

# Preferences for Domestic Action Over International Transfers in Global Climate Policy

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## Abstract

Cost-effective and equitable climate change mitigation requires the transfer of resources from developed to developing countries. In two behavioral experiments, we demonstrate that American subjects act according to a strong home preference, by making private donations and writing letters in support of public spending more often for mitigation programs located at home versus those overseas. We attempt to overcome the preference to act at home by randomly informing some subjects that foreign programs are more cost-effective than domestic programs. Home preference is mitigated only in the case of private donations. From a separate experimental treatment, we show that the preference against foreign programs is exacerbated when the co-benefits of mitigation programs are made salient. Importantly, home preference crosses party lines, indicating that it is a deep-seeded, affective preference. These findings highlight significant political obstacles to international cooperation on climate change that relies on transfers.

**Keywords:** Climate change, cost-effectiveness, behavioral experiments, global cooperation, climate aid

## INTRODUCTION AND THEORY

It has proven difficult to address climate change using large-scale transfers of resources from developed to developing countries. This is surprising for at least

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three reasons. First, the mitigation of climate change is a global public good, so the benefits are shared globally no matter where emissions are reduced. Second, a majority of citizens in developed countries support the mitigation of climate change. Third, the most cost-effective mitigation programs are located in developing countries (Bosetti et al. 2009; Calvin et al. 2009; den Elzen, Paul, and van Vuuren 2005; Landis, Florian, and Thomas 2012).<sup>1</sup> According to the theory about the efficient provision of public goods, support for international transfers should be high under these conditions, yet international transfers account for a small portion of mitigation efforts globally.

To shed light on this puzzle, we study whether the American public exhibits a *home preference*: preferring domestic rather than overseas mitigation. Existing research has assumed a preference for cost-effective policies among the public and policy-makers and has focused on overcoming other problems associated with providing public goods, such as negotiating relative contributions across countries (Cheon and Urpelainen 2013; Eckersley 2012; Tavoni et al. 2011; Tingley and Tomz 2013), monitoring contributions (Aldy 2014; Aldy and Pizer 2015), designing enforcement mechanisms (Barrett 2008; Hovi et al. 2012), decreasing coordination costs and uncertainty (Barrett and Dannenberg 2012; Keohane and Victor 2011), and managing heterogeneous preferences among potential contributors (Gampfer 2014; McGinty 2006; Mendelsohn, Dinar, and Williams 2006). Two recent studies have considered support for international transfers, but one does not do so in comparison to domestic action and only relies on measures of attitudes (Gampfer, Bernauer, and Kachi 2014), and the other compares support across locations of mitigation programs, but only for private donations (Diederich and Goeschl 2017).

We investigate whether American subjects will *act* to support both public and private international transfers for mitigation as compared to funding domestic mitigation. We focus on public actions because politicians in the United States and elsewhere act in the shadow of the public when it comes to foreign policy (Tomz, Weeks, and Yarhi-Milo 2017), and because *private* willingness to pay for voluntary emissions reductions is large (Diederich and Goeschl 2013). Indeed, both President Obama and President Trump have publicly addressed climate change mitigation and financing, showing that the public is of central concern.<sup>2</sup>

On average, we expect individuals to prefer domestic programs compared to foreign programs for three reasons. First, home preference could result from *poor information* about the location of cost-effective programs (Rhodes, Axsen, and

<sup>1</sup>Transfers also address equity concerns (Moellendorf 2014; Wei et al. 2012) and are thought to stabilize international cooperation (Rübelke 2011).

<sup>2</sup>For example, the Obama administration launched a comprehensive public outreach campaign in support of the “America’s Clean Power Plan” policy. In June of 2017, President Trump gave a public speech on his intention to withdraw the United States from the Paris Climate Agreement asserting that he was “elected to represent the citizens of Pittsburgh, not Paris.” In the speech, he singled out the Green Climate Fund, one of the primary instruments for international transfers, and stated that the United States would no longer honor its commitments to it.

Jaccard 2014). If individuals are concerned with maximizing mitigation within a budget constraint, then preferences should tend towards countries that have perceived advantages in mitigation. If information about cost-effectiveness is not known, increasing knowledge that the most cost-effective options for mitigation are in rapidly industrializing countries (den Elzen et al. 2005; Iyer et al. 2015; Olmstead and Stavins 2012) should cause the public to be more supportive of transfers.

