Shaming Paris: A Political Economy of Climate Commitments

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Abstract We use a formal model to explore leaders' incentives to set climate commitments and subsequently exert downstream mitigation effort. Since the Paris Agreement asks countries to make unilateral voluntary commitments, we investigate the domestic factors motivating climate pledges. We study a country with electoral competition between two parties, Green and Brown, who first make commitments to reduce emissions and then implement policies to meet their commitments. Voters anticipate the equilibrium policies each party will implement given the pledge. If downstream mitigation policies are insufficient relative to the commitment, the government is "shamed" by the international community. Several incentive channels arise when parties make commitments, as they have policy and electoral value. Parties can use commitments to tie the opposition's hands to implement preferential policies in the future. If parties care only about winning elections, they will exploit commitments to serve electoral needs, which paradoxically leads anti-environmental parties to implement more ambitious commitments.

The 2015 Paris Agreement aims to hold the increase in global average temperature to below 1.5–2° C relative to pre-industrial levels through national pledges to voluntarily reduce carbon emissions. As of 2021, 181 of 195 signatory states have submitted "nationally determined contributions" (NDCs) with the United Nations Framework Convention on Climate Change (UNFCCC). Early assessments of NDCs document substantial cross-country heterogeneity in the ambition and relative burden-sharing of mitigation commitments;[1] however, few studies attempt to explain this variation.[2] We explore leaders' incentives to set climate commitments and subsequently make costly efforts toward implementing those commitments.

Leaders' decisions to make climate commitments and ultimately see them through are undoubtedly complex. Consider the NDC of the United Kingdom, which in December 2020 committed the country to reducing economy-wide greenhouse gas emissions by at least 68 percent by 2030, compared to 1990 levels.[3] This commitment

1. Holz, Kartha, and Athanasiou 2018; Robiou du Pont and Meinshausen 2018.
2. Tørstad, Sælen, and Bøyum 2020.
3. "United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution," September 2022 <https://tinyurl.com/yr9bd4r5>.

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was made by then–Prime Minister and member of the Conservative Party Boris Johnson, who claimed that "the UK will be home to pioneering businesses, new technologies and green innovation as we make progress to net zero emissions, laying the foundations for decades of economic growth in a way that creates thousands of jobs."[4] Indeed, Johnson's ambition was a watershed moment for the world, as the UK became the first major economy to pass a net zero emissions law.[5]

However, less than three years later, incumbent Tory Prime Minister Rishi Sunak announced he would push back the cutoff for selling new petrol and diesel cars and the phasing-out of gas boilers, key policy considerations in meeting the net zero target.[6] Sunak's rollback was scrutinized as an attempt to relieve voters of anticipated costs of the green transition in the run-up to the country's next election. The Labour Party was perceived as the greener party, and liable to implement the costly policies to which the Conservatives had initially committed the country.[7] Sunak had hoped to position the Conservatives to consumers as a cheaper, albeit less green, alternative to a potential Labour government. Of course, in the July 2024 election, issues other than climate change dominated the electoral landscape; the Conservatives' ability to make the issue salient on the margin proved insufficient, and Labour won despite the perceived costliness of its carbon reduction policies.

We present a formal model probing the domestic motivations behind the setting of climate targets. Two parties, Green and Brown, compete for political office. They vary in their marginal costs of implementing mitigation policy: the Green party faces lower costs than the Brown party and is willing to commit to more expansive climate reforms ex ante. As the incumbent, one of these parties sets a national climate commitment; the party that wins the election then determines whether they want to implement domestic policy to meet that target. Voters support either the Green or the Brown party given the downstream mitigation measures induced by the nation's pledge. At the end of the game, nations imperfectly observe each leader's mitigation efforts and assess whether targets were met in a "global stocktake"; leaders deemed to have underdelivered relative to their national commitments are "shamed."

