Climate Policy Costs, Regional Identity and Backlash against International Cooperation*

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Abstract

Scholars in international political economy are increasingly interested in how the subnational patterns of major economic adjustments such as trade investment and environmental reforms fuel public opposition to international institutions that are meant to catalyze those adjustments. While the literature has sharpened the understanding of material policy costs and their implications for public opinion, the impact of less material considerations—for example, specific subnational identities—is still largely unexplained. In this paper, we explore if and how vulnerability to climate policy, which pushes communities to lash out against rapid decarbonization, is moderated by a sense of strong regional identities, which may reduce the appreciation for national policies at the expense of international ambition. We present new survey evidence from the United Kingdom that assesses if and how communities with different sensitivities to distributive climate policy costs and subnational identities form varying preferences for international cooperation. Our study of 3,000 individuals from three different geographically targeted areas supports our argument and highlights the importance of new climate-related cleavages among politically relevant constituencies on international integration.

Keywords: climate change; distributional policy cost; regional identity; international governance; political backlash.

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1 Introduction

Political science has increasingly documented the roots of a robust popular backlash against global institutions and multilateral cooperation. From Brexit to the 'Make America Great Again' movement via the nationalism in Jiping's China, Modi's India and Putin's Russia, vocal popular demands have put steady pressure on the international system in the past decade. According to the literature, national interests are at the heart of these new forms of isolationism and protectionism (Von Borzyskowski and Vabulas, 2019; Walter, 2021). Yet, if popular backlash against multilateral cooperation is rooted in national interest, it is relevant to ask what aspects of domestic politics influence public opinion against international cooperation, and what explains opposition to international regimes that address international trade, foreign investments or—as we explore in this paper—climate change mitigation.

Some works focus on political ideology and the way partisanship bodes with attitudes towards international integration among the public (Zürn and De Wilde, 2016; Norris and Inglehart, 2016). Others have researched the role of institutions, focusing, on the one hand, on the legitimacy and intrusiveness of international agreements (Börzel and Risse., 2021; Dellmuth et al., 2022) and, on the other hand, the permissiveness of national opportunity structures that can engineer backlash (De Vries, Hobolt, and Walter, 2021). Similar to approaches in trade scholarship (Broz, Frieden, and Weymouth, 2021; Colantone and Stanig, 2018*a*; Baccini and Weymouth, 2021)), we study the *domestic political economy* of policy losers and the *subnational* nature of the costs of international integration as sources of public backlash. Since policy affects subnational realities in different ways, we ought to learn more about how regionally distributed costs contribute to the backlash against international policy ambitions. We concentrate on climate policy here because, while the costs for subnational communities are known to matter greatly for domestic climate policy (Stokes, 2016; Gaikwad, Genovese, and Tingley, 2022; Gazmararian and Tingley, 2023), their implications for attitudes towards global climate cooperation and, specifically, citizens' beliefs about the *effectiveness* of international governance—a prerequisite of the viability of international in-

stitutions (Dellmuth, Scholte, and Tallberg, 2019; Huber, Wicki, and Bernauer, 2019)—are still largely unexplored.

We also focus on the political economy of left-behind communities and their attitudes towards international climate cooperation because the growing body of studies on climate politics and international contestation have mostly zeroed in on the *material* costs from international institutions (Bechtel and Scheve, 2013; Bechtel, Scheve, and van Lieshout, 2022). Yet, studies in other policy areas (Schaffer and Spilker, 2019; Osgood, 2022) point to the importance of *social identity* for shaping attitudes towards international integration; in fact, identity seems to be critical for climate policy preference formation (Benegal, Azevedo, and Holman, 2022; Zucker, 2022). Despite this growing evidence, open questions about the relationship between identity and climate change opinions and global climate politics, more broadly, remain. One such question is how material costs that fuel opposition to international cooperation relate to *regional* identities that reflect both geographically defined in-group policy costs and often problematic relationships between these regions and the national government. On the one hand, identity may fuel existential concerns; on the other hand, regional identities may moderate material cost perceptions by linking subnational territories to higher, more prestigious international communities (Jolly, 2015; Kalin and Sambanis, 2018).

This paper seeks to address these questions. We focus on the intersection of material costs and salient regional identity to investigate if and to what extent strong regional identities magnify or attenuate material cost concerns and, thus, affect the assessment of international climate cooperation. We expect that subnational geographies that are highly concerned about the material consequences of climate policy and lack strong regional identities prioritize losses from international governance that threatens to regulate their vulnerable (regional) economies (Bechtel, Genovese, and Scheve, 2019; **?**). Vice versa, subnational areas with high material concerns about climate policy, but strong regional identity may perceive higher gains from international governance because international institutions may better

protect their interests than national institutions do (Jolly, 2007; Gehring, 2021). Hence, we conjecture that absent any politicized regional identity, the communities with high material costs from integrating in international climate policy will unconditionally lash out against international cooperation. By contrast, attitudes towards international climate governance among materially exposed communities with aspiring sovereign regional identities will be more mixed. According to our argument, this will lead to greater support for international climate action among regions with salient regional identities compared to other localities where such salient identities are not present.

We test this theoretical framework with original survey data from Great Britain. Even though the United Kingdom was a front-runner of coal phase-out and industrial decarbonization, it is a useful case as British climate policy has become increasingly politicized. The salience of climate policy, for example, rose to levels similar to those of other issues such as unemployment and immigration. At the same, the Brexit referendum in 2016 triggered the local politicization of international issues (Zeitlin, Nicoli, and Laffan, 2019), and social identities in Scotland and Wales have emerged as powerful lenses of policy evaluation in the country (Hobolt, Leeper, and Tilley, 2021; Daniels and Kuo, 2021). Exploiting the unique attributes of this case, we fielded identical surveys in four separate geographies of the country: a *general population* survey (baseline sample), a *fossil fuel* region in the Northern part of England ('coal country' sample), and fossil fuel regions with *strong local identities* (Scotland and Wales samples).

Our empirical evidence draws on three different data sources: an observational ranking exercise that compares citizens' support for different climate governance levels, ranging from local, subnational, national, to international governance; qualitative open-ended responses that elaborate on respondents' choices in the ranking outcome; and an informational vignette experiment that tries to isolate the effect of identity politics on respondents' preferences for international climate cooperation. In combination, the results show that strong regional identities alleviate the opposition to international climate cooperation driven by material costs.

Specifically, the economic costs of ambitious mitigation action, as mandated in the Paris Agreement, create backlash to international climate cooperation in policy-vulnerable communities, but much less so in communities with regional identities that appreciate international integration. In these communities, which will also experience adjustment costs resulting from climate mitigation efforts, backlash against international cooperation is nonetheless more modest. This is, we argue, precisely the case because of greater affinity to governance by international institutions than national governance.

These findings suggest that policy costs are not monolithic, but, interact with regional identities in ways to attenuate cost concerns. Furthermore, the results also mean that devolution and power imbalances in federalist political systems can generate momentum in support of international governance and internationally coordinated public good provision. Finally, our study shows that regionally concentrated fossil fuel economies differ in their support for international climate action as a function of different subnational identities. Internal political dynamics and regional identities may hence create allies of global climate ambition where policymakers may have least expected to find them.

2 Background and Argument

Our paper aims to show that different subnational sources of climate policy costs can shape public assessments of international climate cooperation. Specifically, we argue that strong subnational/regional identities may moderate the public's sensitivity to material costs of climate policy and reshape the potential backslash against international climate cooperation. Our contribution lies in tracing the link between subnational politics and public support for international climate governance, while taking into consideration not only material but also regional identity pressures.

Subnational sources of policy costs and their implications for voters are increasingly studied in the international and comparative political economy literature. Recent research, for

example, evaluates the impact of trade shocks on anti-globalization sentiments and anti-authoritarian cultural values (Colantone and Stanig, 2018*b*; Ballard-Rosa et al., 2021). Similarly, the literature on economic voting and redistribution has shown that subnational markets and territorial transformations have major repercussions on votes against international integration (Carreras, Carreras, and Bowler, 2019; Green, Hellwig, and Fieldhouse, 2022). This evidence therefore underscores the relevance of focusing on the 'left-behind' to understand the deep roots of backlash against globalization and international governance (De Vries, Hobolt, and Walter, 2021; Cremaschi et al., 2022).

Building on this literature, the most recent research on climate politics has started investigating the mass politics of "pockets of losers" (Bechtel, Genovese, and Scheve, 2019; Bergquist, Mildenberger, and Stokes, 2020; Colgan, Green, and Hale, 2021). With some exceptions, such as Gaikwad, Genovese, and Tingley (2022); Gazmararian and Tingley (2023), existing scholarship, however, rarely investigates these communities at a more fine-grained geographical level and, hence, tends to gloss over the highly local economic and ecological effects of climate policy. Among those works that focus on vulnerable communities, the emphasis is typically on these communities' links to domestic climate policy rather than international climate governance. Since addressing climate change will require collective action, understanding these communities' opinions about international treaties and global governance is fundamental, not least because of ample precedent of withdrawals and exit threats from international climate treaties (Falkner, 2016; Urpelainen and de Graaf, 2018).

Research on support for international organizations suggests that people's attitudes towards international institutions are based on multiple logics. On a most basic level, public opinion is shaped by *material* factors. This is why international treaties that are likely harmful to the national economy, decrease welfare, or threaten employment find little support among the general population (Bechtel, Genovese, and Scheve, 2019; Owen and Johnston, 2017; Milner, 2021; Walter, 2021). Consistent with this, citizens that are *policy vulnerable*, that is, most exposed to economic losses, for example, from climate policy will be most

opposed to ambitious climate action (Bayer and Genovese, 2020). Individual-level, material concerns are however not the only factors that matter for preference formation. Instead, *group-level* considerations are equally important (Kennard, 2021; Gaikwad, Genovese, and Tingley, 2022): citizens form opinions on climate policies as a result of perceived group-level climate policy costs, too.

