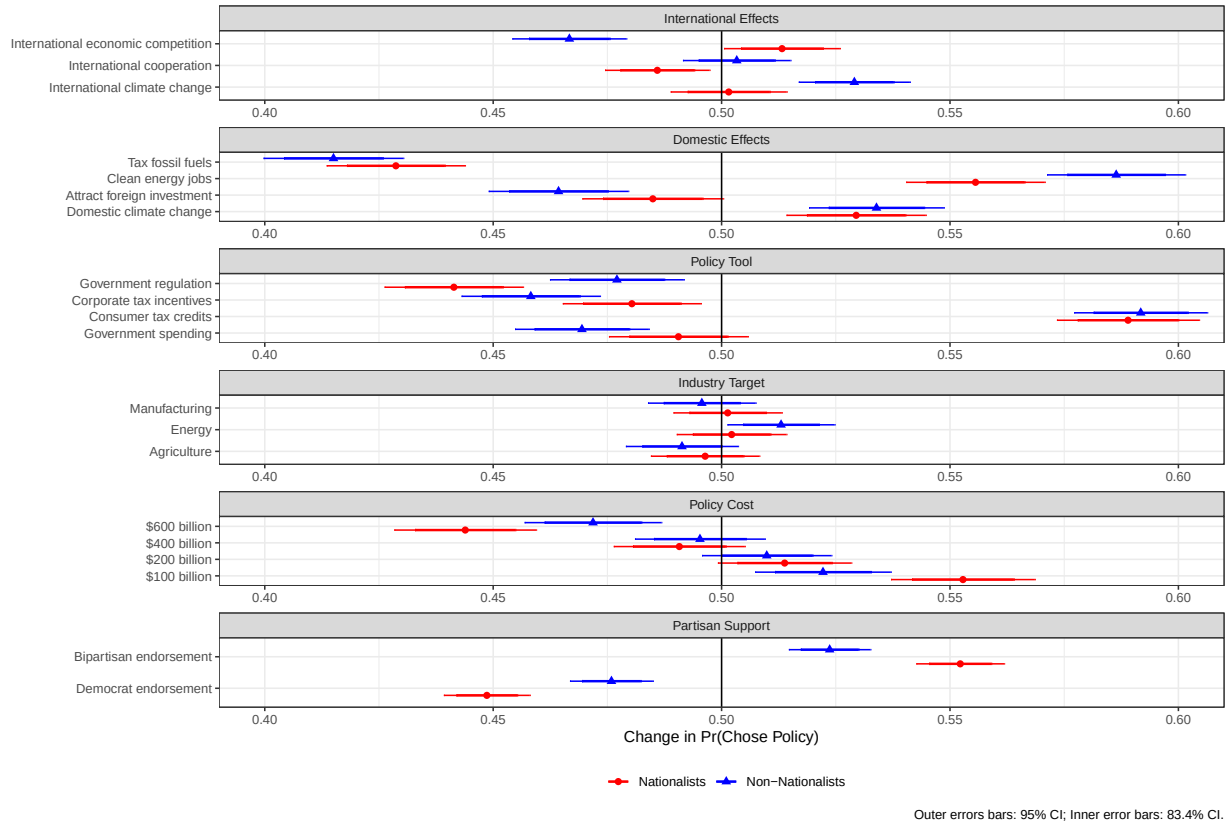


FIGURE F6. *Marginal Means: Nationalism*

F.4 Robustness Checks

We probe our results for robustness in a variety of ways. First, we use an alternative outcome measure regarding willingness to vote for a politician who supported the proposed policy. This outcome is in line with extant work on corporate tax credits, namely Jensen and Malesky (2018), and allows us to ensure these results are not purely a result of question framing. We find substantively and statistically similar results, reported in F5. On average, then, we find support for **H1**: individuals much prefer climate policies when they are primed to think of them as in economic competition with China. The effect is essentially the same as for purely economic competition, suggesting there is no punishment from respondents for the social goal for the corporate tax credits.