Our model is consistent with three central features of the Paris Agreement's structure. First is the notion that Paris seeks to recenter domestic politics in the implementation of international climate goals.[8] Leaders choose their own commitments rather than accepting the terms of legally binding reduction targets, as with the Kyoto Protocol,[9] which makes understanding the domestic political considerations surrounding the setting of commitments paramount. Second is the idea that leaders

4. "UK Enshrines New Target in Law to Slash Emissions by 78% by 2035," government press release, 20 April 2021 <https://tinyurl.com/yc532fxc>.
5. "UK Becomes First Major Economy to Pass Net Zero Emissions Law," government press release, 27 June 2019 <https://tinyurl.com/zkkbrdtr>.
6. "Rishi Sunak Announces U-Turn on Key Green Targets," *The Guardian*, 20 September 2023 <https://tinyurl.com/rfc579jw>.
7. "Sunak U-Turn on Green Policies Forces Labour to Revise Its Own," *The Guardian*, 20 September 2023 <https://tinyurl.com/4pdyfvwj>.
8. Falkner 2016.
9. Keohane and Oppenheimer 2016.

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first determine NDCs and then must enact policies designed to fulfill that commitment. In the model, the incumbent party sets a commitment and then costly effort into mitigation strategies to meet the target is exerted in the future. Third is that these goals are not enforced formally; climate laggards incur only reputational costs, known as "naming and shaming," for failing to meet their targets.[10] We consider how the domestic electoral competition between political parties entices leaders to set different commitments in the shadow of possible international shaming.

Our analysis uncovers two relevant mechanisms through which domestic politics affect climate commitments. First, leaders may tie the hands of the opposition party and pick commitments to bring downstream policy measures closer to their preferred outcomes. Even apart from electoral considerations, leaders may care about implementing climate goals on pure policy grounds. Leaders have policy preferences over possible levels of effort and can tailor their pledges to ensure that their preferred policies are implemented in the future. In particular, when elections are relatively insensitive to climate policy, the Green party can tie the hands of the Brown party after the election with an ambitious target. That is, the Green party can design their pledge in order to force the Brown party to enact policy closer to the Green party's policy preference.

A second set of incentives relates to the value of office-holding. If winning elections is leaders' dominant consideration, then they set commitments in order to maximize their electoral prospects based on the anticipated costs to voters of downstream mitigation measures. The Green party faces an electoral disadvantage relative to the Brown party in this regard because the Green party would ex ante prefer a more ambitious mitigation strategy than the median voter. The Brown party can leverage this advantage by counterintuitively embracing a lofty climate commitment. If the cost of being shamed is high enough, the Green party will try to fulfill more ambitious pledges, while the Brown party will not. The Brown party chooses an ambitious target, knowing it would not comply and would be shamed. However, the Green party would be willing to make costly mitigation efforts to meet the goal, and this makes the Green party electorally unattractive to the median voter. Interestingly, while the commitment itself is uniform across national parties, voters' *expectations* about each party's likelihood of meeting it are different, which generates electoral incentives for anti-environmental parties to exploit Paris's structure.[11] Ambitious climate commitments can therefore be leveraged to maximize electoral prospects based on how those commitments chart future national implementation measures and their subsequent costliness for voters.

By unpacking these mechanisms, our theoretical analysis explains how variation in observed climate commitments and subsequent policy outcomes arises. Given the Paris Agreement's structure, one country's commitment has no *direct* effect on the commitments of other countries. There is no reciprocity baked into the agreement's terms. Moreover, there is no international infrastructure to render these pledges

10. Bodansky 2016; Jacquet and Jamieson 2016.
11. Bagashka and Stone 2013.

"credible." Hence, heterogeneity in pledges, and in efforts to implement these pledges, is driven by variation in politics within nations. Our model points to changes in domestic fundamentals—like variation in the median voter's willingness to pay for climate policies, public support for climate policy as an electoral issue, parties' valuation of holding office, and parties' valuations of climate policy, among other parameters—which point to different incentives that may drive leaders to implement more or less ambitious climate commitments. It is these domestic forces that also ultimately guide the extent to which leaders see these commitments through.