Along these lines, popular assessments of multilateral cooperation rely on a number of *non-material, communal* factors. Dellmuth, Scholte, and Tallberg (2019) and Zürn and De Wilde (2016) show that trust predispositions shape opinions about global institutions. Policy performance of national governments also matters in the public's evaluation of international agreements (Schneider, 2018; De Vries, Hobolt, and Walter, 2021). Bringing in *regional identities* here is useful as regional politics sits between the national level and the individual. Hence, it will allow us to better understand how the public's assessments of international treaties vary at the level of subnational authorities, which often aspire to more international integration to surpass conflictual relationships with national governments (Kalin and Sambanis, 2018).

Importantly, regional identities are a specific type of social identity. They represent alternative definitions of representative communities that could decrease or increase the effect of material policy concerns on backlash against international cooperation. Europe presents many examples of social identities built around regional sovereignty aspirations, although the argument is not limited to this continent.[1] According to the literature, most European regions usually have a problematic history with nation-states, which in turn leads them to consider international organizations as better allies (Jolly, 2007, 2015). Compatible with this logic, some studies in European politics research show that a desire for regional sovereignty is connected to support for international integration (Gehring, 2021). However, this strand of research remains largely silent on how regional identities could affect attitudes

[1]European territories with salient regional identities include Wallonia (Belgium), the Basque region and Catalunya (Spain), Bavaria (Germany), Lombardia and Veneto (Italy), among others. Outside of Europe, a similar argument could be extended to, e.g., Kurdish communities in Asia or indigenous communities in North and South America.

towards more territorially loose issues, such as international climate governance.

To gauge the impact of regional identity on public assessments of international climate policy, we consider the effect of regional identity alongside the material cost conditions in the localities we study. Conceptually, we expect individuals to fall into one of four types of communities: First, some people will be *only pressured by regional identities* (group 1), i.e., their regional identity increases the salience of international climate policy, but they do not experience substantial material costs from international policy; second, some people will be *only pressured by material costs*, i.e., they will feel the effects of climate policy primarily materially (group 2); a third group will experience both effects, that is, they will be *cross-pressured* by both the pocketbook effects from climate policy and a salien regional identity (group 3); the last group will be pressured by *none* of the two dimensions, hence, being neither policy vulnerable nor holding salient identities (group 4). Empirically, we seek to establish the conditioning role of regional identity in the effect of material policy costs on the preferences of international governance among policy vulnerable communities. In keeping with the academic literature's focus on these communities, we concentrate our analysis on these communities as well as they are the most relevant ones to study policy backlash. Therefore, we derive our hypotheses in the following section in relationship to comparing the attitudes of policy vulnerable-only communities (group 2) and cross-pressured groups (group 3) relative to a baseline of unpressured citizens in group 4.

2.1 Hypotheses

We start by assuming that individuals have different propensities to assess international climate policy as a function on their community's *material costs* and their *regionally politicized identity*. We now discuss how these assessments change depending on the locality which individuals reside in.

For the *baseline* group, i.e., for citizens with no significant exposure to material costs and regional identities, we consider that these individuals come from non-vulnerable, non-

regionalist parts of a country whose incomes and jobs are not directly threatened by ambitious international climate policy (group 4 above). As far as democracies are concerned, we assume these individuals to be represented by the median voter in the general population. On average, we expect these individuals not to feel threatened by the consequences of international climate agreements. Under the assumption that international policy were collectively embraced and universally adopted, these individuals are on average persuaded by the *effectiveness* of multilateral cooperation (Bechtel, Scheve, and van Lieshout, 2022). Consequently, we argue that average voters will be least opposed to ambitious climate action and are generally supportive of international climate governance overall.

We next consider individuals who are *only* exposed to the *material climate policy costs* (group 2 above). We expect that unconditional costs will significantly depress the enthusiasm for climate policy. This effect is probably true more generally, but for our purposes we are interested in comparing the beliefs in international governance relative to other levels of governance, such as, for instance, locally or nationally. Following previous studies on public preferences for international climate cooperation (Bechtel, Genovese, and Scheve, 2019; Bergquist, Mildenberger, and Stokes, 2020), we conjecture that, relative to local or national policy, individuals with significant material costs from climate action are least likely to assess international governance positively. This is because citizens, who reside in regions whose incomes and jobs are threatened by ambitious climate policy, would be particularly disfavored by giving up authority to international institutions that have little capability for domestic redistribution and compensation (Gaikwad, Genovese, and Tingley, 2022). Consequently, we expect these individuals to be most protective of local resources and thus most supportive of local climate governance; equally, they should evaluate the effectiveness of international climate governance least favorably. These communities are best represented by areas such as coal country (Gazmararian and Tingley, 2023).

Finally, individuals in *cross-pressured* regions experience the material burdens of climate action, but are sympathetic towards international governance because of the perceived oppor-

tunity of regional recognition results from international integration (group 3 above). These citizens are materially sensitive to climate policy costs, but also benefit from linkage with foreign actors to signal the capacity of decentralization and sovereignty (Sambanis, 2006). This international dependence could induce them to prefer international policy over national policy, which can *de facto* boost their positions on international cooperation (Jolly, 2015). In the case of climate action, we then expect that salient regional identities may result in greater support for international climate action compared to equally vulnerable communities without such salient identities. We claim that materially burdened voters with strong regional identities are less inclined to oppose international climate cooperation compared to materially burdened-only counterparts. These communities are both fossil fuel dependent and hold strong sovereign (e.g., devolved) aspirations.

3 Research Design

To test our three key expectations outlined above, we use variation in relative vulnerability to ambitious climate policy and regional identities in the United Kingdom (UK). Principally, our research design relies on targeting policy vulnerable regions across the UK's devolved nations, which also vary greatly in their regional identity. We describe this empirical strategy in greater detail below: first, we justify our focus on the UK as a test case; second, we describe our targeted sampling; and third, we introduce our survey design.

3.1 Case study: United Kingdom

The main theoretical building block of our argument is to conceptualize attitudes towards international climate policy as a function of both material costs and regional identities. We argue that the United Kingdom is a particularly useful case because it allows us to identify distinct geographies that are unambiguously exposed to the material consequences from ambitious climate policy, but vary in their regional identities. Even though many other

countries also have regions with their own sub-national identities, these regions are often not necessarily experiencing the negative effects from climate policy and decarbonization. In the case of Great Britain, many regions have already experienced serious levels of coal phase-out, although this has only recently become intertwined with increased politicization around climate politics. In that sense, the UK is a most likely case.

We measure regional exposure to the costs of climate policy by focusing on fossil fuel areas, and specifically coal areas. As the most carbon-intensive source of energy, the extraction of coal and its use for electricity production is incompatible with ambitious climate policy. And while coal mining in Britain has been a story of the past—despite the Conservative Government's latest decision to greenlight a new coal mine in Cumbria[2]—, its legacy shows to the present day. Following a steady decline in employment from, at its height, more than one million miners in the 1920s, to the closure of the last deep coal mine in 2015, the country's former coal regions in the north and north east, the Midlands, the Scottish central belt, and Wales are seeking to halt regional decline.[3] At the same time, the UK provides us with a good case to compare fossil fuel-dependent regions with and without regionalist identities, since Scotland and Wales have a long history of separatism and, importantly, strong resentment to the central Westminster government.

3.2 Sampling strategy and survey targeting

As discussed above, our expectations on the public assessment of international climate policy are based on variation in material policy costs and regional identities. To maximize the analytical leverage of our survey design, we rely on an empirical strategy that deploys the same survey instrument to distinct regions across the UK that vary in terms of material costs and regional identities. Specifically, we targeted the following three groups:

First, our baseline group, which is neither likely to suffer disproportionate material con-

[2] "First UK coal mine in decades approved despite climate concerns." *BBC News*, 7/12/2022.

[3] As reported in Appendix A, Scottish and Welsh respondents are similarly likely to report knowing of fossil fuel plants/stations as Yorkshire respondents. Appendix B shows that Scotland and Wales present similar proportions of fossil fuel employees as the regions of Cumbria, Lancashire and Yorkshire.

sequences from climate policy nor hold a distinct regional identity, comes from a general population survey ($n = 1,1790$). Fielded by the firm Prolific (6-8 April 2022), our survey is nationally representative in terms of age, sex, and ethnicity. We use responses from this general population survey as the reference group against which to compare responses from the other targeted regions to test our argument.

Second, we target coal regions in England as the group of those communities most heavily affected from ambitious climate policy. Fielded by the firm Qualtrics, our survey targeted respondents in former coal mining areas at a rather fine-grained geographical level (22 March - 11 April 2022). Starting from reports about UK coalfields, we first focused on Yorkshire as the most populous of all former UK coal regions (Beatty, Fothergill, and Gore, 2019). Within Yorkshire, we then identified South and West Yorkshire as the counties with the highest number of former mines (Northern Mine Research Society, 2022), from where we selected seven districts (Barnsley, Doncaster, East Riding, Leeds, Rotherham, Sheffield, Wakefield).[4] Our final sample includes all respondents from the survey pool available in these targeted districts plus another 60 respondents from Cumbria, where we expected the UK Government to potentially allow new mine operations, which were indeed approved in early December 2022 ($n = 560$). Following the logic of our research design, this sample constitutes the policy-vulnerable group of respondents, for which we expect support for international climate governance to be the weakest.

Third, we rely on samples from Scotland ($n = 936$) and Wales ($n = 450$), again fielded by Qualtrics (22 March - 11 April 2022), to get at our cross-pressured group. Both Scotland and Wales have had substantial coal mining activity in the past comparable to Yorkshire, but both devolved nations share strong regional identities captured, for example, by the significantly different Brexit vote in 2016 and the relevant votes cast for their national parties in the 2019 General Election (Hobolt, Leeper, and Tilley, 2021; Green, Hellwig, and Fieldhouse, 2022).