Second, because of *self-interest*, individuals may support domestic programs that offer them tangible, personal benefits that are not shared globally.<sup>3</sup> Indeed, much of the popular coverage and political rhetoric about mitigation emphasize private co-benefits. During the Obama administration's public outreach campaign in support of America's Clean Power Plan, the President recorded a video emphasizing the domestic benefits of mitigation programs, like job creation, clean air, and technological leadership.<sup>4</sup> Indeed, politicians often attempt to engage the self-interest of the public when selling climate change mitigation.

Third and relatedly, individuals may have *group interests* that lead them to prefer programs that they perceive to primarily benefit people who are "closer" to them (Schelling 1995), such as their co-citizens. For example, subjects playing dictator games in laboratory settings more often send contributions to receiving players with the same party identity (Fowler and Kam 2007) and homogenous groups are more likely to succeed in providing public goods (Habyarimana et al. 2009). In sum, a home preference might arise because people perceive the in-group benefits of mitigation to be more salient than the globally-shared benefits.

We demonstrate that American subjects have a strong baseline preference to act in support of private and public funding for climate change mitigation at home rather than overseas. Home preference is only mitigated in the case of private donations when we successfully inform some subjects that programs located abroad are more cost-effective than domestic programs. Home preference is exacerbated when the private co-benefits of mitigation programs are highlighted. Our results indicate that climate policy based on international transfers faces significant constraints when it comes to engaging public support.<sup>5</sup>

<sup>3</sup>See Sears and Funk (1991) for a classic exploration of the role of self-interest in attitude formation.

<sup>4</sup>He stated, "We've been working with states and power companies to make sure they've got the flexibility they need to cut this pollution, *all while lowering energy bills, ensuring reliable service and paving the way for new job-creating innovations* that help America lead the world forward."

<sup>5</sup>Particularly worrisome is the fact that most scientific studies of climate scenarios, such as those that underpin the recommendations of the Intergovernmental Panel on Climate Change (IPCC), *assume* the presence of cost-effective modes of international cooperation made possible by transfers (Intergovernmental Panel on Climate Change 2007;2015).

## METHODOLOGY

### Sample

We fielded two online behavioral experiments using participants recruited from Amazon's Mechanical Turk. In both experiments, the target population is the portion of the U.S. public hypothetically willing to support action to mitigate climate change, since we expect a lack of support regardless of location among individuals who dismiss climate change.<sup>6</sup> Our convenience samples (Experiment 1, September 2014,  $n = 1,140$ ; Experiment 2, April 2015,  $n = 2,656$ ) approximate the characteristics of our target population, since they are more educated and less conservative politically than nationally representative samples (Supplementary Information (SI), Table S1a–c) (McCright and Dunlap 2011).<sup>7</sup> Thus, our sample meets the most important criterion when evaluating online experiments (Berinsky, Huber, and Lenz 2012; Huff and Tingley 2015). Nonetheless, we verify that the effectiveness of our manipulation is not affected by level of education (Table S8) and our main results are not conditional on party (Figures S2–S4).

### Outcomes

We prompted Americans to make real donations to a non-governmental organization and to write letters to elected officials about public spending (see SI for full description). We examine both private and public spending for several reasons. Private donations are a natural behavior. However, they are not a behavioral measure of a public policy preference. Thus, we pair donations with the behavioral outcome of writing a letter to elected officials for government spending. Examining both private and public spending also offers a within-study replication across different funding channels and allows us to develop a new theory to the extent that the private and public results diverge.

In Experiment 1 for private donations, subjects are asked whether they would consider donating their own money to the World Resources Institute. If they reply affirmatively, they receive an unexpected \$0.50 bonus and are given the chance to donate the bonus or to keep it.<sup>8</sup> In Experiment 2 for private donations, subjects

<sup>6</sup>The results displayed throughout the main text and appendix are for subjects who recognize climate change as at least a minor problem for either the United States or foreign countries (~95% of both recruited samples).