We contribute broadly to the literature on the domestic and international political economy of climate agreements. Much of the recent work in climate politics focuses on public opinion.[12] Experimental work consistently finds that support for climate policy among both citizens and politicians is highly contingent on the expected costs.[13] Scholars have sought to identify consumers' willingness to pay for particular climate policies[14] and whether there exist broad "climate coalitions" in favor of climate-friendly policies.[15] We complement this work in two ways. First, we provide a theoretical rationale for leaders' politically optimal climate policies in the shadow of domestic support, which helps explain the intensity of mitigation policy that should be expected in equilibrium. Second, we demonstrate how leaders internalize voters' anticipated costs of implementing climate policy in setting their NDCs ex ante and how these costs may be leveraged for electoral gain.

Theoretically, our model fits squarely within the "two-level games" tradition of modeling international cooperation.[16] We characterize the effects of elections on the incentives to commit to international treaties.[17] Battaglini and Harstad demonstrate leaders' electoral incentives to sign "weak treaties" in which leaders overcommit but may underdeliver on their environmental promises.[18] Köke and Lange also consider the ratification of international environmental agreements from a domestic perspective and investigate the role of uncertain ratification on the depth of commitments.[19] Dai also finds that governments exhibit greater compliance with international treaties when pro-compliance domestic groups have more electoral leverage and informational capacity, using the case of the Convention on Long-Range Transboundary Air Pollution.[20] Also, as is common in two-level games, we highlight how the preferences of domestic actors may serve as an endogenous veto constraint on the ability to implement international commitments,[21] here reflected in the voters' willingness to pay for mitigation measures.

12. Gazmararian, Mildenberger, and Tingley 2024.
13. Ansolabehere and Konisky 2014; Bechtel and Scheve 2013; Gazmararian and Tingley 2023.
14. Kotchen, Boyle, and Leiserowitz 2013; Nemet and Johnson 2010.
15. Bergquist, Mildenberger, and Stokes 2020; Gaikwad, Genovese, and Tingley 2022.
16. Milner 1997; Putnam 1988.
17. Buisseret and Bernhardt 2018; Melnick and Smith 2023.
18. Battaglini and Harstad 2020.
19. Köke and Lange 2017.
20. Dai 2007.
21. Chapman, Urpelainen, and Wolford 2013; Iida 1993, 1996; Milner and Rosendorff 1997; Mo 1995.

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Previous approaches to modeling the Paris Agreement have interrogated the effects of its novel institutional features on the prospects for climate cooperation. For example, Harstad presents a dynamic bargaining model that documents the conditions under which the Paris Agreement yields more ambitious climate commitments than the Kyoto Protocol.[22] Other models capture how Paris's role in disseminating information affects the scope for ambitious contributions.[23] While we are not the first to try a formal model of climate change cooperation, ours is the first to provide a domestically microfounded story of the implementation of the Paris Agreement that goes beyond global collective-action concerns.[24]

The Paris Climate Accord has no inherent means of sanctioning noncompliance, and, as we shall see, reputational costs will play a sizable role in determining equilibrium commitments. We therefore contribute to the literature interrogating the efficacy of naming and shaming.[25] Problems like information transmission[26] or issue politicization[27] may stymie naming and shaming and thus weaken compliance, while strategies such as issue linkage[28] may enhance reputational incentives to comply. Despite potential shortcomings, recent studies of policy elites demonstrate that policymakers view naming and shaming as an adequate, and even preferable to other means of sustaining cooperation.[29]

How naming and shaming "works" is central to cooperation under Paris and therefore highly relevant in our study. While we follow the human rights literature and think about shaming coming from international actors in a reduced-form way,[30] empirical studies have also sought to tease out domestic microfoundations for compliance. Tingley and Tomz find that shaming by other countries increases support for climate commitments.[31] Other experimental work also demonstrates the presence of shaming costs for leaders who fail to live up to their promises.[32]

Finally, we complement a burgeoning empirical literature on the effects of the Paris Agreement and the determinants of NDCs. Tørstad and Wiborg use a conjoint experiment to demonstrate that the likelihood of compliance is a strong determinant of general public support for climate agreements.[33] In general, empirical evidence suggests that the quality of national political institutions explains most variability in "credible" climate commitments.[34] Wealthier countries pledge to undertake greater emission reductions with higher costs,[35] and more democratic countries and countries