[4]In choosing our target districts, we also verified that all of them had employment in mining and quarrying (category B) in 2020 according to the Business Register and Employment Survey of the UK's Office for National Statistics (nomis, 2021).

Comparing survey responses from these samples to the English coal country sample allows us to isolate the moderating effect of regional identities on material costs. Figure 1 shows the targeted geographies across the UK. Appendix A reports the main descriptive statistics of the four fielded groups, while Appendix B further discusses the comparability of the three targeted samples.

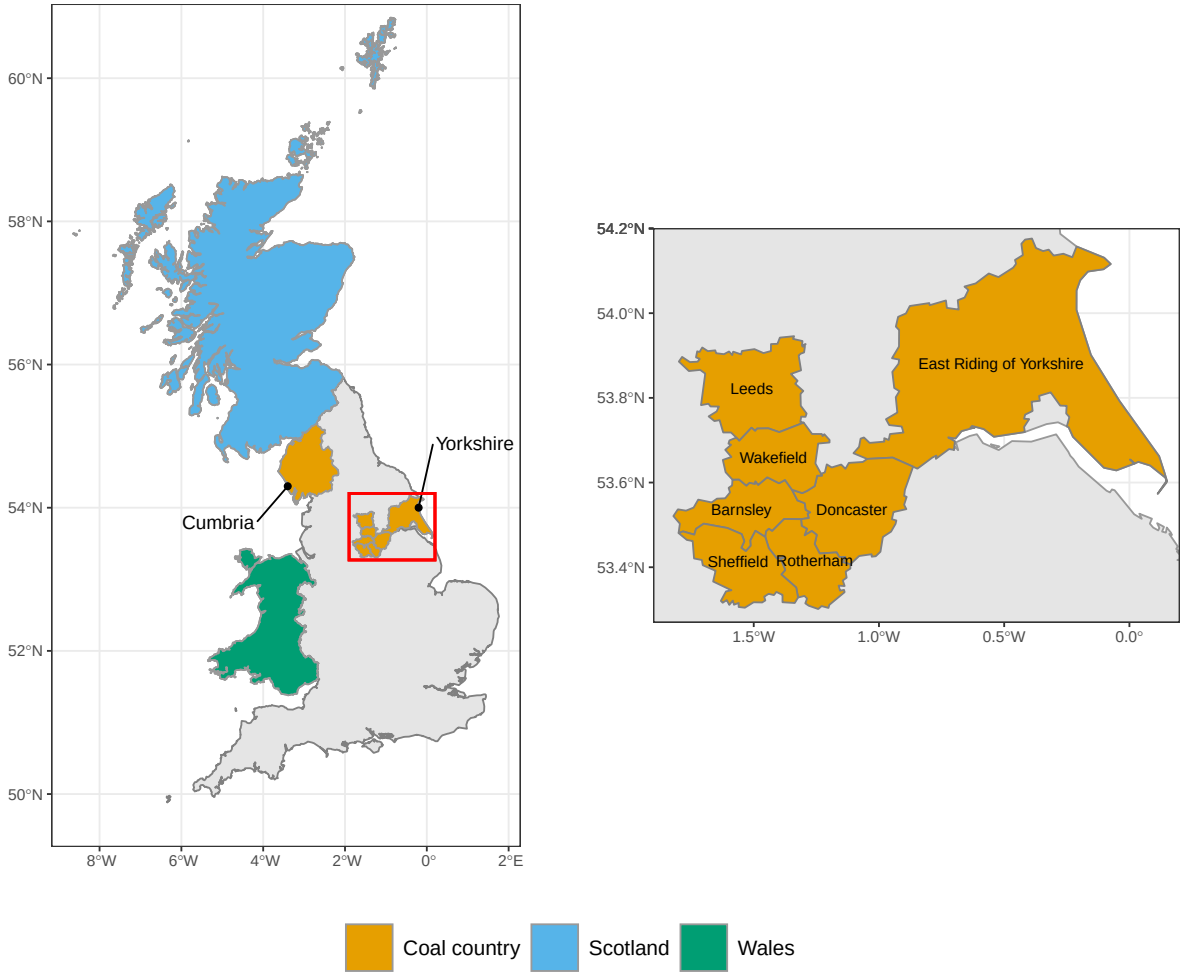


Figure 1: The left panel shows the three geographic regions we targeted in our research design. The "coal country" region of Yorkshire and Cumbria counties capture communities most vulnerable to ambitious climate policy; Scotland and Wales characterize the group of cross-pressured regions, with distinct regional identities. The panel on the right shows the seven districts in Yorkshire we targeted for our survey.

3.3 Survey flow

Our survey instrument consists of three main components: First, we include a battery of standard questions on political attitudes (such as vote choice, party affiliation, stance on Brexit) and basic socio-demographic information (such as gender, education, age, income) as well as more specific questions about climate change and the economy.

For our main outcome question, we focus on the notion that the assessment of *effectiveness* of policy governance levels can provide genuine information on respondents' preferences for international versus national/local policy that is removed from plainly ideological statements of policy support (Dellmuth, Scholte, and Tallberg, 2019). Effectiveness beliefs are also the center of recent studies that seek to gauge preferences for international climate policy relative to other countries (Bayer and Genovese, 2020; Bechtel, Scheve, and van Lieshout, 2022). We asked respondents to rank which level of policy action they consider more effective when it comes to fighting climate change. Responses can take four levels: the local level, the devolved nation level, the national level, and the international level. For each of these levels, we give a specific example in the text of the ranking exercise to clarify how we want respondents to think of the respective levels. The distinction into devolved nations, that is, England, Scotland, and Wales, and the entire country (the UK) as separate response categories is useful to test our argument that regional identities are critical in shaping respondents' positions on international climate governance. This ranking exercise question is followed by an open-ended question that asks participants to briefly explain their top ranked choice. The qualitative analysis of these responses suggests that respondents understand the differences in levels and that the ranking exercise solicits preferences for policy implementation (see section 4.2 below).

Finally, following the main outcome question, we presented a vignette experiment to remind respondents about regional differences across the UK in an attempt to exogenously enhance the salience of regional identities and causally evaluate how the prompted regional identity influences the responses about international climate coordination. The experimen-

tal design is simple. The respondents were randomly assigned to one of two vignettes. The control condition tells survey respondents that governments need to enact policies to address ongoing international crises. These policies, we continue, require important decisions about international coordination and will cost money. The treatment condition presents the same information, but also points out that, as in certain circumstances such as the Brexit vote, UK citizens are able to vote on some of these policies, but that these votes create winners and losers and could potentially lead to regional divisions within the country. The outcome question then records on a $1-10$ scale from "less involvement" to "more involvement," how involved respondents would like the UK government to be in international climate agreements.[5] While this test only indirectly gets at the mechanism about regional identities (which are impossible to manipulate experimentally), it nonetheless offers additional empirical evidence about the moderating role that regional identity can play in opinion formation on international climate governance.

4 Results

We present three sets of results. Based on evidence from the ranking exercise, we first show that respondents in policy vulnerable-only regions are least supportive of international climate governance, while cross-pressured regions place themselves between policy vulnerable-only respondents and the general population. We then present insights from a qualitative analysis of open-ended questions, before summarizing our findings from the survey experiment.

4.1 Ranking exercise

Our main expectation is that citizens assess international climate policy negatively as a function of the material considerations from the expected costs of this diffuse and delegated

[5] An open-ended question invites respondents to briefly comment on their response. The qualitative analysis of these responses corroborates the quantitative findings.

type of climate policy. However, regional affiliations that negatively characterize the role of national governments can significantly moderate the negative perceptions of international climate policy.

Compared to the general population, we expect that international climate policy is least preferred in the regions populated by "policy losers." In contrast, preferences in regions such as Scotland and Wales, which will also suffer materially, but see international climate cooperation as a way to boost their regional sovereignty, should favor international climate governance more.

We test these expectations, in a first instance, by regressing respondents' preferences for climate governance from a ranking exercise on regional sample dummies for coal country (Yorkshire and Cumbria sample), Scotland, and Wales. In this exercise, we asked all our survey respondents to rank four levels of climate policy governance on the premise of most favorable effectiveness. For each of the four levels, we create a dichotomized dependent variable that scores "1" for each respondent who ranked this level as the top choice and zero otherwise. In the general population sample, the overall preference is for climate change to be addressed internationally, with 65% of respondents ranking the international level as their first choice. Enthusiasm for the national (16%), devolved nation (9%), and local levels (10%) is much more muted.[6]

Figure 2 shows how these averages change as a function of our targeted samples. Panel A demonstrates that policy losers in English coal country indeed have the weakest preference for international climate governance; Scottish and Welsh respondents prefer it less than the general population, but, consistent with our expectation of cross-pressured regions, do prefer it somewhat more than coal country respondents. These effects are also substantively large, and results are robust to including a set of individual-level control variables, including gender, age, education, and political ideology: for coal country, point estimates reduce between 22-

[6]In a separate part of the survey instrument, we asked the same question about the effectiveness of different levels of governance for other policy areas (trade, security). The patterns of those responses are grossly similar to the ones reported in this paper, although the differences across the climate policy responses are starker.