<sup>7</sup>Recruitment from Amazon Mechanical Turk involved posting a recruitment ad to the marketplace (see SI for the ad) that included a link to a survey hosted on the online survey platform Qualtrics. Workers read the ad and decided whether to click the link to take the survey. We cannot observe how many workers see the ad and do not click the link to take the survey; thus, we cannot report a response rate.

<sup>8</sup>To measure how often subjects who say they are not interested in donating money change their mind when presented with a bonus, 10% of subjects who said they were not willing to donate were randomly selected to receive the bonus and were then asked whether they wanted to donate or keep it. We account for unequal sampling into the behavioral measure by imputing the donation behavior for subjects not given the opportunity to donate (see SI for details).

pre-committed to split a potential \$20 bonus between a donation to a domestic climate program, a foreign program, and/or their own payout. We use this second, multi-dimensional donation outcome to make opportunity costs salient and to rule out the possibility that an expressive benefit of supporting any mitigation when no choice is available attenuates treatment effects.<sup>9</sup> For public spending, we maintain the same location treatment and ask subjects to write to their congressperson supporting or opposing government spending for climate programs and to click a link to submit it in both experiments.<sup>10</sup>

## **Experimental Treatments**

In Experiment 1, we randomly assign<sup>11</sup> whether the mitigation program for which a donation and letter is requested will be implemented domestically (United States), in a friendly foreign country (India), or in an adversarial foreign country (China).<sup>12</sup> Second, we randomly assign some subjects to receive information about the cost-effectiveness of programs in their assigned country. Treated subjects are told about either the low (United States), medium (India), or high (China) cost-effectiveness of programs (see Table S4 for the experimental groups).

Experiment 2 has a different structure with five experimental groups. A pure control group received no informational prime. All other experimental groups receive a baseline prompt about the shared, global benefits of climate change mitigation. Within the remaining four treatment groups, we assigned two treatment arms independently (Table S5). Unlike Experiment 1, subjects assigned to the cost-effectiveness treatment received information about the cost-effectiveness of programs implemented both domestically and in rapidly developing countries. Subjects assigned to the co-benefits treatment received a prompt highlighting the local co-benefits of providing climate change mitigation, like a reduction in air pollution.<sup>13</sup>

## **Estimation**

To estimate our treatment effects, we use non-parametric randomization inference without covariate adjustment, which does not make any distributional assumptions about the data generating process (see Athey and Imbens 2017 for a recent discussion). We assume the sharp null hypothesis has no effect for any subject, which allows us to posit a full schedule of potential outcomes. We then exactly

<sup>9</sup>We explore additional multinomial analyses of this outcome, but results do not differ significantly from those reported below.

<sup>10</sup>In both experiments, we randomized the order of the public and private funding decisions. Half considered public funding first and the other half considered private donations first.

<sup>11</sup>No blocking was used in the randomization process.

<sup>12</sup>In our post-treatment survey, the proportion of subjects who perceived these countries favorably are 82%, 52%, and 32%, respectively.

<sup>13</sup>The treatment prompts, survey instruments, and manipulation checks (Tables S5 and 6) are available in the SI section called Experimental Design and Analysis Procedures.

