




International commitments and domestic opinion: the effect of the Paris Agreement on public support for policies to address climate change

Dustin Tingley & Michael Tomz


To cite this article: Dustin Tingley & Michael Tomz (2020) International commitments and domestic opinion: the effect of the Paris Agreement on public support for policies to address climate change, *Environmental Politics*, 29:7, 1135-1156, DOI: [10.1080/09644016.2019.1705056](https://doi.org/10.1080/09644016.2019.1705056)

To link to this article: <https://doi.org/10.1080/09644016.2019.1705056>

 [View supplementary material](#) 

 Published online: 22 Dec 2019.

 [Submit your article to this journal](#) 

 Article views: 310

 [View related articles](#) 

 [View Crossmark data](#) 



International commitments and domestic opinion: the effect of the Paris Agreement on public support for policies to address climate change

Dustin Tingley^a and Michael Tomz^b

^aDepartment of Government, Harvard University, Cambridge, MA, USA; ^bDepartment of Political Science, Stanford University, CA, USA

ABSTRACT

How might voluntary international commitments affect domestic support for costly policies to address climate change? We investigated this question by studying the effect of the Paris Agreement on the American public. Our survey experiments supported three conclusions. First, voluntary international commitments shaped public opinion; public support for emissions control policies was much higher in scenarios where the U.S. government had joined the Paris Agreement than in scenarios where it had not. This effect held not only in the population as a whole, but also by political party. Second, although international agreements were influential in general, they were most effective at changing majority opinion about policies with intermediate costs. Finally, our experiments exposed the dangers of promising too much (overpledging) or too little (underpledging). These findings have important implications for the design and consequences of international agreements.

KEYWORDS Climate change; international relations; international agreements; voluntary; goals

Introduction

Carbon dioxide emissions are causing temperatures to rise, with potentially catastrophic consequences for the planet. In December 2015, countries attempted to address this problem by joining the Paris Agreement, a voluntary pact that allows each member to set its own emission-reduction goals and imposes no penalties on countries that fail to comply. This novel approach to international environmental law has inspired diverse reactions, ranging from hope to profound skepticism.

We used survey experiments to investigate how the Paris Agreement affects U.S. public support for costly policies to address climate change. Specifically, we randomized the existence and intensity of future U.S. commitments to the Paris

CONTACT Michael Tomz  tomz@stanford.edu
 Supplemental data can be accessed [here](#).

© 2019 Informa UK Limited, trading as Taylor & Francis Group

Agreement, and estimated how the commitments affected public support for policies that varied in their impact on emissions and cost to households.

Our experiments revealed three key findings. First, even voluntary international commitments can have powerful effects on domestic preferences. In our studies, U.S. public support for costly measures to fight climate change was much higher when the U.S. government had joined the Paris Agreement than when it had not. This conclusion was not preordained. The Paris Agreement is voluntary, with no explicit penalties for violating commitments. Nevertheless, Americans across the political spectrum – Democrats, Independents, and Republicans – were far more likely to embrace costly policies when their government had made a Paris pledge.

Second, international commitments are most likely to change majority opinion about policies with intermediate costs. In our experiments, most Americans welcomed climate policies that were inexpensive, regardless of whether their government had pledged or not. Likewise, most Americans rejected climate policies with large price tags, even when their government had promised to take such action. But when policies involved intermediate costs, pledges created majority support for measures that most of the country would have rejected without a pledge.

Finally, our experiments exposed the dangers of promising too much or too little. When countries pledge to reduce emissions by a certain amount, they create powerful reference points that observers use to judge policies. In our studies, overpledging (setting the bar too high) backfired by depressing public support for ambitious policies that nonetheless fell short of the announced target. Underpledging (setting the bar too low) backfired, as well, by legitimizing modest policies and undercutting more aggressive ones. Thus, our research exposes not only the benefits but also the risks of using international agreements to influence domestic opinion on crucial issues such as climate change.

In what follows, we develop hypotheses about how voluntary international agreements would affect public opinion. We test our predictions by analyzing data from three original survey experiments, and conclude by discussing the implications of our findings for future climate policy efforts, as well as future research on how international pledges affect domestic politics.

Theory

The Paris Agreement is *voluntary* in two important senses. First, each member has the freedom to propose how much, and in what ways, it will contribute to the collective goal of mitigating climate change. Earlier agreements, including the Kyoto Protocol of December 1997, imposed binding emissions targets on developed countries. The Paris Agreement instead involves ‘nationally determined contributions,’ i.e., targets countries set for themselves. The Paris Agreement is also voluntary in a second sense: it lacks

explicit enforcement mechanisms. The agreement does not stipulate legal or economic sanctions for members that fail to achieve the goals they articulated.

Some view the voluntary nature of the Paris Agreement as attractive. By giving each country the flexibility to set its own goals without penalties for noncompliance, the agreement attracted the participation of nearly every country in the world. Others regard the voluntariness of the agreement as a fatal flaw. If countries can set their own emissions targets – however trivial the targets might be – and ignore the targets with impunity, why would anyone expect the Paris Agreement to drive meaningful changes in climate policies?

Why might voluntary international commitments have an impact?

There are two main reasons why voluntary international commitments might prove consequential.¹ First, countries might honor their commitments out of a sense of moral responsibility or a ‘logic of appropriateness’ (March and Olsen 1998). Citizens and government leaders might find it wrong to break international promises, irrespective of the consequences, just as many individuals would rather not commit a crime, even if there were no chance of being caught.

A second mechanism emphasizes the ‘logic of consequences.’ Breaking a voluntary international agreement could prove costly, even if the agreement contained no legal or economic penalties for noncompliance. Most plausibly, countries could pay a reputational price for failing to meet their commitments (e.g. Axelrod and Keohane 1985, Tomz 2007b, Crescenzi 2018). Violators may have difficulty attracting partners for future endeavors, and they could experience forms of retaliation not specified in the agreement.

These two mechanisms are not mutually exclusive. Here, we estimate the effects of voluntary commitments without adjudicating how much stems from concerns about appropriateness, consequences, or both.

How might the effects vary by political party?

The impact of voluntary international commitments could vary across individuals, depending on their political orientations. In the U.S., the Republican party has pushed to weaken regulations on fossil fuels, while the Democratic party has called for stiffer regulations aimed at reducing carbon emissions. Researchers have found analogous differences in opinion between individuals belonging to the two parties (Dunlap and McCright 2008).

Given these differences in preferences, would we expect the impact of voluntary international commitments to vary by political party affiliation? On the one hand, one might think the Paris Agreement would have a bigger effect on Democrats than on Republicans, who have tended to resist emissions controls and argue that other priorities outweigh international

environmental pledges. On the other hand, the logics of appropriateness and consequences might resonate with all individuals. If so, voluntary commitments could prove influential for citizens across the political spectrum.