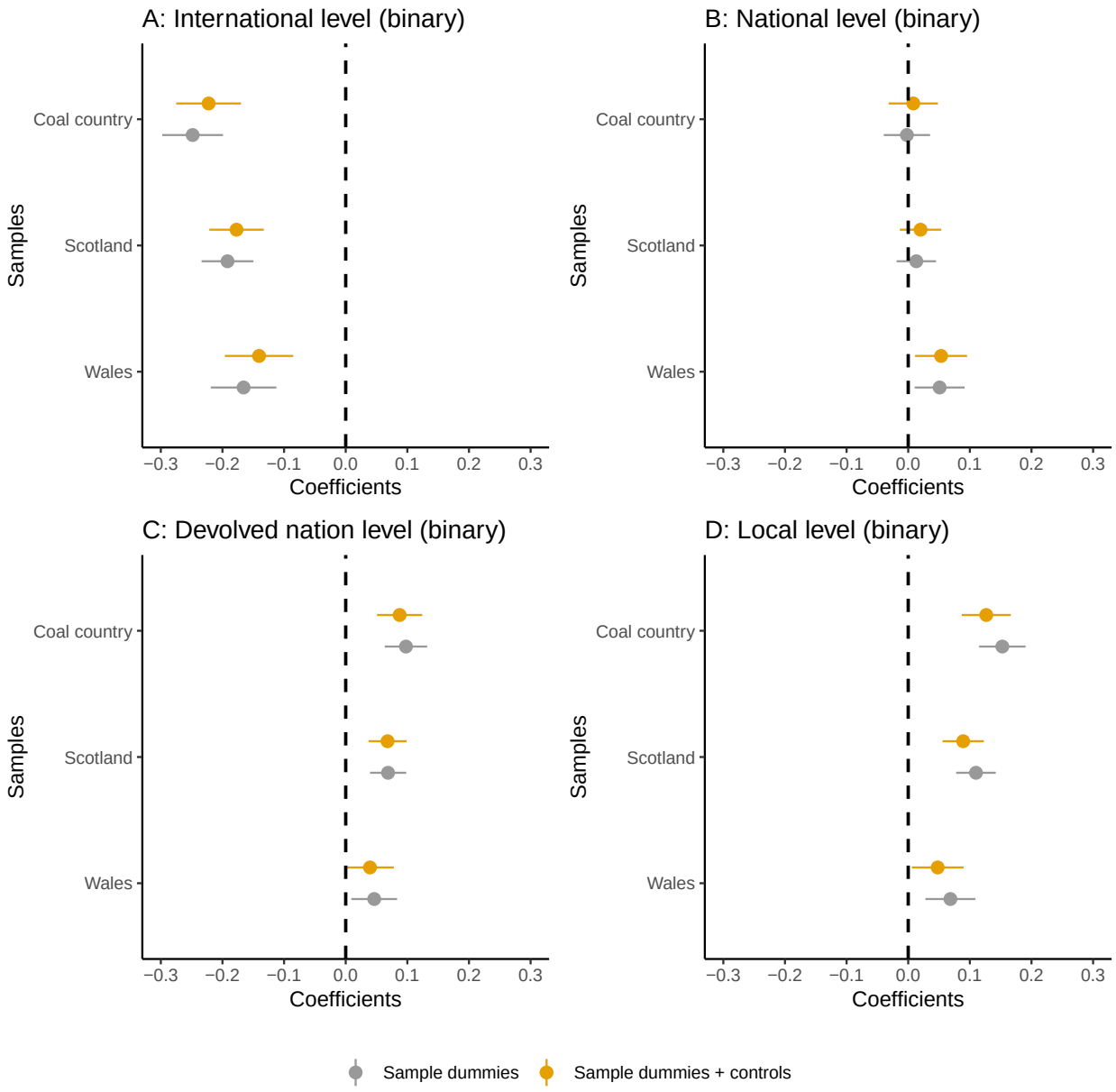
25 percentage points, for Scotland by between 17-19 percentage points, and for Wales by between 14-16 percentage points.

The flip side of our expectation also holds: respondents from coal country have a strong preference for climate governance at the subnational/devolved nation level and the local level. While these effects are smaller in absolute magnitude than for the international level outcome measure, they are still sizable (9-10 percentage points for the subnational level and between 13-15 percentage points for the local level). Among the cross-pressured regions, Scotland leans much more strongly towards subnational and local levels than Wales does. The more fully specified models for Wales do barely show any differences to the general population averages for these two outcome measures.[7] Importantly, these differences in preferences across samples do not seem to be driven by respondents' different perceptions of whether climate policy is understood to target mitigation or adaptation. Respondents from coal country and Scotland prioritize mitigation (30% each) over adaptation (19% and 17%), while the majority of survey participants (51% and 53% respectively) wants to see policy action on both fronts; Welsh respondents are split between mitigation (22%) and adaptation (23%), yet a majority prefers to address climate change holistically (55%). Among the general population, mitigation is considered more important (44%) than adaptation (12%), with the remaining respondents convinced that mitigation and adaptation need to be tackled jointly (44%).

These results suggest a few important patterns. Firstly, the general population is overall quite internationalist, with average voters having roughly a 60 percent predicted probability of establishing this as the most effective level of governance over anything else. Secondly, coal country is most opposed to international governance and most in favor of local governance. These communities have about 35 percent of a predicted probability of selecting the international level as a very effective policy level, although local and subnational levels

[7]We also estimated multinomial models, to capture the realistically non-ordinal nature of the ranking categories. The multinomial logistic regressions reported in Appendix C produce qualitatively identical results to the models presented here with the dichotomized dependent variable.

Figure 2: Results for different levels of climate policy governance



Note: Panels A-D show preferences for climate policy governance for the international, national, subnational and local levels for respondents in policy vulnerable regions in coal country (top row) and cross-pressured regions in Scotland (middle row) and Wales (bottom row). Dependent variables are dichotomized. Coefficients and 95% confidence intervals are relative to the general population survey and are shown for models that regress the dependent variable only on sample dummies (gray) and fuller models with control variables (yellow).

are ranked as more effective than the national level. Finally, for Scotland and Wales the probability of choosing international governance is less than in the general population but

still higher than coal country (roughly 40 percent predicted probability). While no sample ranks national policy as effective, there is a clear divide between coal country and the general population, while the distance is smaller between Scotland/Wales and the general population.[8] It is also noteworthy that these patterns across the targeted samples (and the general population) emerge more prominently even if we compare separate questions based on ranking of effectiveness in other policy areas.

4.2 Qualitative responses

To deepen the understanding of the ranking exercise and corroborate the interpretation of the results, we also performed an analysis of the qualitative responses following the ranking task, which meant to capture the rationale for the respondents' top choice of governance level. Following the question '*can you say very briefly why you ranked your first choice on top?*', respondents were given up to 100 characters of free text. We coded up the themes raised in these open-ended responses, following the four categories captured in the ranking. In short, we coded whether the rationale included *international* themes (the behavior of foreign countries, international organizations, or the global nature of the problem); *national* themes (UK plan, national government's accountability/duty); *subnational* themes (devolution, sovereignty of British nations, decentralization); and *local* themes (needs/duties of towns, cities). The coding is not tautological, for respondents may rank one policy level as most effective but be motivated by other policy levels for their top choice. Also, the assignment of these codes to each response was not exclusive, although given the brevity of the text less than 10 percent of the open-ended responses had multiple complementary themes.

We report the proportions of qualitative responses touching on the selected themes for each of the three sampled groups of interest. For the *general population* (baseline group), we find that 72% of the responses covered international themes; 10% covered national themes;

[8]Evidently, Scotland and Wales are large groups, and a better strategy may be to split, e.g., rural versus urban residents which map onto more versus less fossil fuel-dependent sub-communities. We will look into this heterogeneity in future analyses.

2% subnational themes, and 9% local themes. For *coal country*, we find that 43% of the responses are on international themes; 8% on national themes; 2% and 14% on subnational and local themes, respectively. Finally, for the *Scottish and Welsh* samples, we find that 48% of the responses are on international themes; 8% on national themes; 5% on subnational themes; and 11% on local themes.[9] In sum, the descriptive analysis of the qualitative responses confirms that the general population is largely persuaded about the advantages of international action, while the coal country communities are acutely convinced by the effectiveness of local governance in public good provision. Importantly, even when climate governance at the subnational (devolution) level is not a clear top choice, almost 1 in 10 Scottish and Welsh respondents bring up this level when justifying their choice. This evidence suggests the important conditional effect of subnational identity over the way Scottish and Welsh individuals assess the material impact of climate policy. Excerpts and anecdotal answers corroborate this inference.[10]