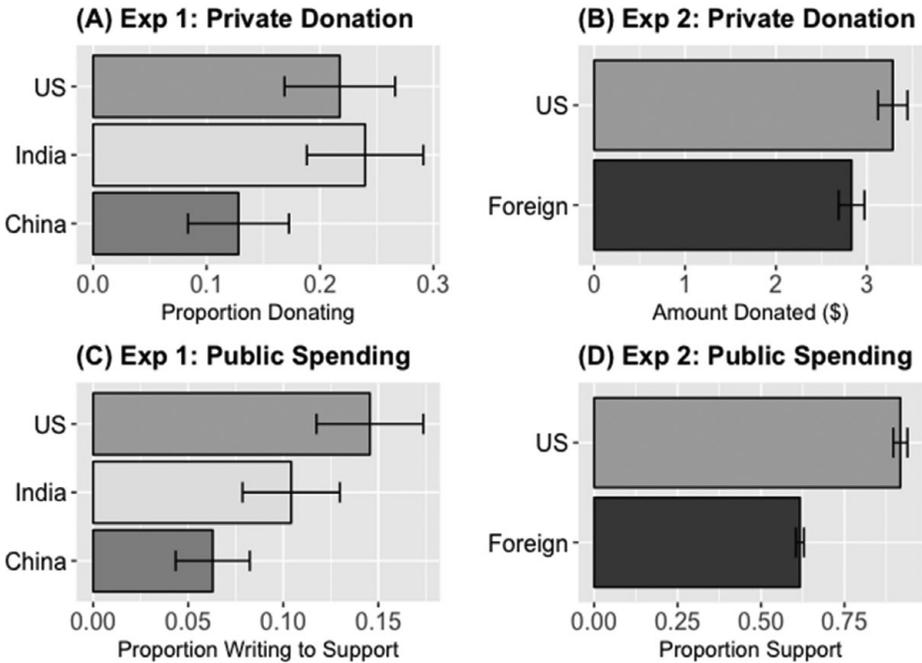


Figure 1

### Proportion of Subjects Supporting Climate Change Mitigation by Program Location.

replicate our randomization procedure, in this case simple random assignment, to assign each observed subject to a treatment condition assuming the sharp null hypothesis and record the observed average treatment in each of 10,000 trials. We use the resulting sampling distribution to calculate the one-tailed  $p$ -value of the actual observed difference in proportions or difference in means.

## RESULTS

### Location

All of our experiments show a baseline tendency to support mitigation at home rather than abroad (Figure 1). In Experiment 1 (displayed in Figure 1 (Panel A)), approximately 22% of subjects donated an unexpected \$0.50 bonus to support the U.S. program, compared with 24% for a program in India ( $te = 0.02$ ,  $p = 0.69$ ) and only 13% for a program in China ( $te = -0.09$ ,  $p = 0.03$ ). These results are restricted to the control group that did not receive information about the cost-effectiveness of programs. In Experiment 2 (displayed in Figure 1 (Panel B)), subjects in the pure control condition who were asked to split a potential \$20 bonus between a donation to a domestic program, a foreign program, and their own payout show a significant preference to act at home ( $diff = -\$0.45$ ,  $p = 0.02$ ).

Figure 1 (Panel C) shows the proportion of subjects in Experiment 1 who write a letter to elected officials in support of public spending, revealing an even stronger preference to act at home in the group not presented with information on cost-effectiveness. The proportion writing a note in favor of spending in the United States is 40% higher than the proportion writing a supportive note for India ( $te = -0.04$ ,  $p = 0.18$ ) and more than double the proportion in the China group ( $te = -0.10$ ,  $p = 0.01$ ). We find the expected results in the reverse order when considering letters *discouraging* spending (Figure S1).

Figure 1 (Panel D) shows the proportion of subjects in the pure control condition in Experiment 2 who state their support for public spending. This is the only outcome in any experiment for which the measure is attitudinal rather than behavioral, due to low uptake of the behavioral measure in Experiment 2 (see Table S1b–c for similar attitudinal items in nationally representative surveys). A staggering 91% of respondents supported government spending for programs located at home, while only 62% of respondents said they would support the U.S. government spending money on programs to mitigate climate change in rapidly developing countries ( $diff = -0.30$ ,  $p = 0.00$ ).

Together, these four sets of results show that the location of climate change mitigation significantly shapes behaviors related to private and public spending on mitigation. We further find that a strong home preference is consistent across subjects with different political preferences (see Figures S2–S4). Indeed, a home preference may be one of the rare points of bipartisan agreement related to climate change. Furthermore, we show that these results were not obtained because our subjects believe that the United States has a greater ability to implement programs compared to foreign countries (Table S7 and related discussion).

### Cost-Effectiveness

Next, we consider whether individuals act in response to information on cost-effectiveness. A manipulation check confirms that respondents understood this information and updated their beliefs on average (Table S7).<sup>14</sup> For private donations, cost-effectiveness information changes behavior as expected in most cases. For Experiment 1, displayed in Figure 2 (Panel A), learning that programs in China are the most cost-effective significantly increases the likelihood that the respondent donates their bonus ( $te = 0.08$ ,  $p = 0.04$ ). We did not have strong expectations about how subjects would react to information that programs located in India are “somewhat” cost-effective. Indeed, the probability of donating to a program in India after learning about cost-effectiveness matches the control group ( $te = -0.00$ ,  $p = 0.64$ , two-tailed). For donations to programs in the United States, surprisingly, we observe no decrease in the rate of donation after information about low cost-effectiveness is presented ( $te = 0.02$ ,  $p = 0.68$ ), demonstrating the robustness of a preference to act at home. On the other hand, cost-effectiveness

<sup>14</sup>This holds even for those respondents with a lower level of education.