Next, as subgroup analysis means our treatment is no longer purely randomly assigned, we also measure our main indicators of heterogeneity in alternative ways. We evaluate partisanship excluding leaners and find similar patterns as our main results. We test nationalism using non-compensatory binary coding, continuous measures of the sub-indicators, and continuous measure from factor analysis, and continue to find that nationalists are more responsive to economic competition priming for the climate policy.

Perhaps most compellingly, we also measure climate skepticism directly and test our theory using a binary measure for climate skeptics. Our theory specifically relates to other demographic features that are correlated with climate skepticism, making a direct measure a more difficult test. We continue to find that climate skeptics, even directly measured, are much more supportive of climate policy when it is framed as making the country more economically competitive. These results are available in Table F6.

TABLE F5. *Effect of Cues on Vote Choice*

	Baseline (1)	Controls included (2)
Tax Credit Treatment (reference= Generic Autos)		
Electric Vehicles	0.272***	0.298***
	(0.085)	(0.079)
Competition Treatment (reference= Control)		
Economic Competition	0.228***	0.235***
	(0.086)	(0.080)
Interaction (reference= Control|Generic Autos)		
Green|Economic Competition	−0.043	−0.007
	(0.121)	(0.112)
Gender (reference= Female)		
Male		−0.164***
		(0.058)
White (reference= Non-White)		−0.016
		(0.069)
Education (reference= Associate degree)		
Advanced Degree		0.265**
		(0.118)
Bachelor's degree		0.115
		(0.098)
Some college		−0.011
		(0.098)
High school graduate		0.035
		(0.099)
No high school		−0.178
		(0.195)
Income (reference= Up to $29,999)		
$30,0000–$59,999		−0.040
		(0.080)
$60,000–$99,999		−0.027
		(0.088)
$100,000–$149,999		−0.082
		(0.110)
More than $150,000		0.077
		(0.128)
Employment (reference= Disabled)		
Full time		−0.268**
		(0.130)
Part time		−0.329**
		(0.141)
Retired		−0.152
		(0.151)
Student		−0.559***
		(0.204)
Unemployed-looking		−0.241
		(0.147)
Unemployed-not looking		−0.333*
		(0.180)
Age (reference= 18 - 24)		
25 - 34		0.001
		(0.114)
35 - 44		0.031
		(0.115)
45 - 54		−0.074
		(0.122)
55 - 64		0.004
		(0.124)
65 - 74		−0.022
		(0.153)
75 or older		−0.494**
		(0.202)
PID (inc. leaners) (reference= Democrat)		
Republican		−0.124
		(0.090)
No preference		−0.243***
		(0.093)
Social Ideology (reference= Haven't thought much about)		
Moderate		0.345*
		(0.195)
Liberal		0.392*
		(0.204)
Conservative		0.144
		(0.205)
Economic Ideology (reference= Haven't thought much about)		
Moderate		−0.297
		(0.195)
Liberal		−0.341*
		(0.204)
Conservative		−0.218
		(0.202)
Region (reference= Midwest)		
Northeast		−0.023
		(0.090)
South		−0.072
		(0.079)
West		−0.055
		(0.090)
Climate concern index (1-7)		0.337***
		(0.022)
Nationalism index (1-7)		0.150***
		(0.023)
N	2,337	2,304
R^2	0.012	0.181

Table entry is the OLS regression coefficient with standard error in parentheses.
Significance codes: *p<0.1; **p<0.05; ***p<0.01, two-tailed tests.