Cost as a constraint and a moderator

It is well known that individuals are sensitive to costs, not only when they behave as consumers in the marketplace, but also when they consider government policies. Previous research has found stronger support for a cleaner environment when there were lower costs associated with policies to achieve that goal (e.g. Kotchen *et al.* 2013). Moreover, when investigating the types of international environmental agreements citizens would support, Bechtel and Scheve (2013) found cost to be the most important variable.

What has gone largely uninspected is how international agreements might affect public sensitivity to costs, and vice versa. Would international agreements make citizens more or less responsive to variation in the costs of the policies under consideration? And would international commitments be most likely to transform public opinion about policies with low, moderate, or high costs?

On the one hand, international commitments seem most likely to change majority opinion about policies with intermediate costs. When a policy involves low costs, we expect that most citizens would be willing to pay, even without an international pledge. When a policy involves high costs, in contrast, we anticipate that most would be unable or unwilling to pay, regardless of whether their government had pledged. Between these extremes international pledges could prove decisive, creating majority support for policies that most citizens would oppose if the government not pledged.

On the other hand, commitments might be most effective in building majority support for costly policies. Suppose the public was generally reluctant to support policies with heavy price tags. In just those circumstances, an international commitment may supply the necessary nudge to get most of the public to approve. We test these alternative hypotheses below.

Goal setting, overpledging and underpledging

Signatories to the Paris Agreement set their own emissions-reduction targets. The literature in behavioral economics suggests why this type of goal setting might affect behavior, even in the absence of external enforcement. According to some behavioral economic models, goal setting helps individuals solve commitment problems by creating reference-point dependence, thereby exposing actors to disutility for failing to live up to their commitments (Kőszegi and Rabin 2006, Hsiaw 2013, Harding and Hsiaw 2014).²

One can apply this logic to climate politics. When parties to the Paris Agreement articulate emission-reduction goals, they create reference points

that citizens can use to judge government policies and outcomes. Thus, in addition to judging policies based on the distance between a proposal and their own ideal point (preferred level of emissions reduction), citizens may judge policies based on the distance between a proposal and whatever target their government established by making a public international pledge.³

If international commitments create reference points, it is interesting to consider how high or low to set the target. Lofty goals could inspire the public to demand radical reform, but overpledging (promising too much) could backfire by discrediting more practical proposals that fall short of the pledge. Underpledging (promising too little) could produce the opposite effect, by sapping public enthusiasm for change and legitimizing token efforts rather than deep reforms.⁴ To our knowledge, the literature has not yet addressed these questions, despite their theoretical and practical importance. Indeed, a recent review of how psychological theories are used in international relations does not cover goal setting at all (Kertzer and Tingley 2018).

Methodological challenges and the role of micro-level experiments

Of course, we are not the first to study the consequences of international agreements. A long literature in political science uses historical data to investigate how international agreements affect state behavior across many policy areas, from trade to human rights to the environment (for a review, see Simmons 2010; examples relating to environmental policy include Barrett 2003, Mitchell 2003). Scholars have hypothesized various mechanisms through which international agreements might influence domestic policy. These include mobilizing domestic interest groups, creating norms, and providing signals about optimal policy choices (e.g. Finnemore and Sikkink 1998, Keck and Sikkink 1999, Bearce and Cook 2018).

It is, however, challenging to establish a clear causal link between international agreements and subsequent state behavior (von Stein 2005, Simmons and Hopkins 2005, Chaudoin *et al.* 2018). One complication is that the choice to join an international agreement is endogenous, making it difficult to measure whether joining has a positive, negative, or neutral effect. Furthermore, numerous domestic and international economic forces affect policy, making it difficult to separate the effects of agreements from other confounding variables.

In light of these methodological problems, researchers have begun using survey experiments to study how international commitments affect public support for domestic and foreign policies (e.g. Tomz 2007a, 2008, Wallace 2013, Chaudoin 2014, Chilton 2015, Kreps and Wallace 2016, Chilton and Versteeg 2016, Chu 2019, Tomz and Weeks 2019). In these types of studies, participants read a vignette in which the researcher has randomized the presence or absence of an international commitment. By comparing how

citizens respond to these different contexts, one can estimate how international commitments affect public opinion. We employ this empirical strategy to study the impact of the Paris Agreement.

Design of experiment 1

To study whether and how a Paris pledge could work, we embedded experiments in surveys of U.S. adults in November–December 2018. Respondents were recruited by Lucid (Coppock and McClellan 2019), which used quota sampling to approximate the U.S. adult population with respect to gender, age, race/ethnicity, and region.⁵

We randomly assigned some respondents to consider a hypothetical future in which the U.S. had joined the Paris Agreement and pledged to reduce emissions. Others considered a hypothetical future in which the U.S. refused to join the agreement and refrained from making a pledge. We then measured opinions about various policy options.

Our study focused on the U.S. for several reasons. First, the U.S. emits more carbon than any country other than China, and U.S. carbon consumption per capita is among the highest in the world. To address global climate change, it is important to understand under what conditions Americans would support costly action to curtail their own emissions. Second, although U.S. leadership under President Barack Obama contributed to the Paris Agreement (Parker and Karlsson 2018), his successor, President Donald Trump, announced in June 2017 that the U.S. would withdraw from the agreement. Trump's decision opened a unique research opportunity: the ability to construct some vignettes in which the U.S. remained outside the agreement, and others in which a future U.S. administration (re)joined the agreement.

In the remainder of this section we describe Experiment 1. This initial experiment ($N = 2,230$) served as a template for two follow-up experiments, described later in the article.⁶

In Experiment 1, all respondents read the following preamble.

The Paris Agreement is an international agreement about climate change. Every country that joins the agreement promises to contribute to the worldwide goal of fighting climate change, by developing and carrying out a plan to reduce its emissions of carbon dioxide as quickly as possible.

The Paris Agreement does not specify any legal or economic penalties for countries that violate their promises to reduce emissions.⁷

In the future, the U.S. government must decide whether to join the Paris Agreement and whether to pass new laws to reduce U.S. emissions of carbon dioxide. On the following screens, we will describe one approach the U.S. government could take in the future and ask whether you approve or disapprove.

We then randomly assigned respondents to one of two conditions: the *Pledge* condition or the *No Pledge* condition. In both cases, we included attention checks to confirm that respondents comprehended the treatment. The *Pledge* condition said:

In 2021, the U.S. government announced that it would join the Paris Agreement. When it officially joined later that year, the U.S. said: “As a member of the Paris Agreement, we pledge to reduce U.S. emissions of carbon dioxide by 25% within ten years.”