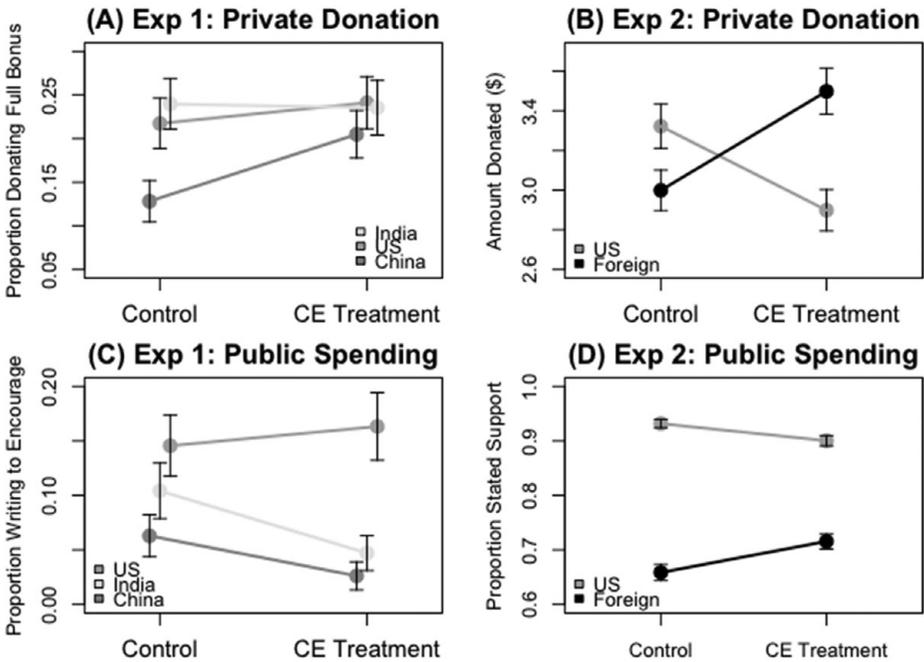


Figure 2

**Proportion of Subjects Supporting Climate Change Mitigation by Program Location and Cost-Effectiveness Treatment.**

information increases the probability of donating to foreign programs such that there are no differences in preferences for donations to China as compared to the U.S. program ( $te = -0.04$ ,  $p = 0.24$ ) or to India ( $te = -0.01$ ,  $p = 0.46$ ). Home preference is mitigated by information, but not reversed.

Figure 2 (Panel B) shows a strong and significant effect of cost-effectiveness information under the amended design of Experiment 2. Learning that foreign programs are the most cost-effective significantly increases the amount donated to those programs, while the effect on United States based programs is equal and opposite (foreign:  $te = \$0.50$ ,  $p = 0.00$ ; United States:  $te = -\$0.42$ ,  $p = 0.00$ ). Because respondents could keep any amount of their potential bonus, this equal and opposite effect did not obtain by construction. Subjects learn and act on information when other more cost-effective options for mitigation are available and global benefits are primed.

Turning to public spending, the effect of cost-effectiveness information is considerably more limited. Figure 2 (Panel C) shows that cost-effectiveness information actually reduces the likelihood that individuals write a letter in support of public spending on programs in India and China in Experiment 1 (India:  $te = -0.06$ ,  $p = 0.08$ , two-tailed; China:  $te = -0.04$ ,  $p = 0.97$ ). Similarly, we

see no change in the probability of supporting domestic programs, even though individuals are told that programs in the United States are the least cost-effective ( $te = 0.02$ ,  $p = 0.72$ ).

The results from Experiment 2, displayed in [Figure 2](#) (Panel D), are more consistent with expectations, though the effects are muted as compared to donations. Respondents are slightly less likely to support government spending on programs in the United States and slightly more likely to support government spending on programs abroad when learning about the relative cost-effectiveness of these programs (United States:  $te = -0.03$ ,  $p = 0.01$ ; Foreign:  $te = 0.06$ ,  $p = 0.00$ ). Even with this information, a large gap remains in support for programs based on location.