22. Harstad 2023b.
23. Harrison and Lagunoff 2017; McAllister and Schnakenberg 2022; Slechten 2020.
24. Aklin and Mildenberger 2020; Kennard and Schnakenberg 2023.
25. Hafner-Burton 2008; Terman 2023.
26. Creamer and Simmons 2019; Raiser, Çalı, and Flachsland 2022.
27. Terman and Voeten 2018.
28. Hafner-Burton 2005; Spilker and Böhmelt 2013.
29. Dannenberg et al. 2023; Hafner-Burton, LeVeck, and Victor 2017.
30. Hafner-Burton 2012.
31. Tingley and Tomz 2022.
32. Andrews and Bokemper 2024; Casler, Clark, and Zucker 2023.
33. Tørstad and Wiborg 2023.
34. Victor, Lumkowsky, and Dannenberg 2022.
35. Aldy et al. 2016.

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more vulnerable to climate change have been associated with more ambitious commitments.[36] However, given the complexity in setting policy to meet mitigation targets, some scholars have argued that it is difficult to know whether Paris targets are empirically comparable between countries.[37] Hence we provide a theoretical treatment of NDCs and the domestic political forces that shape them.

Paris and Climate Commitments

The Paris Agreement seeks to overcome the global collective-action problem by encouraging voluntary emissions-reduction commitments enforced through reputational sanctions. Article 4.2 of the Agreement requires that "each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve."[38] Rather than delegate authority to an international body that imposes top-down, legally binding targets as in other international climate governance frameworks like the Kyoto Protocol, nations asymmetrically consider their own incentives and abilities to abate.[39] As negotiated, such an institutional design is maximally "flexible,"[40] albeit very "shallow."[41] Taking these institutional attributes as exogenous, we consider the domestic political incentives to make commitments within such an agreement. Importantly for our story, these initial commitments serve as *endogenous reference points:* climate pledges, while chosen strategically, may redefine the scope of desirable policies that leaders implement in the future.[42]

The Paris Agreement does not explicitly identify any enforcement mechanism to ensure that NDCs are implemented. Article 7.14 establishes the system of pledge-and-review in which nations reconvene for a "global stocktake" to assess progress toward NDCs and inform future measures.[43] Articles 13, 14, and 15 outline the "enhanced transparency framework" and information-dissemination process intended to serve as compliance mechanisms. The first global stocktake occurred in 2023, and they are set to be held every five years thereafter. As part of the process, countries submit reports on their performance (a noisy signal of their effort to meet their pledges). The stocktake itself does not serve to "name and shame" individual countries,[44] but it does generate a report laying the groundwork for assessments of policy goals by other nations and public actors like NGOs and activists, to pressure leaders into adopting more ambitious commitments.[45] This process thus provides a

36. Tørstad, Sælen, and Bøyum 2020.
37. Rowan 2019.
38. UNFCCC 2015.
39. Harstad 2023a, 2023b.
40. Johns 2014; Linos and Pegram 2016; Rosendorff and Milner 2001.
41. Downs, Rocke, and Barsoom 1998; Edry 2020; Gilligan 2004.
42. Leinaweaver and Thomson 2021.
43. UNFCCC 2015.
44. Milkoreit and Haapala 2017.
45. Hermwille and Kreibich 2018.

platform to facilitate international shaming, deemed effective by policymaking elites.[46]

Given the long time horizon between submission of NDCs and subsequent evaluations of progress, enforcement of the agreement is informal, and if costs of noncompliance are incurred they are levied in the future, not when nations initially set their targets. Leaders who set their nation's commitments need not be in power when it comes time to "name and shame" those who did not follow through on their commitments.

Since pledges are not legally binding and enforcement is uncertain, leaders vary in their ultimate willingness to comply with their nation's target. We stipulate that leaders pay a "shaming cost" if judged to have failed to fulfill their commitment. This cost is larger if leaders anticipate greater reputational sanction for breaching their commitment, and larger expectations of shaming costs can entice leaders to fulfill larger commitments. However, in a world with imperfect monitoring,[47] the precision with which the international community can verify national emissions reductions also affects leaders' incentives to comply with the target. As we will demonstrate, downstream mitigation efforts are dependent on the interaction between these international factors and domestic policy preferences.