We selected a target of 25% for two reasons. First, it resembled the original commitment the U.S. made in 2015, when President Barack Obama pledged to slash U.S. emissions between 26 and 28% by the year 2025. Second, other countries have made pledges of similar magnitudes, with similar time frames.

In contrast, the *No Pledge* condition said:

In 2021, the U.S. government announced that it would not join the Paris Agreement. The U.S. said: “We will not become a member of the Paris Agreement, and we do not pledge to reduce U.S. emissions of carbon dioxide.”

After reading whether the U.S. had pledged or not, we enjoined: ‘Assuming that happened, we would like to know what you think the U.S. government should do next.’

We then asked respondents to compare two options, which we called Policy A and Policy B. One option would reduce emissions by 25% but increase household energy costs by \$32 per month;⁸ the other would maintain the status quo, without affecting U.S. emissions or energy costs.⁹ The sentences in brackets, which refer to the U.S. pledge, were administered only in the *Pledge* condition.

Policy A: Pass new laws that would reduce emissions by 25% and increase household energy costs by \$32 per month. [This policy would honor the pledge the U.S. had previously made to reduce emissions by 25%.]

Policy B: Do not pass any new laws to reduce emissions. This policy would not affect emissions, and it would not affect energy costs. [This policy would violate the pledge the U.S. had previously made to reduce emissions by 25%.]

After presenting a table that summarized the two policies, we asked members of the *Pledge* condition: ‘Assume the U.S. government joined the Paris Agreement and pledged to reduce emissions by 25%. Which policy would be better to do next?’ Likewise, we asked members of the *No Pledge* condition, ‘Assume the U.S. government did not join the Paris Agreement and did not pledge to reduce emissions. Which policy would be better to do next?’ The options were ‘Policy A would be much better, Policy A would be slightly better, Policy B would be slightly better, or Policy B would be much better.’

After measuring preferences over those two options, we introduced a third possibility, Policy C, which would reduce emissions by 10% but increase household energy costs by \$10 per month.¹⁰ As before, the sentence in square brackets appeared only to respondents in the *Pledge* condition.

Policy C: Pass new laws that would reduce emissions by 10% and increase household energy costs by \$10 per month. [This policy would violate the pledge the U.S. had previously made to reduce emissions by 25%.]

We then asked respondents to choose between Policy A and Policy C, and between Policy B and Policy C.¹¹

Two features of this experimental design deserve special mention. First, the design separated the initial decision about joining the Paris Agreement from subsequent decisions about emission-control laws. We randomized whether the U.S. had made a Paris commitment or not, and traced the downstream effects of that decision on support for costly policies to reduce emissions. Second, the experimental design required participants to choose between pairs of policies. This task simulated the kinds of tough choices leaders and citizens will need to make in the future, while also increasing attentiveness and data quality (Hainmueller *et al.* 2015).

Findings from experiment 1

We now summarize the findings from our first experiment. The top portion of [Figure 1](#) shows how people responded to the choice between cutting emissions by 25% or taking no action.¹² In the *No Pledge* condition, a majority (64%) opted to cut emissions, despite reading that such action would increase energy costs for the typical American household by \$32 per month. Support for action was even higher (78%) when the government had previously made a Paris pledge. In our experiment, pledging increased public support for action by 14 percentage points.

This pattern reveals several important features about the politics of climate change in the U.S. Notably, most Americans would support costly action to mitigate climate change, even if the U.S. remained outside the Paris framework. Nevertheless, making a pledge could enlarge this majority, even though the Paris Agreement specifies no legal or economic penalties for countries that violate their verbal commitments.

The middle graph in [Figure 1](#) summarizes how respondents chose when considering whether to cut emissions by 25% at a cost of \$32 per month, or cut emissions by only 10% at a cost of \$10 per month. When the government abstained from Paris, slightly more than a third of citizens preferred the more ambitious action. When the government entered the agreement and promised to cut emissions by 25%, however, nearly two-thirds of Americans embraced

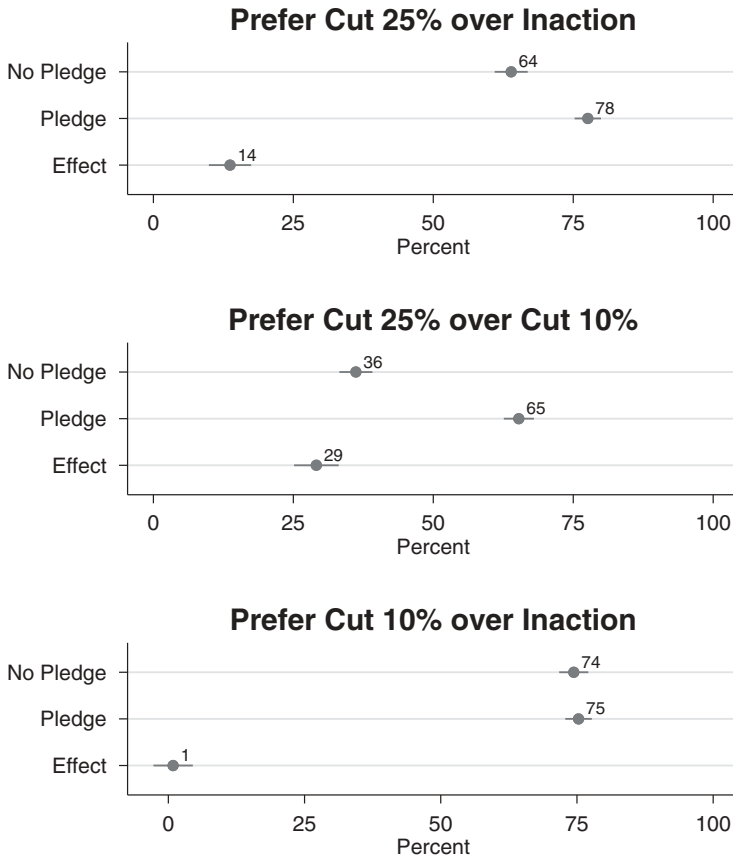


Figure 1. Effect of pledge on policy preferences. The top panel of Figure 1 shows the percentage of respondents who preferred to cut 25% over inaction when the U.S. had not pledged ($N = 1,020$), and when the U.S. had pledged ($N = 1,210$). The second panel shows how the same respondents chose between cut 25% and cut 10%, and the third panel shows how they chose between cut 10% and inaction. In all three panels, effect is the difference between pledge and no pledge. The dots are estimates, and the dark horizontal bars are 95% confidence intervals.

this more significant change in policy. In our study, joining the Paris Agreement boosted support for emissions cuts of 25% by 29 percentage points, transforming a clear minority into a clear majority.