4.3 Experimental vignette

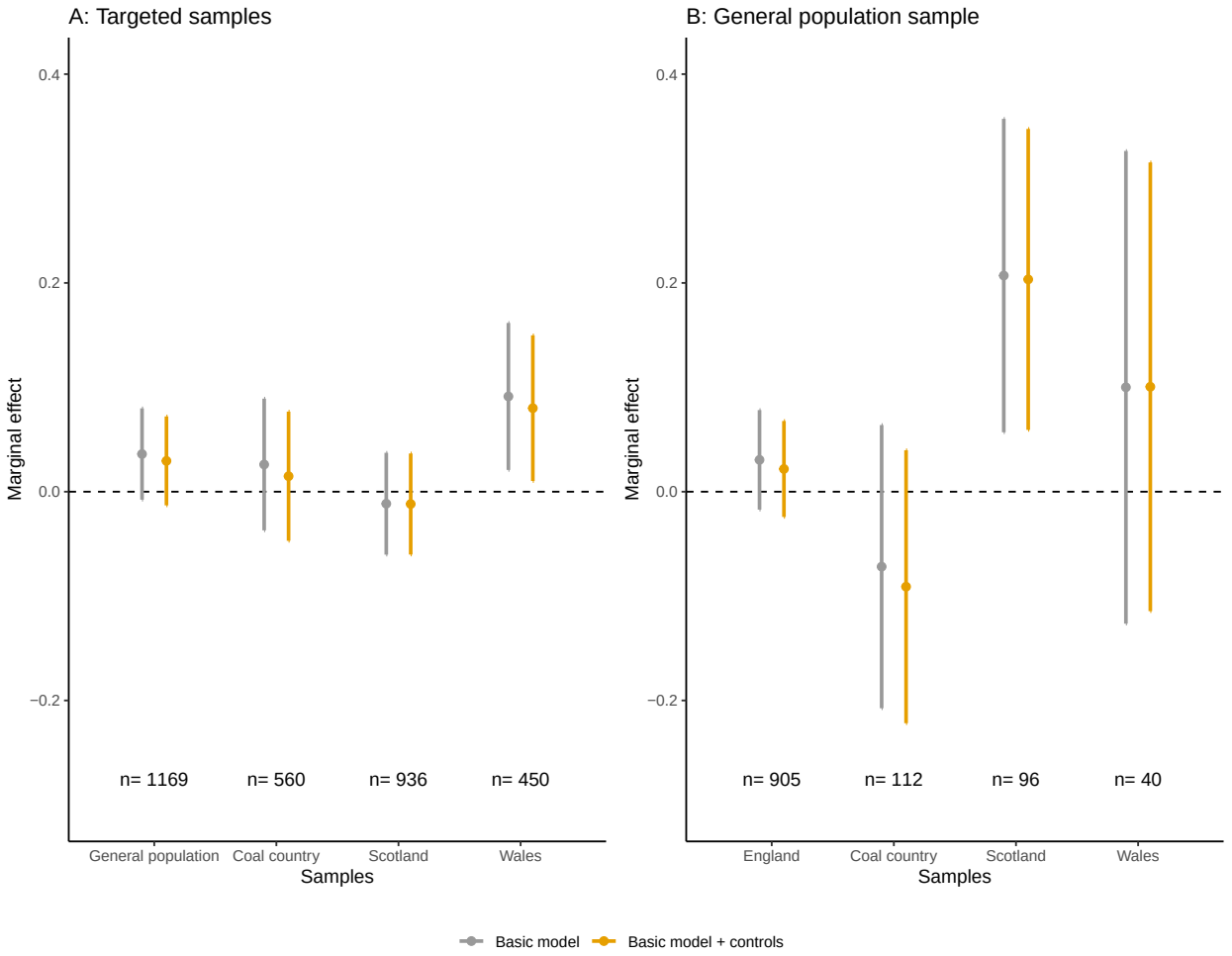
As discussed, our argument's causal mechanism relies on the combination of material cost considerations from climate policy and regional identity. We also have already shown, both with data from the ranking exercise and from qualitative open-ended survey responses that regional identity shapes UK respondents' preferences on international climate governance. Here, we add another layer of suggestive evidence for our argument from survey experimental data. Our very straightforward experimental design probes the idea of whether respondents from cross-pressured regions, where regional identity is more salient, respond more strongly to treatment information that emphasizes regional division as a potential result from gov-

[9]The subnational category for Scotland and Wales is even larger if we pool the targeted Scotland/Wales samples with the Scottish and Welsh respondents from the general population sample (8-9%).

[10]In the Scotland targeted sample, one respondent said, '*The devolved level is high enough to make an impact whilst still being in touch with people and their needs*'. Another Scottish respondent said, '*I think that Scotland would do more than Westminister for climate change, but it's all about having the money to do such change*.' Similarly, a Welsh respondent said, '*The UK gov aren't doing near enough so maybe devolving it will get more done at least here*.'

ernmental policies that seek to address international crises.

Figure 3: Marginal effects from information treatment on preference for UK international involvement



Note: The plot shows the marginal effects (and 90% confidence intervals) of the information treatment for respondents from different groups. Panel A shows the treatment effect for the UK general population alongside treatment effects in our targeted samples of respondents from policy vulnerable-only regions in coal country and cross-pressured regions in Scotland and Wales. Panel B shows the treatment effects for different geographies across the UK, broken out from the general population sample. Here, England denotes all English regions except "Yorkshire and Humber," which we denote as coal country; Scotland and Wales capture Scottish and Welsh respondents. The dependent variable measures respondents' preference for the UK's international involvement on a $1-10$ scale, which we dichotomize at the mean. We show estimated coefficients from models that regress the dependent variable only on the treatment indicator and sample dummies (gray) and fuller models with control variables (yellow). Sample sizes are shown in the bottom of the plots.

Figure 3 shows the marginal effects of the informational treatment condition on respondents' preference for the United Kingdom's international involvement across the different

samples.[11] Panel A reports results for the general population sample and for respondents in our targeted samples of coal country, Scotland, and Wales. While we do not find any statistically significant effects of our treatment text for the general public, for coal country districts in Yorkshire and Cumbria nor in Scotland, Welsh participants respond strongly to our treatment. Reminding respondents in Wales that policies to address international crises have the potential to sow regional division and societal cleavages makes them support international involvement much more. The share of those in favor of greater international involvement increases from 63% to roughly 72% in the baseline and fuller model specification, resulting in substantively sizable marginal effects of between 8% ([1.0%-15.0%])-9% ([2.1%,16.2%]), which are statistically significant at the 10% level.

To shed more light and further probe our intuition, Panel B shows the treatment effects when we disaggregate respondents from the general population sample by region. We assign respondents from "Yorkshire and Humber" to the coal country sample, while all other English respondents are assigned to the "England" group; Scottish and Welsh respondents are assigned correspondingly. The treatment effect for England is estimated at 3.0% and substantively close to zero. Despite small sample sizes in the other groups, an interesting pattern emerges. In coal country, the treatment effect is negative (-7%), while the effects for Scotland (20.7%) and Wales (10.0%) are positive and large. These findings are consistent with our argument, namely that emphasizing regional identity amplifies support for international involvement in those regions where regional identity is salient. In coal country, however, reminding respondents of regional divisions makes them seeking less international cooperation. We take this as tentative evidence in favor of the intuition that (further) elevating the importance of regional identities can push especially aspiring sovereign communities to support international policy.

[11] We measure the effects on a dichotomized outcome variable, but results are qualitatively similar when keeping the original $1-10$ scale (Appendix D, Figure A4).

5 Conclusion

This paper sets out to study the public roots of backlash against international cooperation in an increasingly politicized domain of government action: climate change policy. Much of the international political economy literature that is focused on the mass contestation of international policies and the disintegration from international agreements focuses on material costs, which tend to be concentrated in communities of policy losers. Building on this literature, this paper explores if and how the material vulnerability to climate policy (in the form of economic adjustment and risk of job/income losses) may be shaped by an understudied non-material cue—namely a sense of strong regional identity, which may induce a lower appreciation for national/local policy and a larger appreciation for international integration.

Theoretically, we conjecture that a strong regional identity in areas with high material costs associated with international climate policy can moderate the otherwise significant opposition to international climate governance. This, we believe, may be the case because regional identities are often associated with negative perceptions of central/national governments, therefore triggering a greater affinity to international institutions. Furthermore, regional identities come with a stronger sense of public good and communal trust, which may favor positive assessments of international governance which is by definition more tilted towards public good provision.

Empirically, we concentrate on the UK case to test our theoretical premises.[12] To compare how individuals in policy vulnerable communities with and without strong regional identities assess international climate policy, we fielded a survey instrument with a ranking exercise and experimental vignettes in targeted samples in England, Wales and Scotland, in addition to a general population survey. The results suggest that strong regional identities as captured by the identification with Scotland and Wales attenuate the opposition to international climate

[12]Future work could extend and probe the generalizability of these results with public opinion data from comparable countries such as Spain.

cooperation driven by material costs documented in Northern England coal communities. In Scottish and Welsh communities, despite their large dependence on the fossil fuel economy and the significant policy costs from ambitious climate action, backlash against international cooperation is more modest due to the relative trust in international institutions.

Our study contributes to the international relations and international political economy literatures in multiple ways. First, our research provides fresh evidence on how subnational political realities form cogent assessments of climate policy not only at the domestic, but also at the international level. Second, our findings broaden the understanding of non-material determinants of climate policy attitudes and their interaction with material costs by centering attention on an understudied form of identity, namely regional identity. Bridging the scholarship on distributional comparative politics and the legitimacy of international organizations, the paper breaks a new path for scholars interested in the micro-level roots and political geographies of backlash against climate policy integration, amongst other new battles of globalization.

References

Baccini, L., and S. Weymouth. 2021. "Gone for good: Deindustrialization, white voter backlash, and US presidential voting." *American Political Science Review* 2 (115): 550–567.

Ballard-Rosa, C., M. A. Malik, S. J. Rickard, and K. Scheve. 2021. "The economic origins of authoritarian values: evidence from local trade shocks in the United Kingdom." *Comparative political studies* 13 (54): 2321–2353.

Bayer, Patrick, and Federica Genovese. 2020. "Beliefs About Consequences from Climate Action Under Weak Climate Institutions: Sectors, Home Bias, and International Embeddedness." *Global Environmental Politics* 20 (4): 28–50.

Beatty, Christina, Steve Fothergill, and Tory Gore. 2019. "The State of the Coalfields 2019: Economic and Social Conditions in the Former Coalfields on England, Scotland, and Wales." Centre for Regional Economic and Social Research Sheffield Hallam University.

Bechtel, Michael M., Federica Genovese, and Kenneth F. Scheve. 2019. "Interests, norms and support for the provision of global public goods: the case of climate co-operation." *British Journal of Political Science* 4 (49): 1333–1355.

Bechtel, Michael M., and Kenneth F. Scheve. 2013. "Mass support for global climate agreements depends on institutional design." *Proceedings of the National Academy of Sciences* 34 (10): 13763–13768.

Bechtel, Michael M., Kenneth F. Scheve, and Elisabeth van Lieshout. 2022. "Improving public support for climate action through multilateralism." *Nature Communications* 1 (13): 1–9.

Benegal, Salil, Flavio Azevedo, and Mirya R. Holman. 2022. "Race, ethnicity, and support for climate policy." *Environmental Research Letters* 11 (17).

Bergquist, Parrish, Matto Mildenberger, and Leah C. Stokes. 2020. "Combining climate, economic, and social policy builds public support for climate action in the US." *Environmental Research Letters* 5 (15).

Broz, J. L., J. Frieden, and S. Weymouth. 2021. "Populism in place: the economic geography of the globalization backlash." *International Organization* 2 (75): 464–494.