Although the location of a program has a large effect on individual donations to a mitigation program, learning about the cost-effectiveness of programs can eliminate or even reverse the effects of location in some cases. This is never the case, however, for public programs. The fact that cost-effectiveness information has an effect on donation behavior but not letter writing behavior, suggests that poor information about relative cost-effectiveness may contribute to a home preference, but for public spending there are other factors at play. We suggest two possibilities.

First, considering public spending on international transfers may prompt individuals to think about the spending their government could do domestically on the same issue or others. Second, it could remind people that other countries have governments that could spend funds in their own countries to combat climate change. The statements of around two-thirds of the individuals who wrote to their representatives discouraging public spending in Experiment 1 use this logic (see SI for more details).<sup>15</sup> Future research could parse these explanations by designing experiments to explicitly compare justifications for behaviors related to public and private spending on climate change mitigation as well as other public goods.

## Provisioning Benefits

Finally, we investigated whether the local co-benefits, or *provisioning benefits*, that obtain from climate change mitigation programs are driving our results. Individuals may prioritize the private benefits that accrue to countries that host mitigation programs—such as job creation and better local air quality—rather than the global benefits. We expect that priming individuals to think about provisioning benefits may strengthen the home preference, since individuals may be more inclined to support domestic programs and perhaps more opposed to foreign programs that provide exclusive benefits to foreign countries.

<sup>15</sup>In contrast, respondents tended to justify their opposition to donating by either citing that they themselves needed the money or that they simply did not know the organization well enough to donate.

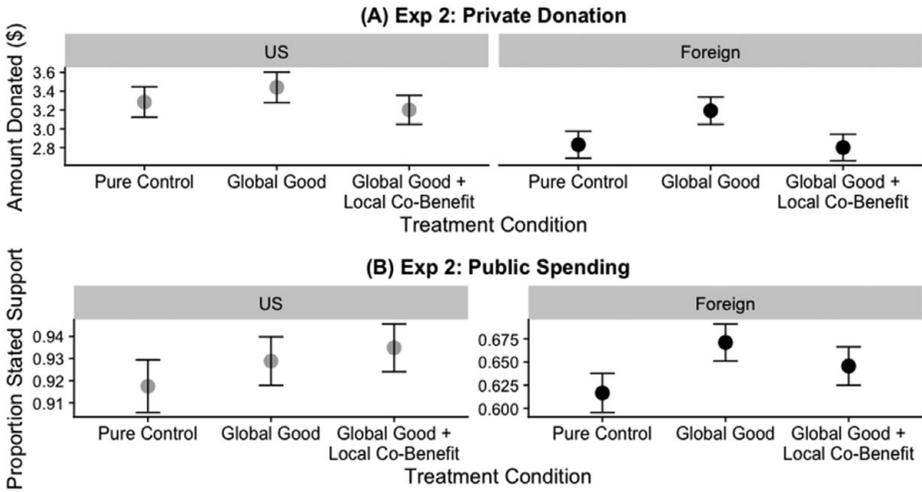


Figure 3

**Amounts Donated and Proportion of Subjects Supporting Climate Change Mitigation by Program Location and Provisioning Benefits Treatment.**

Only Experiment 2 contained an informational prime about provisioning benefits, which is always given when subjects are also provided information about the public goods nature of climate change mitigation (see Table S3). In Figure 3, the pure control group is provided with no informational primes, the control group (labeled in figure as “Global Good”) is provided with only information about the public goods nature of mitigation, and the local co-benefit group is provided with information about both the public goods nature of mitigation programs and provisioning benefits.

Figure 3 (Panel A) contains the findings for the donation outcome. For donations to U.S. programs, we cannot reject the null that providing information about the public goods nature of climate change mitigation does not change donation rates ( $te = \$0.16$ ,  $p = 0.50$ , two-tailed). Likewise, highlighting the local co-benefits of mitigation programs does not change donation rates by an amount that is inconsistent with the null ( $te = -\$0.12$ ,  $p = 0.78$ ), possibly because local benefits are already salient. By contrast, the public goods prime significantly increases donations to foreign programs ( $te = \$0.36$ ,  $p = 0.06$ ) and the provisioning benefits treatment significantly *decreases* donations to foreign programs ( $te = -\$0.31$ ,  $p = 0.02$ ). These results confirm that subjects on average perceive the benefits from climate programs to be rival.