Model Setup

We model a multistage policy process in which nations gather at a multilateral summit to pledge emissions reductions and subsequently enact policies to meet those targets. There are n countries indexed by $i = 1, \ldots, n$. We will focus on the decision making of a representative nation that is governed by one of two governments, $g \in \{\mathrm{G}, \mathrm{B}\}$ (and omit the subscript i where it is not confusing). Governments vary in their marginal costs of implementing emissions reductions, λ_g. A "Green" government G faces lower marginal costs than a "Brown" government B, so $\lambda_\mathrm{G} < \lambda_\mathrm{B}$. The nation also includes a median voter M, such that $\lambda_\mathrm{G} < \lambda_\mathrm{M} < \lambda_\mathrm{B}$.

Each country initially sets a target, $y \in \mathbb{R}_+$, which is analogous to their NDC in the Paris framework. This is the overall reduction in carbon emissions to be achieved by the nation by the end of the pledge-and-review period. After setting their targets, nations implement mitigation strategies and other policy measures designed to meet their targets, $a \in \mathbb{R}_+$. We endow actors of our representative nation with the following utility function over policy:

$$u_g(a_g, A; \lambda_g) = A - \frac{\lambda_g}{2} a_g^2, \qquad g \in \{\mathrm{B}, \mathrm{G}, \mathrm{M}\},$$

where $A = \sum_i a_i$ is global emissions reductions. We suppress dependence on A and λ_g where it is not confusing, writing $u_g(a)$.

46. Dannenberg et al. 2023.
47. Dai 2002; Porter 1983.

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All nations benefit when others enact policies to reduce emissions, so utility is increasing in the mitigation efforts of other countries, but mitigation is costly at home. Pursuing more ambitious reductions has increasing marginal costs, as reflected by the quadratic term, with λ_g parameterizing the magnitude of these marginal costs. In what follows, it will be convenient to denote the reduction target that maximizes this function as actor g's "ideal point," $\tilde{a}_g = \frac{1}{\lambda_g}$.

After nations set their targets but prior to the implementation of mitigation policy, there is an election in our representative nation. We place the election in between these two points of the game in order to study the electoral incentives to enact different *commitments*, which, as we shall see, will indirectly affect the choices of mitigation policy as well. The election is determined by the median voter M, who incurs costs to adjust to mitigation strategies such that $\lambda_{\mathrm{G}} < \lambda_{\mathrm{M}} < \lambda_{\mathrm{B}}$. That is, the median voter wants greater emissions reductions than the Brown government, but does not share the ambition of the Green government. To construct examples, we let $\lambda_{\mathrm{M}} = \frac{\lambda_{\mathrm{B}}+\lambda_{\mathrm{G}}}{2}$. The median voter is prospective, and votes for the Green government if and only if the payoff from electing the Green government exceeds that from electing the Brown government. In addition to observing the pledge y, the median voter observes valence shocks μ_{G} and μ_{B}, which represent the value of both parties on all other electorally salient dimensions beyond mitigation policy. Let $\mu = \mu_{\mathrm{B}} - \mu_{\mathrm{G}}$, such that $\mu \sim F(\cdot)$, with associated density $F'(\cdot)$. Thus the median voter prefers the Green government if and only if

$$u_{\mathrm{M}}(a_{\mathrm{G}}) - u_{\mathrm{M}}(a_{\mathrm{B}}) \geq \mu,$$

so G's probability of election is $F(u_{\mathrm{M}}(a_{\mathrm{G}}) - u_{\mathrm{M}}(a_{\mathrm{B}}))$.