This pattern, too, has important implications for climate politics. Although most Americans want to do something about climate change, they do not instinctively incline toward the more substantial—and costly—options. Most would prefer modest action at a modest price over more substantial action at a higher price. In light of such preferences, an ambitious pledge could productively shift majority opinion from cheaper policies that would fall short of the pledge, toward costly policies that would honor the pledge.

The bottom portion of [Figure 1](#) summarizes reactions to the final policy pairing: cutting emissions by 10% versus eschewing action entirely. Roughly three-quarters of respondents preferred the 10% option even with the price tag of \$10 per month. Here, the Paris Agreement had no effect: citizens were just as likely to support a 10% cut whether or not the U.S. had made a Paris pledge.

We can gain additional insights by comparing the three graphs in [Figure 1](#). In the top and bottom graphs, a majority of citizens favored action over inaction, even in the absence of a Paris pledge. Nevertheless, the size of the majority declined with the costliness of action. Faced with a choice between cutting emissions or not, 74% of citizens preferred cuts that would cost \$10 per month (bottom graph), but only 64% preferred cuts that would cost \$32 per month (top graph). Later, we treat the question of cost more thoroughly by analyzing a follow-up experiment in which we varied the costs of policies while holding their effects on emissions constant.

The data also qualify our findings about the effects of Paris. Pledging to reduce emissions by 25% increased support for a policy that did exactly that, compared to a policy that did nothing (inaction, in the top graph) or fell short of the pledge (cut 10%, in the middle graph). In contrast, pledging to reduce emissions by 25% did not alter how the public thought about doing nothing versus cutting by only 10%. This null finding suggests that the effect of a pledge may vary, depending on whether the pledge is more or less aggressive than the policies being compared. We develop this idea later by presenting follow-up experiments that randomize the strength of the pledge relative to the policy options.

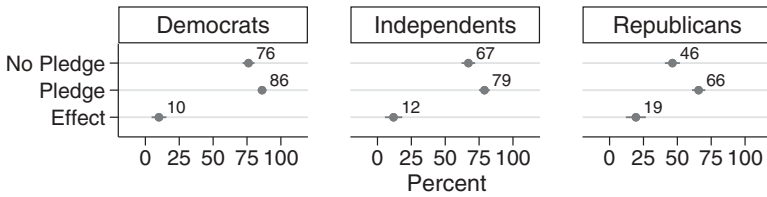
Findings from experiment 1, by political party

We conclude our analysis of the first experiment by testing whether our main conclusions held not only in the population as a whole, but also by political party. [Figure 2](#) splits the sample into Democrats (36% of the sample), Independents (34% of the sample), and Republicans (30% of the sample).

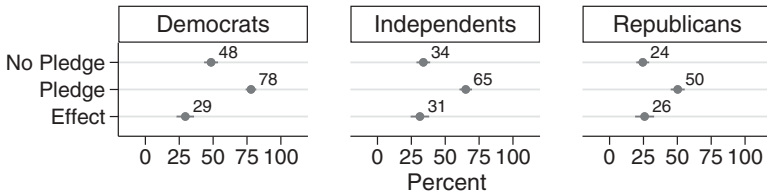
The first row of graphs shows how members of each partisan group chose between cutting emissions by 25% and refraining from passing new laws. In the *No Pledge* condition, support for action was highest among Democrats (76%), intermediate among Independents (67%), and lowest among Republicans (46%). This pattern is consistent with earlier work, which found that support for controlling emissions declines as one moves from left to right across the American political spectrum (Dunlap and McCright 2008).

Although support for action varied by party, the pledge proved consequential for all three groups. When choosing between a costly policy of reducing emissions by 25% or no policy at all, the existence of a U.S. government pledge increased support for the 25% cut option by 10 percentage points among Democrats, 12 percentage points among

Prefer Cut 25% over Inaction



Prefer Cut 25% over Cut 10%



Prefer Cut 10% over Inaction

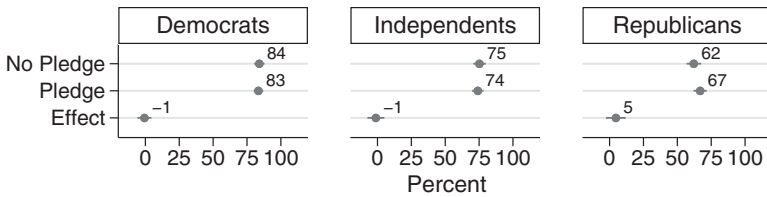


Figure 2. Effect of pledge on policy preferences, by party. For each political party, the top panel shows the percentage of respondents who preferred cut 25% over inaction when the U.S. had not pledged, and when the U.S. had pledged. The second panel shows the percentage of respondents who preferred cut 25% over cut 10%, and the third panel shows the percentage of respondents who preferred cut 10% over inaction. Effect is the difference between pledge and no pledge.

Independents, and a remarkable 19 percentage points among Republicans. These treatment effects created a Republican majority for costly action, while strengthening the preexisting majorities among Democrats and Independents. Overall, the first row of graphs in [Figure 2](#) confirms that pledges shape opinion not only in the aggregate, but also within each partisan group.

The second row of graphs in [Figure 2](#) considers the choice between 25% cuts and 10% cuts. As before, policy preferences varied predictably by political party. Nevertheless, in the *No Pledge* condition, a policy of 25% cuts failed to garner a majority in any of the three political groups. Even

Democrats, traditionally the strongest proponents of climate action, preferred the less costly alternative of cutting emissions by only 10%. Once again, the Paris pledge transformed opinion in all three groups; it manufactured majorities among Democrats (78%) and Independents (65%), while making Republicans collectively indifferent between the 25% and the 10% options.

Finally, the third row of [Figure 2](#) shows how respondents weighed the choice of inaction versus cutting emissions by 10%. Although the desire for action was strongest among Democrats, majorities in all three groups preferred 10% cuts to doing nothing. Moreover, support for action remained roughly the same, regardless of whether the government had or had not pledged to reduce emissions by 25%. Thus, despite partisan differences over climate policies, our main conclusions about the Paris Agreement held not only in the aggregate, but also within each political subgroup.

Experiment 2

For additional insight we administered a follow-up experiment that varied the cost of emissions controls. This new experiment ($N = 1,574$) randomized whether laws to curtail emissions by 25% would increase energy costs for the average household by \$16, \$64, or \$128 per month. All other features were identical to Experiment 1, including that cutting emissions by 10% would cost \$10 per month and that inaction would not affect emissions or energy prices. We combined data from Experiment 1 (cost \$32 per month) and Experiment 2 (cost \$16, \$64, and \$128 per month) to study the effects of the Paris Agreement under many cost scenarios.