The findings on the government spending outcome, displayed in Figure 3 (Panel B), show that highlighting the public goods nature of climate change mitigation does not increase support for U.S. programs ( $te = 0.01$ ,  $p = 0.24$ ), but does increase support for foreign programs at magnitudes inconsistent with random chance

( $te = 0.05$ ,  $p = 0.03$ ). The provisioning benefits treatment in contrast increases support for government spending on domestic programs and decreases support for government spending on foreign programs though these effects are not significant at traditional levels (United States:  $te = 0.01$ ,  $p = 0.21$ ; Foreign:  $te = -0.02$ ,  $p = 0.16$ ). There remains across all conditions a large and significant difference (note the different y-axis scales) between domestic programs (strongly supported) and programs located abroad (moderately supported).

## DISCUSSION

Although many Americans appear willing to act to support domestic mitigation efforts, our experiments show that this behavior weakens at the water's edge. These findings contribute to theoretical debates on providing public goods in at least two ways.<sup>16</sup> First, we build on the work on group identity and public goods to show that nationality is an important identity conditioning support for global public goods. Future work should explore the role of nationality as it pertains to support for other international public goods, such as foreign aid and global health spending. Second, we identify differences across actions in support of public spending and private donations. While previous work has primarily focused on whether private action crowds out support for public programs (see, e.g., Werfel 2017), we address differences in the factors that predict action across the two domains. We show that a home preference is particularly strong for public spending, but malleable for private donations. Future work can explore whether these differences obtain, for example, because individuals have unique preferences about spending their own money versus public funds or because they have strong beliefs that governments should be oriented towards domestic concerns.

Our work strongly suggests that politicians will be able to more effectively persuade the public to take action to mitigate climate change at home and will likely find that putting much effort into transfer schemes will significantly limit the coalition that can be assembled for ambitious action.<sup>17</sup> This has two main implications for policy and policy research. First, scholars may need to reconsider research<sup>18</sup> that for decades has focused on coordinated solutions to mitigation

<sup>16</sup>One additional implication is for research on information and individual behavior. There has been great skepticism about the role of information in shaping people's preferences. Our work has implications for this debate showing that people do seem to update their private behavior in response to new information, but other types of public behavior are more difficult to shape.

<sup>17</sup>Beyond climate change mitigation, our results also provide insight into the difficulty of generating cooperation for other international public goods, like the prevention of pandemic diseases (Pike et al. 2014), where prevention abroad is much more cost-effective than treatment at home, yet funding patterns also do not follow an efficiency logic.

<sup>18</sup>The economics literature assumes mitigation programs will be designed to take advantage of opportunities to mitigate at lower costs in alternate locations, but our study explains why we primarily see domestic offsets, even as part of policies like California's cap-and-trade program that is intended to provide "when, where, and what" flexibility (State of California Air Resources Board 2015).

that take advantage of cost-effective international transfers via mechanisms such as carbon markets (Flachsland, Marschinski, and Edenhofer 2009), technology transfers (Yang, Zili, and Nordhaus 2006), and carbon offsets (Kindermann et al. 2008). Second, transfers are the glue that holds recent climate agreements together and if there is weak support for such transfers in countries that must supply them, then the foundation for such agreements is on shaky ground. Although the main objections to transfers from the United States, such as those directed through the Green Climate Fund, have largely come from Republican politicians, our findings show broader resistance among the public to transfers as compared to acting at home. Over the longer term, we must conclude that more mitigation is likely to be accomplished by focusing on ambitious policies and programs at home that have public support, even if those policies are not optimal in terms of cost-effectiveness globally.<sup>19</sup>

## CONFLICT OF INTEREST STATEMENT

The authors did not use external funding or receive remuneration for the research. The authors report no conflicts of interest. No party had the right to review this research prior to publication.

## SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <https://doi.org/10.1017/XPS.2017.34>

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<sup>19</sup>Our experiments shed light on the microfoundations of emerging forms of cooperation, such as the coordinated voluntary national pledges of *domestic* actions under the Paris Accord.

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