Finally, as the pledge-and-review period ends, nations reconvene for a "global stocktake" that examines how successful countries were in implementing their targets. This amounts to determining the distance between a and y. We assume that each a is imperfectly observed: the international community observes a noisy signal of the reduction measures $x = a + \varepsilon$, where $\varepsilon \sim N\left(0, \frac{1}{\beta}\right)$. If it is determined that country i failed to reach its target (that is, $x < y$), then the governing party in country i is "shamed" and incurs a cost $\sigma_g \in \mathbb{R}_+$. Since these costs are party-specific, we allow the impact of shaming to vary across parties. Although not necessary for our results, we may anticipate that the Green party faces a larger cost for failing to follow through on its commitment than the Brown party. Thus, given a commitment y and effort level a, the ruling party is shamed with probability $\Phi\left(\sqrt{\beta}(y-a)\right)$, where $\Phi(\cdot)$ and $\phi(\cdot)$ are the cumulative distribution and probability density functions for the standard normal, respectively. Observe that, while the shaming cost does not depend on the difference between x and y, leaders have varying expectations about the probability they will be shamed as a function of how much effort they put into fulfilling the commitment.

While the framers of Paris had hoped that naming and shaming could originate from international and domestic sources,[48] our preferred interpretation is that the shaming cost is reputational and levied on noncompliant states by other nations. This

48. Falkner 2016.

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is different from an endogenous cost levied on leaders by voters,[49] but this strategic dynamic is explored elsewhere in the literature.[50] An external source of shaming also comports with experimental evidence that individuals are more likely to support commitments if they know their leaders could be shamed.[51] Hence, the shaming cost σ_g should be thought of as conceptually distinct from the median voter's decision to retain or replace the incumbent party given the observed commitment (prior to implementation). We understand that there may be credibility or collective-action problems in terms of who does the shaming internationally,[52] but the probabilistic nature of shaming in our model captures these concerns in reduced form.

Finally, let $\rho \in \{0, 1\}$ denote whether the median voter elects the Green party ($\rho = 1$) or the Brown party ($\rho = 0$). Then the governments' payoffs from making a commitment y are

$$v_{\mathrm{G}}(y) = \rho\Big(\Psi + u_{\mathrm{G}}(a_{\mathrm{G}}) - \sigma_{\mathrm{G}}\Phi\Big(\sqrt{\beta}(y - a_{\mathrm{G}})\Big)\Big) + (1 - \rho)(u_{\mathrm{G}}(a_{\mathrm{B}})).$$

$$v_{\mathrm{B}}(y) = \rho(u_{\mathrm{B}}(a_{\mathrm{G}})) + (1 - \rho)\Big(\Psi + u_{\mathrm{B}}(a_{\mathrm{B}}) - \sigma_{\mathrm{B}}\Phi\Big(\sqrt{\beta}(y - a_{\mathrm{B}})\Big)\Big).$$

This demonstrates that, when choosing climate commitments, leaders care about mitigation policy outcomes, the ability to influence electoral outcomes through the behavior of the median voter, and winning elections. The party that wins the election enjoys benefit $\Psi > 0$. Notice also that only the party in power incurs the shaming cost σ_g if their mitigation efforts are judged to fall short of the nation's climate commitment. We do not require that the median voter or the party out of power pay the shaming cost, although many of the main features of the equilibrium would be robust to this modification.

The timing of the game is summarized as follows.

1. Governments commit to pledges y_g.
2. The median voter observes their nation's pledge y and votes to elect either the Green government G or the Brown government B.
3. The elected government implements mitigation policies a_g.
4. Nations review global mitigation progress and observe x, shaming country i if $x < y$.

We analyze the subgame perfect equilibrium. The incumbent party chooses a climate commitment $y_g \in \mathbb{R}_+$. The median voter's strategy is a mapping from the expected efforts given y and the valence shock into a vote choice for G or B. Finally, the party that wins the election chooses effort $a_g \in \mathbb{R}_+$ given their nation's prior commitment.

49. McGillivray and Smith 2008.
50. To be clear, we do not interpret σ_g as an "audience cost" in the sense of Fearon 1994, although see Casler, Clark, and Zucker 2023 for such an interpretation.
51. Tingley and Tomz 2022.
52. Hafner-Burton 2008; Terman 2023.

Analysis

We start with a general characterization of the subgame perfect equilibrium. Using backward induction we characterize each party's mitigation efforts for each possible commitment, find how the efforts affect the voter's electoral decision, and characterize the commitments that each party will make given how such commitments affect the election and subsequent mitigation efforts.