Börzel, Tanja A., and Thomas Risse. 2021. "Effective governance under anarchy: Institutions, legitimacy, and social trust in areas of limited statehood." *Cambridge University Press* .

Carreras, Miguel, Yasemin Irepoglu Carreras, and Shaun Bowler. 2019. "Long-term economic distress, cultural backlash, and support for Brexit." *Comparative Political Studies* 9 (52): 1396–1424.

Colantone, I., and P. Stanig. 2018*a*. "Global Competition and Brexit." *American Political Science Review* 2 (112): 201–218.

Colantone, Italo, and Piero Stanig. 2018*b*. "The trade origins of economic nationalism: Import competition and voting behavior in Western Europe." *American Journal of Political Science* 4 (62): 936–953.

Colgan, Jeff D., Jessica F. Green, and Thomas N. Hale. 2021. "Asset revaluation and the existential politics of climate change." *International Organization* 2 (75): 586–610.

Cremaschi, S., P. Rettl, M. Cappelluti, and C. E. De Vries. 2022. "Geographies of Discontent: How Public Service Deprivation Increased Far-Right Support in Italy." *OSF Preprints* .

Daniels, L. A., and Alexander Kuo. 2021. "Brexit and territorial preferences: Evidence from Scotland and Northern Ireland." *Publius: The Journal of Federalism* 2 (51): 186–211.

De Vries, Catherine, Sarah Hobolt, and Stefanie Walter. 2021. "Politicizing international cooperation: The mass public, political entrepreneurs, and political opportunity structures." *International Organization* 2 (75): 306–332.

Dellmuth, L., J. A. Sholte, J. Tallberg, and S. Verhaegen. 2022. "The elite–citizen gap in international organization legitimacy." *American Political Science Review* 1 (116): 283–300.

Dellmuth, Lisa Maria, Jan Aart Scholte, and Jonas Tallberg. 2019. "Institutional sources of legitimacy for international organisations: Beyond procedure versus performance." *Review of International Studies* 4 (45): 627–646.

Falkner, Robert. 2016. "The Paris Agreement and the New Logic of International Climate Politics." *International Affairs* 92 (5): 1107–1125.

Gaikwad, N., F. Genovese, and D. Tingley. 2022. "Creating Climate Coalitions: Mass Preferences for Compensating Vulnerability in the World's Two Largest Democracies." *American Political Science Review* 4 (116): 1165–1183.

Gazmararian, A., and D Tingley. 2023. "Credibility and Climate Transitions: The Politics of Economic Transformation." *Cambridge University Press* .

Gehring, Kai. 2021. "Overcoming History Through Exit or Integration: Deep-Rooted Sources of Support for the European Union." *American Political Science Review* 1 (115): 199–217.

Green, J., T. Hellwig, and E. Fieldhouse. 2022. "Who gets what: The economy, relative gains and Brexit." *British Journal of Political Science* 1 (52): 320–338.

Hobolt, Sara B., Thomas J. Leeper, and James Tilley. 2021. "Divided by the vote: Affective polarization in the wake of the Brexit referendum." *British Journal of Political Science* 4 (51): 1476–1493.

Huber, Robert A., Michael L. Wicki, and Thomas Bernauer. 2019. "Public support for environmental policy depends on beliefs concerning effectiveness, intrusiveness, and fairness." *Environmental politics* .

Jolly, Seth Kincaid. 2007. "The Europhile Fringe? Regionalist Party Support for European Integration." *European Union Politics* 1 (8): 109–130.

Jolly, Seth Kincaid. 2015. "The European Union and the Rise of Regionalist Parties." *Ann Arbor: University of Michigan Press* .

Kalin, Michael, and Nicholas Sambanis. 2018. "How to think about social identity." *Annual Review of Political Science* 1 (21): 239–257.

Kennard, Amanda. 2021. "My Brother's Keeper: Other-regarding preferences and concern for global climate change." *Review of International Organizations* 2 (16): 345–376.

Milner, Helen V. 2021. "Voting for populism in Europe: Globalization, technological change, and the extreme right." *Comparative Political Studies* 31 (54): 2286–2320.

nomis. 2021. "Business Register and Employment Survey." Available at https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?opt=3&theme=&subgrp=.

Norris, Pippa, and Ronald Inglehart. 2016. "Cultural Backlash: Trump, Brexit, and Authoritarian Populism." *Cambridge University Press* .

Northern Mine Research Society. 2022. "Yorkshire Coalfield." Available at https://www.nmrs.org.uk/mines-map/coal-mining-in-the-british-isles/yorkshire-coalfield/.

Osgood, Iain. 2022. "Representation and reward: the left-wing anti-globalization alliance, contributions, and the congress." *Review of International Political Economy* pp. 1–26.

Owen, Erica, and Noel P. Johnston. 2017. "Occupation and the political economy of trade: Job routineness, offshorability, and protectionist sentiment." *International Organization* 4 (71): 665–699.

Sambanis, Nicholas. 2006. "Globalization, decentralization and secession: a review of the literature and some conjectures." *Globalization and Self-Determination* pp. 217–250.

Schaffer, Lena, and Gabriele Spilker. 2019. "Self-interest versus sociotropic considerations: an information-based perspective to understanding individuals' trade preferences." *Review of International Political Economy* 6 (26): 1266–1292.

Schneider, Christina J. 2018. "The responsive union: National elections and European governance." *Cambridge University Press* .

Stokes, Leah C. 2016. "Electoral backlash against climate policy: A natural experiment on retrospective voting and local resistance to public policy." *American Journal of Political Science* 4 (60): 958–974.

Urpelainen, Johannes, and Thijs Van de Graaf. 2018. "United States non-cooperation and the Paris agreement." *Climate Policy* 7 (18): 839–851.

Von Borzyskowski, Inken, and Felicity Vabulas. 2019. "Hello, goodbye: When do states withdraw from international organizations?" *The Review of International Organizations* 2 (14): 335–366.

Walter, Stefanie. 2021. "The backlash against globalization." *Annual Review of Political Science* 1 (24): 421–442.

Zeitlin, J., F. Nicoli, and B. Laffan. 2019. "The European Union beyond the polycrisis? Integration and politicization in an age of shifting cleavages." *Journal of European Public Policy* 7 (26): 963–976.

Zucker, Noah. 2022. "Group Ties amid Industrial Change: Historical Evidence from the Fossil Fuel Industry." *World Politics* 4 (74): 610–650.

Zürn, Michael, and Pieter De Wilde. 2016. "Debating globalization: cosmopolitanism and communitarianism as political ideologies." *Journal of political ideologies* 3 (21): 280–301.

Climate Policy Costs and Backlash against International Cooperation

—Supplementary Materials—

A Descriptive statistics

Sample		N	Mean	SD	Min	Max
General population	*Age group*: 1 (<21 y) to 7 (>70 y)	1169	3.98	1.58	1	7
	Female: 0 (male) to 1 (female)	1169	0.51	0.50	0	1
	Education group: 1 (no qual) to 6 (PhD)	1154	3.59	1.03	1	6
	Climate concern: 1 (not at all) to 4 (very)	1169	3.49	0.74	1	4
	Urban share (% self-reported)	1169	68	47	0	100
	Fossil fuel vicinity: 0 (no) to 1 (yes)	1169	0.29	0.45	0	1
Coal country	*Age group*: 1 (<21 y) to 7 (>70 y)	560	3.31	1.26	1	7
	Female: 0 (male) to 1 (female)	560	0.74	0.44	0	1
	Education group: 1 (no qual) to 6 (PhD)	553	3.16	1.11	1	6
	Climate concern: 1 (not at all) to 4 (very)	560	3.30	0.74	1	4
	Urban share (% self-reported)	560	68	47	0	100
	Fossil fuel vicinity: 0 (no) to 1 (yes)	560	0.47	0.50	0	1
Scotland	*Age group*: 1 (<21 y) to 7 (>70 y)	936	3.70	1.52	1	7
	Female: 0 (male) to 1 (female)	936	0.67	0.47	0	1
	Education group: 1 (no qual) to 6 (PhD)	909	3.34	1.14	1	6
	Climate concern: 1 (not at all) to 4 (very)	936	3.39	0.74	1	4
	Urban share (% self-reported)	936	65	48	0	100
	Fossil fuel vicinity: 0 (no) to 1 (yes)	936	0.40	0.49	0	1
Wales	*Age group*: 1 (<21 y) to 7 (>70 y)	450	4.22	1.57	1	7
	Female: 0 (male) to 1 (female)	450	0.60	0.49	0	1
	Education group: 1 (no qual) to 6 (PhD)	441	3.20	1.15	1	6
	Climate concern: 1 (not at all) to 4 (very)	450	3.42	0.71	1	4
	Urban share (% self-reported)	450	54	50	0	100
	Fossil fuel vicinity: 0 (no) to 1 (yes)	450	0.48	0.50	0	1

B Substantive Comparison of UK Targeted Regions

Our sampling raises a question about scope conditions, namely – how comparable are the fundamentals of the English coal country, Wales and Scotland beyond the basic descriptive statistics reported in Appendix A. In this section we discuss additional commonalities of these three areas.