TABLE F6. *Effect of Cues on Support for Tax Policy: Climate Index*

Type Treatment (reference= Business)	
Green	1.007***
	(0.135)
Competition Treatment (reference= Control)	
China Competition	0.469***
	(0.133)
Climate Index (reference= Above Median)	
Below Median	−0.140
	(0.129)
Gender (reference= Female)	
Male	−0.194***
	(0.066)
White (reference= Non-White)	−0.089
	(0.076)
Education (reference= Associate degree)	
Advanced Degree	0.245*
	(0.134)
Bachelor's degree	0.186*
	(0.111)
Some college	−0.077
	(0.111)
High school graduate	−0.007
	(0.112)
No high school	−0.005
	(0.221)
Income (reference= Up to $29,999)	
$30,0000–$59,999	0.072
	(0.092)
$60,000–$99,999	−0.031
	(0.100)
$100,000–$149,999	0.040
	(0.126)
More than $150,000	0.159
	(0.146)
Employment (reference= Disabled)	
Full time	−0.321**
	(0.148)
Part time	−0.235
	(0.161)
Retired	−0.140
	(0.173)
Student	−0.495**
	(0.233)
Unemployed-looking	−0.355**
	(0.168)
Unemployed-not looking	−0.460**
	(0.205)
Age (reference= 18 - 24)	
25 - 34	0.247*
	(0.130)
35 - 44	0.400***
	(0.131)
45 - 54	0.394***
	(0.138)
55 - 64	0.495***
	(0.139)
65 - 74	0.287*
	(0.173)
75 or older	−0.019
	(0.229)
Region (reference= Midwest)	
Northeast	0.029
	(0.102)
South	−0.080
	(0.090)
West	−0.049
	(0.102)
Interactions (reference= Control X Business X Above Climate Median)	
Green X Competition	−0.237
	(0.191)
Green X Below Climate Median	−1.459***
	(0.183)
Competition X Below Climate Median	−0.180
	(0.182)
Green X Competition X Below Climate Median	0.454*
	(0.259)
N	2,308
R^2	0.148

Table entry is the OLS regression coefficient with standard error in parentheses.
Significance codes: *p<0.1; **p<0.05; ***p<0.01, two-tailed tests.

G Appendix References

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H Pre-Analysis Plan

The Mass Politics of Green Industrial Policy: Understanding Public Support for Climate-Friendly Tax Cuts

Study Information

Hypotheses

We are collecting survey data to answer the question: to what extent do American individuals support clean energy tax credits for corporations? We broadly hypothesize that American individuals will be more supportive of climate change policy goals when they are pursued through economic policy mechanisms that individuals think will benefit the country as a whole, including corporate tax credits and international economic competition.

We will run two different survey experiments, a conjoint and a vignette, each with a different starting point.

In a conjoint experiment, we will anchor respondents to explicitly consider policies designed to mitigate climate change. Within this choice set, we expect that individuals on average will support tax credits (for both corporations and consumers) over government spending and regulation, will prefer job creation to other economic and pure-climate benefits, and will prefer international competition or collaboration to pure-climate benefits.

We also expect that different components of policies will interact to produce more support. We hypothesize that combining broad green end-goals with specific economic policy mechanisms will generate more support for the green policies. We expect in particular that combining clean energy tax corporate credits with new job growth and with competition framing will produce more support for the climate policy.

We also anticipate strong partisan differences over the policies. We expect that the boost in approval for green policies associated with these economic mechanisms will be especially pronounced for the partisans who are least likely to support green initiatives, on average (Republicans, economic conservatives, climate change deniers, and nationalists). This should especially be the case for job creation and economic competition. We also weakly expect that economic competition cue may reduce support for the green tax credits amongst partisans most likely to support green initiatives (Democrats, economic liberals, climate change prioritizers, and globalists).

In a vignette experiment within a 2x2 factorial design, we will anchor respondents to consider a government policy intended to produce jobs. We will then vary how climate-friendly those jobs are and if there is another government competing with the U.S. for those jobs.

Based on previous research, we expect that the pure competition treatment will strongly increase support for corporate tax credits.