[Figure 3](#) shows how support for a policy to reduce emissions by 25% varied as function of the pledge and as a function of costs. The top row of graphs reveals that most participants in the *No Pledge* condition preferred the 25% reduction option over inaction, even when cutting emissions would impose significant economic burdens on American households. As expected, though, costs caused enthusiasm to wane, from 68% when action would cost \$16 per month, to only 52% when action would cost \$128 per month.

Although costs undermined support for action, they did not moderate the effect of the pledge on the choice between inaction and a 25% reduction. In our study, a U.S. government pledge caused the pro-action coalition to swell by 14–15 percentage points, regardless of whether action would cost as little \$16 or as much as \$128. Earlier, we hypothesized that the pledge might be most potent for policies that would involve intermediate costs. The top row of graphs in [Figure 3](#) does not support this hypothesis, at least for the range of costs we considered.

The bottom row of graphs in [Figure 3](#) corroborates our findings about sensitivity to costs. We asked respondents to choose between 25% cuts,

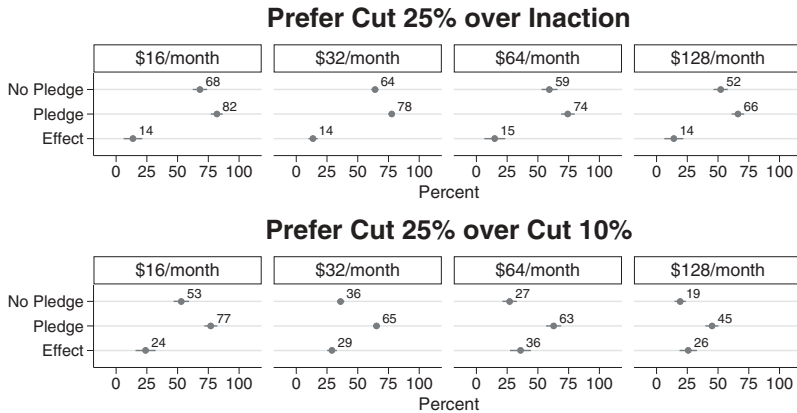


Figure 3. Effect of pledge, by cost of cutting emissions by 25%. These figures show how people responded when cut 25% was portrayed as costing the average household \$16, \$32, \$64, or \$128 per month. The top panel shows the percentage of respondents who preferred cut 25% over inaction when the U.S. had not pledged, and when it had pledged. The second panel shows the percentage of respondents who preferred cut 25% over cut 10% when the U.S. had not pledged, and when it had pledged. Effect is the difference between pledge and no pledge. The figure is based on 2,230 observations from Experiment 1 (cost \$32/month) and 1,574 observations from Experiment 2 (cost \$16, \$64, or \$128/month).

which varied in cost, and 10% cuts, which always cost \$10 per household. Given this menu, most respondents were willing to pay \$16 per month for the more ambitious option, but as costs escalated, support for 25% cuts plummeted. In our study, only 27% would tolerate a cost of \$64 per month, and only 19% would countenance a cost of \$128 per month.

The bottom row of graphs in [Figure 3](#) also suggests that pledges changed majority opinion only when policies involved intermediate costs. When the 25% reduction policy would cost only \$16 per month, most citizens favored that option even without the pledge. Conversely, when achieving a 25% reduction would cost \$128 per month, a majority rejected that option even in the presence of a pledge. In both cases, the pledge shifted opinion but did not transform a minority into a majority.

The political implications were more dramatic for policies with intermediate costs. When we presented the 25% reduction policy as costing either \$32 or \$64, a majority of citizens in the *No Pledge* condition rejected that option. At those same cost levels, most citizens in the *Pledge* condition embraced the 25% option. Thus, for costs of \$32 and \$64, the pledge manufactured majorities where none had existed previously. To the extent that policy in democracy reflects—or aspires to reflect—the will of the majority, our experiments suggest that pledges might make the biggest

political difference for policies whose costs are neither too low nor too high.¹³

Experiment 3

In the first two experiments, the U.S. government either eschewed the Paris Agreement or pledged to reduce emissions by 25%. We found that this particular pledge increased support for cutting emissions by 25%, but did not make citizens more likely to choose 10% cuts over the status quo (a three-quarters majority expressed this preference regardless of pledge condition). These patterns suggest that the effectiveness of a pledge may depend on whether the pledge was more ambitious, less ambitious, or in sync with the policies being considered.

To explore this possibility, our third experiment ($N = 1248$) randomized the level of emissions reductions the U.S. promised to achieve. Some respondents read a scenario in which the U.S. committed to reduce emissions by 10%. Others received a vignette in which the U.S. promised to curtail emissions by 30%. All other aspects of the experimental design remained the same as in Experiment 1, including the three policy options and their associated costs. By combining the data from this experiment with the data from Experiment 1, we were able to infer how the ambitiousness of the pledge affected preferences over policies.

Figure 4 summarizes the choices citizens made when the government refused to pledge, and when the government pledged to slash emissions by 10%, 25%, or 30%. The top graph in Figure 4 reveals a ‘backwards-C’ pattern. The share of citizens who preferred a 25% cut over inaction was highest when the U.S. pledged either 10% or 25%. What accounts for this pattern? Promising 10% increased support for action by accentuating the distinction between a 25% cut (which would have honored the pledge) and inaction (which would have violated the pledge). Promising 25% accentuated the same distinction and evoked the same response. Promising 30% backfired, however, by eroding the distinction between the two policy options, both of which would have abrogated the pledge. Thus, the top graph in Figure 4 illustrates the dangers of overpledging.

The middle graph of Figure 4 demonstrates the dangers of underpledging. Absent a pledge, 36% of respondents preferred the policy that cut emissions by 25% over the policy that cut emissions by 10%. Relative to this baseline, pledging 10% proved counterproductive. By promising to curtail emissions by 10%, the government created a reference point that validated just such a policy, causing support for more ambitious action to decline by 8 percentage points. Ironically, if the goal is to galvanize public support for deep reductions in emissions, our experiment suggests that modest pledges may be worse than no pledges at all.