In terms of population, these three areas range on similar figures proportional to the UK population. As of the 2021 census,[13] Scotland's population records 5.3 million people (8.2% of the UK population). Wales' population is 3.1 million (5.2% of the UK population). The populations of Yorkshire and Cumbria combined are about 5.5 million (8.5% of the UK population). More than 50% respondents across the three samples report to be from urban areas of their belonging county, although all of them have substantive rural communities. According to the local authorities, 20% of Yorkshire is rural,[14] while 17% and 28% of Scotland and Wales (respectively) are estimated to live in rural areas.[15]

The three groups are also similar on the policy vulnerability dimension, i.e. their territorial dependence and economic history of fossil fuels. Scotland has not had active coal extraction since 2016, although the 2022 coal mining licence for the geographical site in Cumbria extends into the Scottish territories of Dumfries and Galloway. Scotland also has significant quantities of fossil fuel deposits, including substantial proven reserves of oil and gas and 69% of UK coal reserves.[16] In 2020, 45% of the electricity consumed in Scotland came from fossil fuel sources.[17] More than a dozen of the oil and gas-fired power stations in Scotland are still active. In Wales, coal has had a similar history, with large extraction until the 1980s and a decline afterwards. As of 2020 there are four deep coal mines left in the region, although two are in the process of closing. Wales has however significant quantities of gas and oil depositions, and approximately 63% of electricity generation is by gas fuelled power stations.[18] As for Yorkshire, Northumberland and Cumbria, deep coal extraction stopped in 2015 while fossil fuel drilling is substantive. Roughly 52% of the region's electricity production comes from oil and gas.[19]

Furthermore, the economies of these three regions are similar in various ways. In December 2021 and April 2022, unemployment rates in these three areas were similar (around 4%, also with similar inactivity rates).[20] On the UK credit score index, Scotland, Yorkshire and the Humber, and Wales are on the bottom of the list.[21] The three regions also have also historically had similar housing values since the 1990s.[22]

[13] https://census.gov.uk/census-2021-results.

[14] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/427117/RUCLAD_leaflet_May2015.pdf.

[15] https://lordslibrary.parliament.uk/fact-file-rural-economy/.

[16] "Enough UK oil reserves 'for at least 20 years of production'". BBC. (18 November 2018) Retrieved 31 January 2021.

[17] https://fullfact.org/environment/scotland-renewable-energy/.

[18] https://www.gov.wales/sites/default/files/publications/2021-01/energy-generation-in-wales-2019.pdf.

[19] https://electricityproduction.uk/in/yorkshire/. Retrieved 6 January 2023.

[20] https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/regionallabourmarket/december2021.

[21] https://www.sharetobuy.com/news/mapped-average-credit-scores-uk-2/.

[22] https://www.ons.gov.uk/peoplepopulationandcommunity/housing/bulletins/

C Ranking: Additional Results

We provide several additional results of the main analysis here.

- First, we replicate our main findings when we use multinomial regression models instead of dichotomizing our dependent variable (Figure A1).
- Second, we re-estimate our main models for a restricted sample that only includes respondents in the three samples who report that they are aware of fossil fuel industries in the area they live, or a neighboring area (Figure A2).
- Third, we replicate the main analysis when we drop respondents who indicate that they are "not at all" concerned about climate change (Figure A3).

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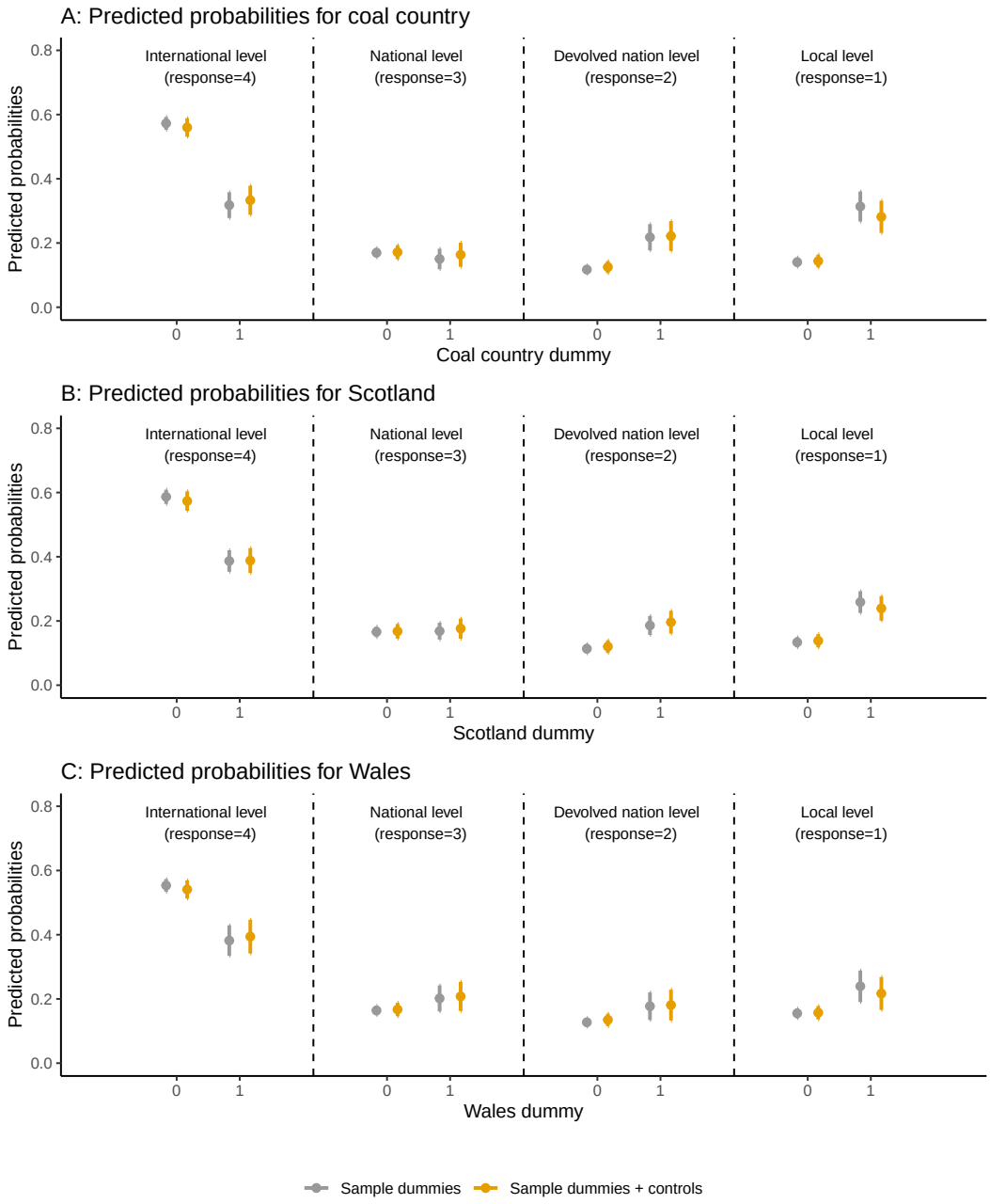
C.1 Multinomial models

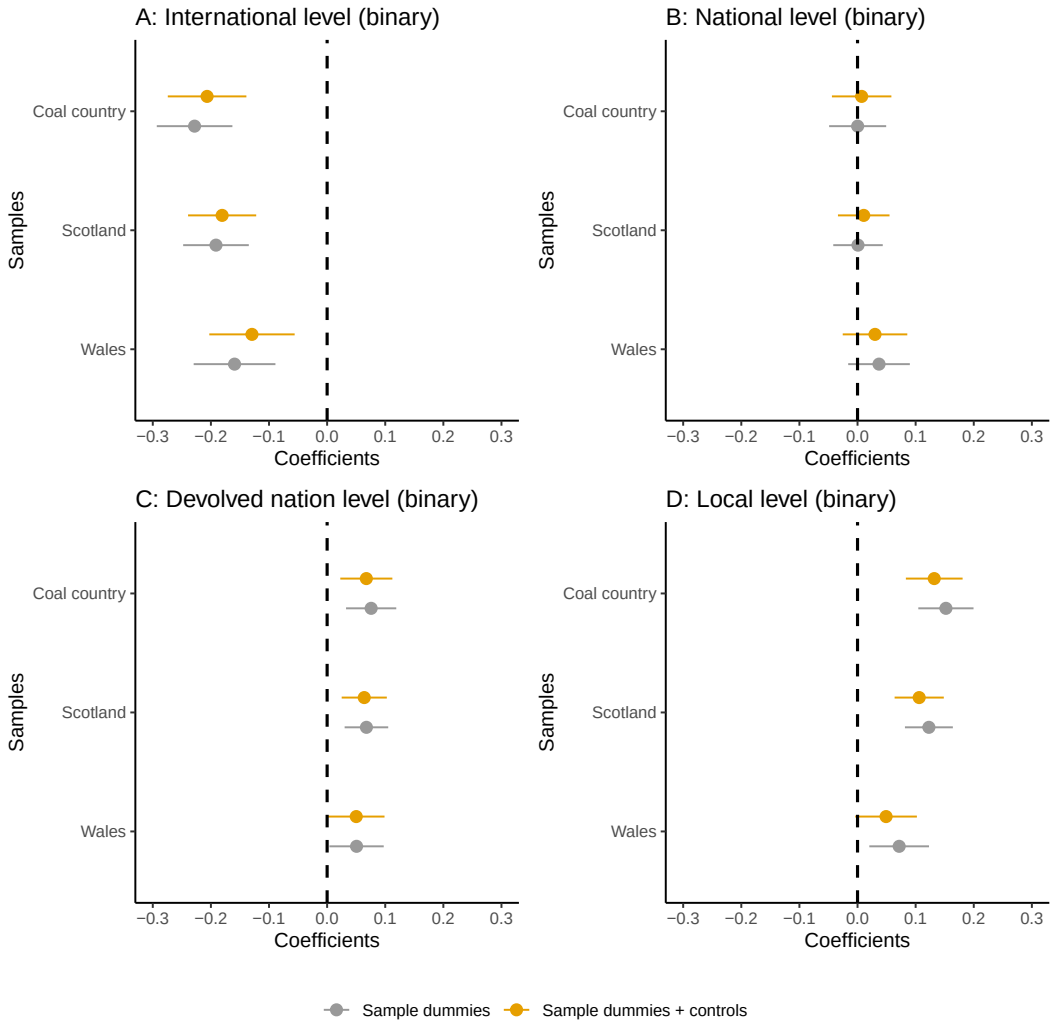
Figure A1: Predicted probabilities from multinomial models



Note: The plot shows the predicted probabilities with 95% confidence intervals separately for coal country (Panel A), Scotland (Panel B), and Wales (Panel C). The dependent variable measures preferred governance choice at the local (response=1), devolved nation (response=2), national (response=3), and international level (response=4). Coefficients are shown for models with only sample dummies (gray) and fuller models with control variables (yellow).