We weakly expect the green tax credit treatment will increase average support for the corporate tax credit policy. However, we expect that any result here will be of value: it may be the case that adding social dimensions to tax credits hurts their popularity. We expect there to be countervailing effects again (as discussed below) but cannot assuredly state their magnitude. As climate provisions tend to be on average supported in the U.S., we weakly expect this treatment to be positive.

We expect the green credit + competition treatment to be the strongest. We anticipate that respondents will be more likely to support offering green tax credits to businesses when the policy is framed as making it more attractive for companies to invest in the United States compared to other countries. When primed with competition, respondents will prefer the policy significantly more than either the base corporate tax credits condition or the pure green tax credits condition.

Again, for these vignette treatments, we expect there to be countervailing effects. We expect green tax credits to be disliked by partisans who are least likely to support climate initiatives (Republicans, economic conservatives, and nationalists), but we expect that this group will also be the most moved by the tax competition treatment to become more supportive of tax credits, including green clean energy tax credits. We weakly expect that the pro-climate supporters (Democrats, economic liberals, globalists) will be less supportive of tax credit policies, including green policies, when they are primed to consider tax competition.

We also expect that the vignette treatments would increase people's willingness to vote for a politician who endorsed the policy. We expect this to be the case on average for the competition treatment. We expect the previously specified countervailing effects for pro-climate and anti-climate partisans.

Furthermore, we expect that the positive approval of the policies shown in the vignette treatment will primarily be driven by belief that they improve the overall economic welfare of the US. We expect that competition treatment will lead people to believe the policy of tax credits will be more beneficial for the US overall, while the green tax credit treatment will not. However, we expect that the competition + green treatment will remain robustly positive for the US economy, including for both pro- and anti-climate partisans.

We also expect that the policies will vary in how they are viewed in terms of climate change mitigation. We expect that the green tax credit treatment will have a positive impact on this view, but that competition will have a negative impact. We expect there may be countervailing effects amongst pro- and anti-climate

partisans for the green credits + competition treatment group. Pro-climate partisans will think the green competition policy is less effective at mitigation, while anti-climate partisans will be unmoved.

Design Plan

Study type

Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Blinding

For studies that involve human subjects, they will not know the treatment group to which they have been assigned.

Is there any additional blinding in this study?

No response

Study design

The study incorporates two survey experiment designs.

The first is a conjoint experiment asking respondents to choose between two hypothetical government policies that are intended to mitigate climate change. They will have six conjoint tasks, meaning six paired choices. The following six attributes will be varied: Policy Tool, Industry Target, Domestic Effects, International Effects, Government Spending, and Partisan Support. The dimensions of all attributes are included in an attached file.

The second is a vignette experiment in a 2x2 factorial design. Respondents will be divided evenly into four groups and asked to evaluate a government policy intended to create new manufacturing jobs in the country. The control will be shown a description of a US government policy to increase automobile manufacturing jobs in the country through corporate tax credits. The first treatment arm will be shown a policy to increase electric vehicle manufacturing jobs through clean energy tax credits. The second treatment arm will be shown a description of US tax competition with China over these specific kinds of jobs. Respondents in the business tax credits arm will see competition for automobile manufacturing, whereas respondents in the clean energy credits arm will see competition for electric vehicle manufacturing. Please see the attached Qualtrics print-out for precise wording of the vignette conditions and see the attached png for a visual depiction of the design.

- Vignette Factorial_Politics of Green Incentives.png
- Conjoint_Politics_of_Green_Incentives.pdf
- Survey Instrument_Politics_of_Green_Incentives.pdf

Randomization

Randomization will be carried out by the Qualtrics survey program. Randomization of the conjoint study will be carried out at the individual-task-profile level, with attribute dimensions varying across each profile of each task that each respondent sees. Attribute ordering will also be varied except for the Policy Tool dimension, will be anchored at the top, in accordance with the framing of the experiment. There are no restrictions in the appearance of dimensions together.

Randomization of the vignette will be carried out at the individual level. Individuals will be divided evenly into the tax credit/clean energy tax credit arm and into the no competition/competition treatment arm.