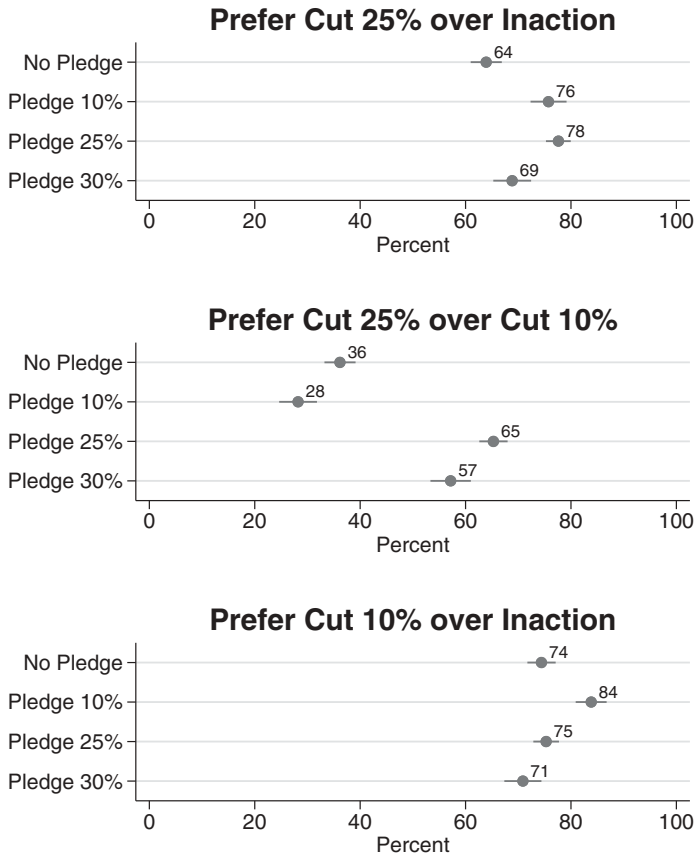


Figure 4. Support for policies, by ambitiousness of pledge. The figure shows how people responded when the government did not pledge, or pledged to reduce emissions by 10%, 25%, or 30%. For each of these scenarios, the top panel shows the percentage of respondents who preferred cut 25% over inaction; the second panel shows the percentage of respondents who preferred cut 25% over cut 10%; and the third panel shows the percentage of respondents who preferred cut 10% over inaction. Effect is the difference between pledge and no pledge. The figure is based on 2,230 observations from Experiment 1 and 1,248 observations from Experiment 3.

As expected, pledging 25% proved far more productive. By driving a wedge between the 25% option (which would have honored the commitment) and the 10% option (which would have violated the commitment), pledging 25% led nearly two-thirds of the nation to embrace the more ambitious policy option. Finally, the middle row of [Figure 4](#) reconfirms that overpledging has downsides. By establishing a lofty reference point that neither policy satisfied, the 30% pledge actually resulted in less support for the 25% option than what we observed when the government pledged only 25%.

The bottom graph of [Figure 4](#) considers the choice between 10% cuts and the status quo. Here, too, we observe a ‘backward C.’ Public willingness to cut by 10% was strongest when that policy would satisfy the pledge while inaction would not. Overpledging completely erased the effect, however, by creating a scenario in which neither alternative met the announced benchmark.

These findings have profound implications for the political dynamics of pledges. In our study, public support for cutting emissions by 25% was highest when the government pledged precisely that amount. One might think it would be politically prudent to pledge less and subsequently aspire to exceed the benchmark; or to pledge more, with the understanding that actual policies might fall short of the official target. Instead, we found that both underpledging and overpledging reduced support for 25% cuts by blurring the distinction between that policy and the alternatives.

Our findings may also rationalize the ‘ratcheting’ provisions in the Paris Agreement. Instead of issuing a single, once-and-for-all pledge, members of the agreement set initial emissions targets, with the option of making more ambitious pledges (ratcheting upward) in the future. By giving countries the flexibility to strengthen their pledges down the road, the Paris Agreement weakens the temptation to overpledge today while creating space for more ambitious targets in the future.

Conclusions and future research

How do international commitments affect domestic politics? We explored this question by investigating how the Paris Agreement affects domestic support for costly emission control policies.

Our experiments produced three main conclusions. First, voluntary international agreements can have powerful effects on domestic preferences. Participants in our experiments were far more likely to support emission control policies when the U.S. had joined the Paris Agreement than when it had not, even though the Paris Agreement does not specify legal or economic penalties for failing to comply. Moreover, agreements changed the preferences of citizens across the political spectrum, from Democrats to Independents and Republicans. Thus, ostensibly unenforceable international pledges can shape the domestic political landscape.

Second, international commitments were most effective at changing majority opinion about policies that were neither too expensive nor too cheap. In our studies, most respondents rejected policies that entailed heavy costs, regardless of whether or not their government had previously pledged. Most respondents also embraced inexpensive policies, not only when their government had pledged but also when it had refrained. But when costs fell in the intermediate range, international commitments

transformed the majority, by creating majority support for policies that most of the public would otherwise reject. This finding has important implications for understanding not only whether but also when voluntary international agreements are most likely to matter.

Finally, our experiments underscored the risks of setting the bar at the wrong level. Setting the bar too high backfired by depressing public support for policies that would make a real difference but fall short of the lofty, unattainable pledge. Setting the bar too low had its own perverse effects, by obscuring the distinction between modest actions and more ambitious ones. To get the most out of international commitments, governments must calibrate their promises carefully, pledging no more nor less than they hope to achieve.

The experimental methods we employed here could be adapted to study other features of international agreements. For instance, some have hypothesized that governments and NGOs enforce voluntary agreements by threatening to ‘name and shame’ noncompliers. Elsewhere (Tingley and Tomz 2019), we test this hypothesis by using experiments to estimate how international naming and shaming affects domestic support for climate policies. Likewise, researchers could use experiments to study ‘pledge and review’ mechanisms, as in the foundational work by Barrett and Dannenberg (2016).

Future experiments could also shed additional light on the consequences of including enforcement provisions in international agreements. In the preface to our first experiment, we randomly told some participants that the Paris Agreement was voluntary, while not mentioning this fact to others. This additional sentence proved inconsequential, so we maximized statistical power by pooling respondents who received the sentence with respondents who did not. But this null effect suggests several topics for future research. Did most people assume the agreement was voluntary, whether they received the sentence or not? Were respondents motivated primarily by a logic of appropriateness, rather than a logic of consequences? Did respondents expect that violating the Paris pledge would result in serious costs, even though the agreement did not specify costs? More generally, how might the presence or absence of enforcement clauses affect public willingness to comply with international agreements? Future studies could answer these questions.

Experiments could also reveal whether international pledges make citizens more or less likely to condition their behavior on the conduct of other nations. Prior research has shown that citizens are more likely to support environmental action when other countries do the same (Bechtel and Scheve 2013, Tingley and Tomz 2014, Bernauer and Gampfer 2015). It is less clear whether international pledges amplify or dampen this reciprocity mechanism. On the one hand, citizens might not feel bound by the Paris Agreement if other parties fail to comply. On the other hand, pledging could create normative and/or consequentialist reasons for the government to keep its

word, regardless of what other countries do. Future experiments could help resolve this debate.¹⁴

Researchers could use experiments to study how citizens respond to variation in who bears the costs of international commitments. Our experiments indicated how various emission control policies would affect the monthly energy bills of average American households. A common refrain, however, is that other actors should foot the bill for transitioning to a greener economy. How would international agreements affect support for policies if the costs fell primarily on high earners, large corporations, or the U.S. government? How might the distribution of costs affect public support for environmental policies more generally? These are important questions for future research.