C.2 Robustness: Subsample of respondents with fossil fuel industries in their vicinity

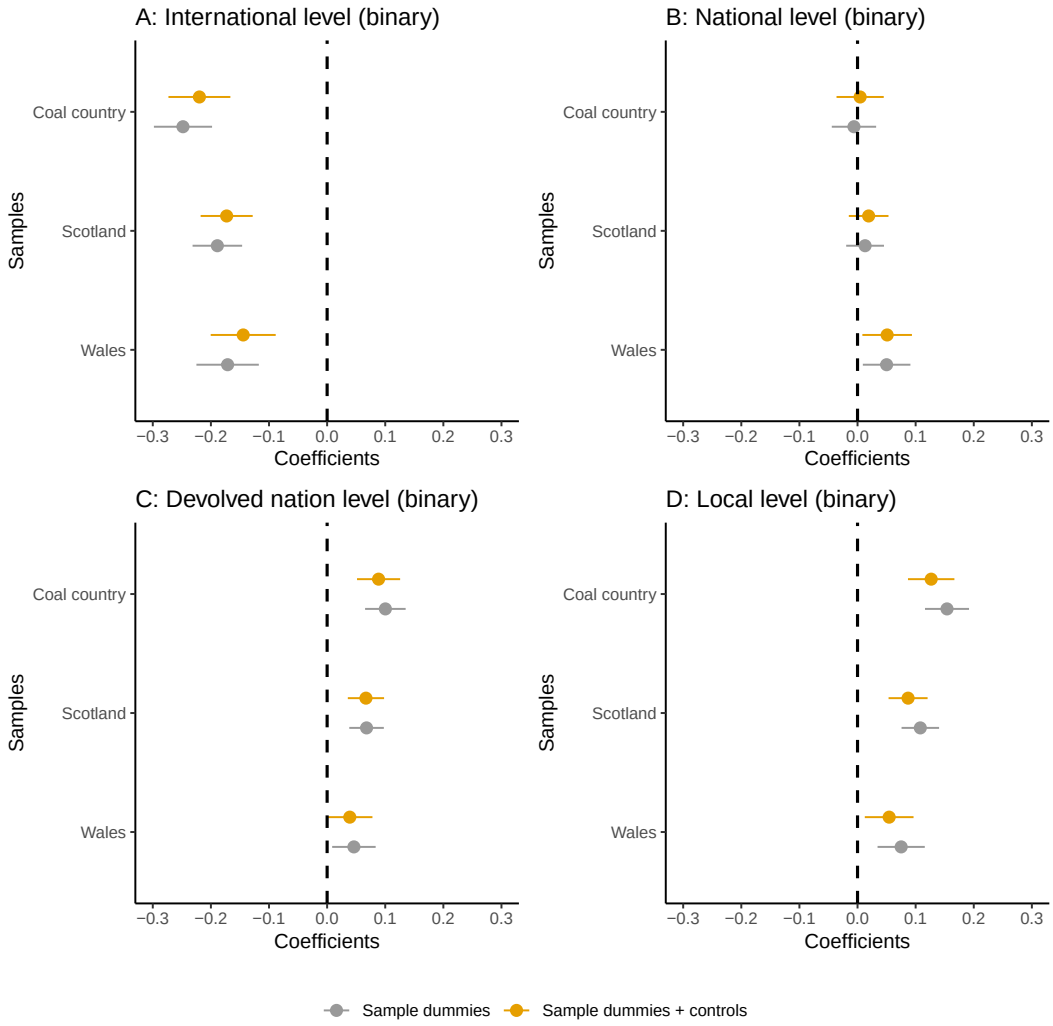
Figure A2: Results for different levels of climate policy governance



Note: Panels A-D show preferences for climate policy governance for the international, national, subnational and local levels for respondents in policy vulnerable regions in coal country (top row) and cross-pressured regions in Scotland (middle row) and Wales (bottom row). Sample is restricted to respondents who report to be aware of fossil-fuel intensive industries in the area they live in or neighboring areas. Dependent variables are dichotomized. Coefficients and 95% confidence intervals are relative to the general population survey and are shown for models that regress the dependent variable only on sample dummies (gray) and fuller models with control variables (yellow).

C.3 Robustness: Subsample excluding respondents with no climate concern

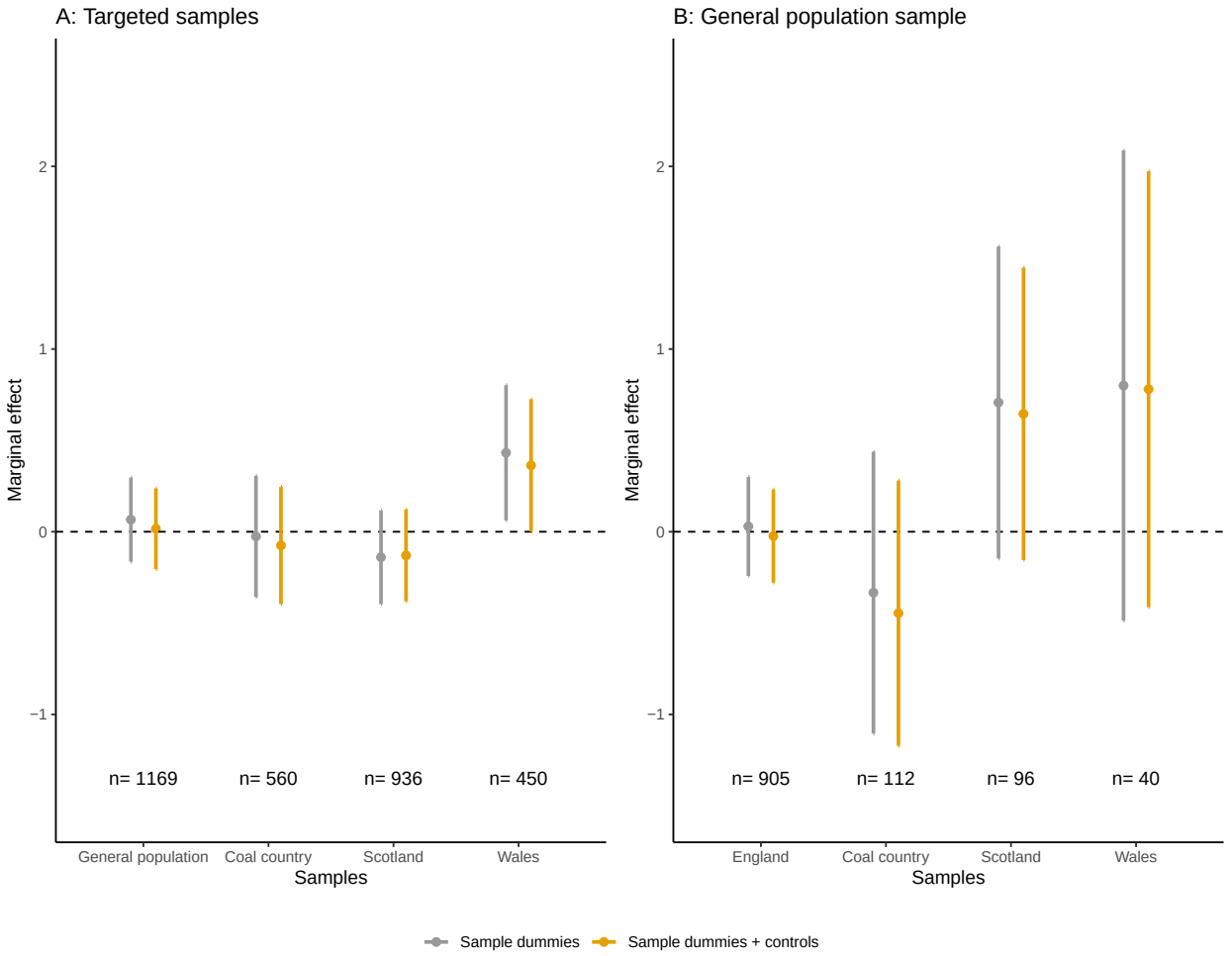
Figure A3: Results for different levels of climate policy governance



Note: Panels A-D show preferences for climate policy governance for the international, national, subnational and local levels for respondents in policy vulnerable regions in coal country (top row) and cross-pressured regions in Scotland (middle row) and Wales (bottom row). Sample excludes respondents that they are "not at all concerned" about climate change. Dependent variables are dichotomized. Coefficients and 95% confidence intervals are relative to the general population survey and are shown for models that regress the dependent variable only on sample dummies (gray) and fuller models with control variables (yellow).

D Vignettes: Additional Results

Figure A4: Marginal effects from information treatment on preference for UK international involvement



Note: The plot shows the marginal effects (and 90% confidence intervals) of the information treatment for respondents from different groups. Panel A shows the treatment effect for the UK general population alongside treatment effects in our targeted samples of respondents from policy vulnerable-only regions in coal country and cross-pressured regions in Scotland and Wales. Panel B shows the treatment effects for different geographies across the UK, broken out from the general population sample. Here, England denotes all English regions except "Yorkshire and Humber," which we denote as coal country; Scotland and Wales capture Scottish and Welsh respondents. The dependent variable measures respondents' preference for the UK's international involvement on a $1-10$ scale. We show estimated coefficients from models that regress the dependent variable only on the treatment indicator and sample dummies (gray) and fuller models with control variables (yellow). Sample sizes are shown in the bottom of the plots.