Sampling Plan

Existing Data

Registration prior to creation of data

Explanation of existing data

No response

Data collection procedures

We will collect responses from adults residing in the United States through Lucid Theorem online survey panels. Respondents will be collected from the nationally-representative pool available through Lucid. Respondents will be remunerated in accordance with standard pricing on the Lucid platform. We will post a pilot in January 2024, review data to make sure the technical survey flow is working properly, and post the full task in January/February 2024.

No files selected

Sample size

We expect to collect approximately 2,300 adult respondents.

Sample size rationale

Sample size is limited by funding constraints.

Stopping rule

No response

Variables

Manipulated variables

Attached is the table for the conjoint experiment describing all attributes and dimension possibilities. The attached Qualtrics print-out also shows the pre-experiment language shown to all respondents.

The vignette experiment will have the control phase: "U.S. policymakers are debating ways of encouraging the creation of new manufacturing jobs in the United States."

Respondents in control will be shown: "To help create new manufacturing jobs, some American policymakers have proposed providing tax credits to automobile manufacturers. The tax credits would make it cheaper for these businesses to produce vehicles in the U.S. and would support American innovation."

Respondents in the clean tax credit treatment will be shown: "To help create new manufacturing jobs that are also environmentally-friendly, some American policymakers have proposed providing clean energy tax credits to automobile manufacturers. The green tax credits would make it cheaper for those businesses to produce electric vehicles in the U.S. and would support the clean energy transition."

Respondents in the competition treatment will be shown either of the following, depending on which dimension of tax credits they are in:
"The Chinese government is competing with the United States to attract investments. The proposed tax credits would make it more attractive for companies to invest in the United States rather than China."

"The Chinese government is competing with the United States to attract environmentally-friendly investments. The proposed clean energy tax credits would make it more attractive for companies to invest in the United States rather than China."

- Survey Instrument_Politics_of_Green_Incentives.pdf

Measured variables

We will collect standard demographic characteristics of respondents: gender, race/ethnicity, education, income, state and zip code, age, and employment. Lucid Theorem collects many of these directly.

We will collect standard items on political knowledge and opinion: frequency of following government affairs, partisanship, partisan leaning, social ideology, and economic ideology.

We will collect several items on climate change beliefs about the importance of climate change, material benefits from green investment, green investment desires, and international cooperation. The questions about green investment can serve as a pre-treatment measure of our dependent variable.

We will collect several items on nationalism attitudes, including regarding cultural superiority of America and relative valuation of America internationally.

We will collect feeling thermometers regarding President Biden, Donald Trump, automobile manufacturers, the federal government, the United States, and China.

We will collect the Global Political Knowledge question battery.

We will ask two standard attention check midway through the survey, prior to treatment.

Following the vignette experiment, we will collect several outcome measures.
* To what extent do you support [policy shown]?
* Briefly, could you tell us why you provided the answer you did to the question above? [open-ended response]
* Would you be more or less likely to vote for a politician who supported [policy shown]?
* To what extent do you think the proposed policy of [policy shown] improves the overall condition of the U.S. economy?
* To what extent do you believe the proposed policy of [policy shown] addresses the negative impacts of climate change?
*In the scenario you read above, the government of which country is competing with the United States to attract investments? [competition treated group only, treatment attention/comprehension check]
* In the policy shown above, why are American policymakers considering providing tax credits to automobile manufacturers? [comprehension check]
* How often do you think other countries compete with the United States to attract automobile manufacturing jobs? [post-treatment manipulation check]

Following each conjoint task, we will ask respondents:
* Would you rather see Policy 1 or Policy 2 enacted in the United States?
* On a scale from 1 to 7, where 1 indicates strongly oppose and 7 indicates strongly support to what extent do you support or oppose Policy 1?
* On a scale from 1 to 7, where 1 indicates strongly oppose and 7 indicates strongly support to what extent do you support or oppose Policy 2?