Finally, our focus was on the United States. How might our results differ in other settings? For example, responsibility for past emissions might moderate the impact of certain features of our experiment. In countries that historically have not contributed much to emissions, people might feel less compelled to honor international climate pledges by their own government. Thinking about how past responsibility could interact with current goal setting would be an interesting avenue for future research.

Notes

1. On the causes and consequences of voluntary environmental commitments by corporations, rather than countries, see Prakash and Potoski (2006).
2. For additional insight about the effects of reference points, see the literatures on anchoring and prospect theory (e.g. Tversky and Kahneman 1974, Levy 1997, McDermott 2001a, 2001b).
3. Many accounts of public opinion dynamics suggest an important role for elite signals in influencing citizen preferences generally (e.g. Zaller 1992), and on climate issues in particular (Carmichael and Brulle 2017).
4. Other goal setting literatures might be interesting to investigate with respect to voluntary international agreements, including incremental ratcheting up of goals (Weitzman 1980) and the role of setting and evaluating medium versus long term goals (Hsiaw 2018).
5. For details about the sample and comparisons to the U.S. population, see the online appendix.
6. The online appendix presents the text of all experiments and attention checks. Here, we report sample sizes and statistical estimates for the subset of participants who passed the attention checks.
7. Half of the preambles included this sentence; the other half did not. Our estimates remained the same whether this sentence was included or not. Thus, throughout, we maximize statistical power by pooling respondents who received this sentence with respondents who did not.
8. There are many estimates of the cost of reducing U.S. emissions by around 25–28%. In Experiment 1, we chose an intermediate cost: higher than suggested by Resources for the Future (Chen and Hafstead 2016), but lower than suggested

- by the Heritage Foundation (Dayaratna *et al.* 2016). In Experiment 2 we presented higher and lower costs per household, as in Bechtel and Scheve (2013).
9. We randomized which option was A and which one was B, but our conclusions did not depend on the ordering.
 10. We chose \$10 to convey that cutting emissions by 10% would cost less than cutting emissions by 25%. In Experiment 2 we varied the difference in cost between cutting emissions by 25% and cutting emissions by only 10%.
 11. After asking respondents to choose between policy options, we asked them to rate each option on a scale from 0 to 10. In the article, we analyze the choices respondents made, but our conclusions remained the same when we analyzed their ratings, as well.
 12. The treatment groups in our experiments were balanced with respect to demographic and attitudinal variables (see the online appendix). Consequently, in all figures we present the mean responses by treatment group, without adjusting for covariates.
 13. The online appendix presents [Figures 3 and 4](#) broken out by party.
 14. Indeed, some work suggests that backsliding by one country in the Paris Agreement might not pull down support in other countries (Mildenberger 2019).

Acknowledgments

For extremely helpful comments on earlier versions, we thank Thomas Bernauer, Alice Hsiaw, Aseem Prakash, the anonymous reviewers, participants at the Environmental Politics and Governance Conference, and seminar participants at the Hebrew University of Jerusalem.

conflict of interest

None

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Axelrod, R. and Keohane, R.O., 1985. Achieving cooperation under anarchy: strategies and institutions. *World Politics*, 38 (1), 226–254. doi:[10.2307/2010357](https://doi.org/10.2307/2010357)
- Barrett, S., 2003. *Environment and statecraft: the strategy of environmental treaty-making*. Oxford: Oxford University Press.
- Barrett, S. and Dannenberg, A., 2016. An experimental investigation into ‘pledge and review’ in climate negotiations. *Climatic Change*, 138 (1–2), 339–351. doi:[10.1007/s10584-016-1711-4](https://doi.org/10.1007/s10584-016-1711-4)
- Bearce, D.H. and Cook, T.R., 2018. The first image reversed: IGO signals and mass political attitudes. *The Review of International Organizations*, 13 (4), 595–619. doi:[10.1007/s11558-017-9293-0](https://doi.org/10.1007/s11558-017-9293-0)

- Bechtel, M.M. and Scheve, K.F., 2013. Mass support for global climate agreements depends on institutional design. *Proceedings of the National Academy of Sciences*, 110 (34), 13763–13768. doi:10.1073/pnas.1306374110
- Bernauer, T. and Gampfer, R., 2015. How robust is public support for unilateral climate policy? *Environmental Science & Policy*, 54, 316–330. doi:10.1016/j.envsci.2015.07.010
- Carmichael, J.T. and Brulle, R.J., 2017. Elite cues, media coverage, and public concern: an integrated path analysis of public opinion on climate change. 2001–2013. *Environmental Politics*, 26 (2), 232–252. doi:10.1080/09644016.2016.1263433
- Chaudoin, S., 2014. Promises or policies? An experimental analysis of international agreements and audience reactions. *International Organization*, 68 (1), 235–256. doi:10.1017/S0020818313000386
- Chaudoin, S., Hays, J., and Hicks, R., 2018. Do we really know the WTO cures cancer? *British Journal of Political Science*, 48 (4), 903–928. doi:10.1017/S000712341600034X
- Chen, Y. and Hafstead, M., 2016. Using a carbon tax to meet US international climate pledges, resources for the future. Available from: <https://media.rff.org/archive/files/document/file/RFF-DP-16-48.pdf>
- Chilton, A., 2015. The laws of war and public opinion: an experimental study. *Journal of Institutional and Theoretical Economics*, 171 (1), 181–201. doi:10.1628/093245615X14188909230370
- Chilton, A.S. and Versteeg, M., 2016. International law, constitutional law, and public support for torture. *Research and Politics*, 3 (1), 1–9. doi:10.1177/2053168016636413
- Chu, J., 2019. A clash of norms? How reciprocity and international humanitarian law affect American opinion on the treatment of POWs. *Journal of Conflict Resolution*, 63 (5), 1140–1164. doi:10.1177/0022002718789751
- Coppock, A. and McClellan, O., 2019. Validating the demographic, political, psychological, and experimental results obtained from a new source of online survey respondents. *Research and Politics*, 6 (1), 1–14. doi:10.1177/2053168018822174
- Crescenzi, M.J.C., 2018. *Of friends and foes: reputation and learning in international politics*. New York: Oxford University Press.
- Dayaratna, K., Loris, N., and Kreutzer, D., 2016. *Consequences of the Paris protocol* [online]. Heritage Foundation. Available from: <https://www.heritage.org/environment/report/consequences-paris-protocol-devastating-economic-costs-essentially-zero>
- Dunlap, R.E. and McCright, A.M., 2008. A widening gap: republican and democratic views on climate change. *Environment: Science and Policy for Sustainable Development*, 50 (5), 26–35. doi:10.3200/ENVT.50.5.26-35
- Finnemore, M. and Sikkink, K., 1998. International norm dynamics and political change. *International Organization*, 52 (4), 887–917. doi:10.1162/002081898550789
- Hainmueller, J., Hangartner, D., and Yamamoto, T., 2015. Validating vignette and conjoint survey experiments against real-world behavior. *Proceedings of the National Academy of Sciences*, 112 (8), 2395–2400. doi:10.1073/pnas.1416587112
- Harding, M. and Hsiaw, A., 2014. Goal setting and energy conservation. *Journal of Economic Behavior and Organization*, 107, 209–227. doi:10.1016/j.jebo.2014.04.012
- Hsiaw, A., 2013. Goal-setting and self-control. *Journal of Economic Theory*, 148 (2), 601–626. doi:10.1016/j.jet.2012.08.001
- Hsiaw, A., 2018. Goal bracketing and self-control. *Games and Economic Behavior*, 111, 100–121. doi:10.1016/j.geb.2018.06.005