At the end of the survey, we will ask respondents to provide feedback on the survey itself, ask for a self-report of device used to take the survey, and ask them a generic question about their sincerity in responding to surveys.

See attached the complete file of the Qualtrics survey to be run. Note that the conjoint tasks will be populated by attributes stored in javascript. Those attributes and dimensions can be found in the design plan section.

- Survey Instrument_Politics_of_Green_Incentives.pdf

Indices

We anticipate analysis with individual measures for climate change and nationalism but also will incorporate them into separate indices to measure pro-climate beliefs and pro-nationalism beliefs. As there are no standard means of doing so, we intend to do so in several ways: mean of measures, factor analysis, and non-compensatory coding.

We will also combine the Global Political Knowledge questions into an index, following the instructions of the index creators.

No files selected

Analysis Plan

Statistical models

We will use multiple regression to analyze our experimental results. Given that most of our outcome measures are seven point scales, we intend to treat the measured construct as a latent variable and use OLS for main models, which we will validate with binary binned outcome logit models (or probit models as appropriate for grouping in the data).

For the conjoint, we will use multiple regression and calculate both the average marginal component effects (AMCE) and the marginal means for the forced choice. We will also use multiple regression for the individual policy outcome scales.

While we are primarily interested in AMCE level results, we will also examine interactions in the conjoint attributes. We in particular want to examine interactions between the Policy Tool attribute and the Domestic Effects and International Effects attributes. We expect that the consequences of the policies will moderate approval for the policy mechanisms. We will conduct these analyses with multiple regressions with interaction terms. We also intend to examine interactions atheoretically, using the average marginal interaction effect (AMIE).

For the vignette experiment, we will use multiple regression to examine the effects of the treatments for the policy (DV1) and willingness to vote for a politician who supported the policy (DV2). We will also examine the results using structural topic models of the open-ended responses, expecting to seek topics that emphasize economic benefits, climate benefits, and competition.

In particular, we are interested in:

* the Conditional Average Treatment Effect (CATE) of T2 = Competition conditional on T1 = Green [expected to be positive];
* CATE of T1 = Green conditional on T2 = Competition [weakly expected to be positive, likely to depend on countervailing partisan effects described below];
* CATE of T1 = Green conditional on T2 = No Competition [weakly expected to be positive, likely to depend on countervailing partisan effects described below];
* the difference in CATES when T1 = Green [expected to signify the effect is driven by competition].

We will also estimate the ATE of T1 = Green, which we expect to be mixed and plagued with countervailing effects; the ATE of T2 = Competition, which we expect to be strongly positive; and the CATE of T2 = Competition conditional on T1 = Business, which we expect to be strongly positive.

We expect the ATE in our green condition to be positive and statistically significant, but in the case that it is not, we expect that it will be driven by these countervailing effects from pro- and anti-climate respondents. We expect that the ATE in our competition condition to be positive and statistically significant. We expect that the CATE in the green + competition condition to be positive and significant relative to pure green treatment, with no expectation relative to pure competition.

We will additionally conduct subgroup analysis to evaluate heterogeneous treatment effects (HTE) in both experiments. To facilitate analytic interpretation, we will binarize moderators into groups or into high/low categories. For completeness, we will also conduct HTE analysis with continuous moderators when relevant.

We expect to find HTE by a main moderator: partisanship. Republicans tend to like green policies less than Democrats. We will measure partisanship both by direct question and by forced closeness. We expect that Republicans will be especially responsive to the tax competition treatment in the vignette (in ATEs and CATEs). We also expect that Republicans will be more favorable of the tax credits dimensions in the conjoint, as well as the jobs domestic effect and the competition international effect dimensions.

We specifically expect that this will be attractive for a class of Republicans that are economic nationalists. We will measure this group more specifically using the nationalism question battery, the Donald Trump feeling thermometer, and the questions on social ideology and economic ideology. We expect that nationalists, Trump supporters, and social conservatives (esp. those who are not as economically conservative) will be more likely to support economically oriented green policies. We will also test these expectations that anti-climate respondents will support green policies more directly by creating a pro- and anti-climate measure using the climate change opinions index.