- Keck, M.E. and Sikkink, K., 1999. Transnational advocacy networks in international and regional politics. *International Social Science Journal*, 51 (159), 89–101. doi:[10.1111/issj.1999.51.issue-159](https://doi.org/10.1111/issj.1999.51.issue-159)
- Kertzer, J.D. and Tingley, D., 2018. Political psychology in international relations: beyond the paradigms. *Annual Review of Political Science*, 21, 319–339. doi:[10.1146/annurev-polisci-041916-020042](https://doi.org/10.1146/annurev-polisci-041916-020042)
- Kőszegi, B. and Rabin, M., 2006. A model of reference-dependent preferences. *The Quarterly Journal of Economics*, 121 (4), 1133–1165. doi:[10.1093/qje/121.4.1133](https://doi.org/10.1093/qje/121.4.1133)
- Kotchen, M.J., Boyle, K.J., and Leiserowitz, A., 2013. Willingness-to-pay and policy-instrument choice for climate-change policy in the United States. *Energy Policy*, 55, 617–625. doi:[10.1016/j.enpol.2012.12.058](https://doi.org/10.1016/j.enpol.2012.12.058)
- Kreps, S.E. and Wallace, G.P., 2016. International law, military effectiveness, and public support for drone strikes. *Journal of Peace Research*, 53 (6), 830–844. doi:[10.1177/00223433166657405](https://doi.org/10.1177/00223433166657405)
- Levy, J.S., 1997. Prospect theory, rational choice, and international relations. *International Studies Quarterly*, 41 (1), 87–112. doi:[10.1111/isqu.1997.41.issue-1](https://doi.org/10.1111/isqu.1997.41.issue-1)
- March, J.G. and Olsen, J.P., 1998. The institutional dynamics of international political orders. *International Organization*, 52 (4), 943–969. doi:[10.1162/002081898550699](https://doi.org/10.1162/002081898550699)
- McDermott, R., 2001a. *Risk-taking in international politics: prospect theory in American foreign policy*. Ann Arbor: University of Michigan Press.
- McDermott, R., 2001b. The psychological ideas of Amos Tversky and their relevance for political science. *Journal of Theoretical Politics*, 13 (1), 5–33. doi:[10.1177/0951692801013001001](https://doi.org/10.1177/0951692801013001001)
- Mildenberger, M., 2019. Support for climate unilateralism. *Nature Climate Change*, 9 (3), 187. doi:[10.1038/s41558-019-0416-x](https://doi.org/10.1038/s41558-019-0416-x)
- Mitchell, R.B., 2003. International environmental agreements: a survey of their features, formation, and effects. *Annual Review of Environment and Resources*, 28 (1), 429–461. doi:[10.1146/annurev.energy.28.050302.105603](https://doi.org/10.1146/annurev.energy.28.050302.105603)
- Parker, C.F. and Karlsson, C., 2018. The UN climate change negotiations and the role of the United States: assessing American leadership from Copenhagen to Paris. *Environmental Politics*, 27 (3), 519–540. doi:[10.1080/09644016.2018.1442388](https://doi.org/10.1080/09644016.2018.1442388)
- Prakash, A. and Potoski, M., 2006. *The voluntary environmentalists*. New York: Cambridge University Press.
- Simmons, B., 2010. Treaty compliance and violation. *Annual Review of Political Science*, 13, 273–296. doi:[10.1146/annurev.polisci.12.040907.132713](https://doi.org/10.1146/annurev.polisci.12.040907.132713)
- Simmons, B.A. and Hopkins, D.J., 2005. The constraining power of international treaties: theory and methods. *American Political Science Review*, 99 (4), 623–631. doi:[10.1017/S0003055405051920](https://doi.org/10.1017/S0003055405051920)
- Tingley, D. and Tomz, M., 2014. Conditional cooperation and climate change. *Comparative Political Studies*, 47 (3), 344–368. doi:[10.1177/0010414013509571](https://doi.org/10.1177/0010414013509571)
- Tingley, D. and Tomz, M., 2019. *The effects of naming and shaming on public support for compliance with international agreements: an experimental analysis of the Paris Agreement*. Unpublished Working paper. Harvard University and Stanford University.
- Tomz, M., 2007a. Domestic audience costs in international relations: an experimental approach. *International Organization*, 61 (4), 821–840. doi:[10.1017/S0020818307070282](https://doi.org/10.1017/S0020818307070282)
- Tomz, M., 2007b. *Reputation and international cooperation*. Princeton, NJ: Princeton University Press.

- Tomz, M., 2008. *The effect of international law on preferences and beliefs*. Unpublished Working paper. Stanford University.
- Tomz, M. and Weeks, J., 2019. *Military alliances and public support for war*. Unpublished Working Paper. Stanford University and the University of Wisconsin–Madison.
- Tversky, A. and Kahneman, D., 1974. Judgment under uncertainty: heuristics and biases. *Science*, 185, 1124–1130. doi:[10.1126/science.185.4157.1124](https://doi.org/10.1126/science.185.4157.1124)
- von Stein, J., 2005. Do treaties constrain or screen? Selection bias and treaty compliance. *American Political Science Review*, 99 (4), 611–622. doi:[10.1017/S0003055405051919](https://doi.org/10.1017/S0003055405051919)
- Wallace, G.P., 2013. International law and public attitudes toward torture: an experimental study. *International Organization*, 67 (1), 105–140. doi:[10.1017/S0020818312000343](https://doi.org/10.1017/S0020818312000343)
- Weitzman, M.L., 1980. The “ratchet principle” and performance incentives. *The Bell Journal of Economics*, 11, 302–308. doi:[10.2307/3003414](https://doi.org/10.2307/3003414)
- Zaller, J.R., 1992. *The nature and origins of mass opinion*. New York: Cambridge University Press.