We also have weaker expectations that more pro-climate respondents will be less favorable to green policies when they are tied to economic mechanisms like jobs and tax competition (CATEs). We will evaluate this with partisanship in the main HTE analysis, but also our climate change beliefs battery and our social ideology battery.

We will also examine the results using individual assessments of the policy's benefit to the US economy (DV3) and mitigation of climate change impacts (DV4). We intend to use these outcomes to further confirm the mechanisms driving the results for DV1, DV2, and OER. We expect the the ATE and both CATEs of competition will positively drive views of the US economic benefits, while the ATE and both CATEs of clean energy credits will positively drive views of the climate change mitigation. However, we expect the CATE of Competition | Green to have a negative impact on climate change mitigation, the CATE of Green | No Competition to have a negative impact on economic welfare, and the difference of CATEs to have a positive impact on economic welfare but not on climate change mitigation. This should confirm that the results above are driven by nationalist economic considerations, not evaluations of climate policy efficacy. Per our discussion of HTE, we expect the influence of competition on economic welfare to be especially strong for anti-climate partisans.

We will also evaluate an alternative hypothesis of material effects. We will use both a beliefs-oriented question about the benefits of green investment and the zip code of a respondent to assess material benefits from green investment.

We will also evaluate the Global Political Knowledge battery as a moderator for the main effects. We expect that respondents who score higher in GPK will be more likely to know that tax incentives for economic competition are not effective, and so will be moved more negatively by the tax competition treatment.

Since HTE means the treatment is no longer randomly assigned, we will include demographic controls in these regressions, including age, region, income,

education, race, and gender. If pertinent, we will include partisan controls together, including political party, economic ideology, political ideology, climate change views, nationalism, and feeling thermometers.

- Vignette Factorial_Politics of Green Incentives.png

Transformations

We will run models in OLS, but we will also run models with logits. Our outcome variables will be binarized by assigning 1 to any respondent who answers above a 4 in the 7-point scale.

Our subgroups will similarly be binarized. When relevant, we will also assign 1 to any respondent who answers above a 4 in the 7-point scale. We will binarize parties according to expressed closeness, particularly using the "lean" item. We will binarize indicies like nationalism and climate change beliefs by picking respondents above the median, above the mean, and above cutoffs for every single sub-item (non-compensatory measurement).

We will also run our main analyses with survey weights.

Inference criteria

We will rely on standard p values from OLS regression models as criteria for inference.

Data exclusion

We will drop respondents who do not consent, who mark that they are under 18, or who fail either of or two standard pre-treatment attention checks. Their participation will end before treatment and will not be recorded or analyzed.

We will conduct exploratory ATT analysis with the post-treatment comprehension check for which country was assigned to as part of the vignette treatment, using respondents who answer correctly which treatment they saw.

We will conduct further ATT exploratory analysis with the end-of-questionnaire question about respondent sincerity, using respondents who note that they always answer surveys honestly.

We will conduct further ATT exploratory analysis with the use of timers to examine users who may have sped through the survey or through individual experiments.

We will begin the survey with a Captcha question, which along with the attention checks we expect will filter out bots before they complete the survey. Still, we will probe our data for evidence that survey responses were completed by bots. We will specifically look for matching IP addresses and duplicated open-ended responses, although we will use other best practices as befits the need of the data.

Missing data

Listwise deletion, or explore for covariate associations with missingness.

Exploratory analysis

We are also interested in examining heterogeneous effects by respondent's 1) race, 2) gender, 3) level of political interest.

We will also check results by device (mobile or laptop) to ensure technological validity.

In addition to AMIEs, we may use generalized random forests to examine unspecified heterogeneous treatment effects.

Other

Other

No response