In equilibrium, a party's climate pledge is influenced by a variety of factors, including the ability to tie the other party's hands with respect to policy implementation as well as the ability to influence which party will win election. To isolate the properties of each of these mechanisms, we examine a series of limiting cases as the signals of mitigation efforts become precise ($\beta \to \infty$).

Optimal Mitigation Efforts

We first consider the emissions-reduction target pursued by government g after the election. Government g's expected utility is

$$u_g(a_g, A; \lambda_g) = \underbrace{A}_{\text{benefits}} - \underbrace{\frac{\lambda_g}{2} a_g^2}_{\text{cost of mitigation}} - \underbrace{\Phi\Big(\sqrt{\beta}(y - a_g)\Big)\sigma_g}_{\text{expected shaming}},$$

which, given the predetermined pledge y, is the utility over mitigation commitments plus the probability of being shamed and incurring the cost σ_g for failing to meet the pledge. The optimal mitigation effort a_g^* therefore solves the following first-order condition stated in Lemma 1.

Lemma 1: Given climate commitment y, the government's policy a_g^* satisfies the first-order condition

$$\frac{du_g(a_g, A; \lambda_g)}{da_g} = 1 - \lambda_g a_g^* + \sigma_g \sqrt{\beta}\phi\Big(\sqrt{\beta}(y - a_g^*)\Big) = 0 \tag{1}$$

and the second-order condition

$$\frac{d^2 u_g(a_g, A; \lambda_g)}{da_g^2} = -\lambda_g + \sigma_g \beta \sqrt{\beta}(y - a_g^*)\phi\Big(\sqrt{\beta}(y - a_g^*)\Big) < 0. \tag{2}$$

If the signal of effort x is sufficiently noisy, there is a unique solution to the first-order condition: Equation (1). However, with precise signals, there might be two local maxima that satisfy the first-order condition, which can result in a discontinuity in the government's optimal response. Given the technical rather than the substantive nature of this uniqueness discussion, we characterize these conditions at length in the online supplement (Lemmas A.1 and A.2).

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Parties weigh the marginal costs of effort against their global marginal benefits and the possibility of being shamed and, in general, will set their effort close to their ideal point $\tilde{a}_g$ or close to the pledge y. Leaders will choose the former if the commitment is low enough that an effort close to their ideal point is enough to avoid being shamed, or if the commitment is so high that they prefer to accept that they are likely to be shamed. By contrast, if the commitment is not too high relative to the ideal point, then governments will make an effort closer to the target, to lower the probability of being shamed.

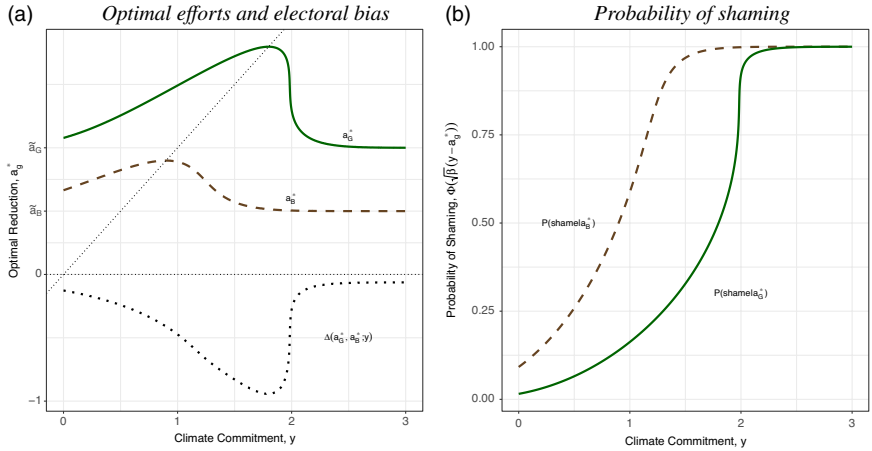

FIGURE 1. *Efforts and the likelihood of shaming as a function of commitments* $(\lambda_G = 1,\ \lambda_B = 2,\ \beta = 4,\ \sigma_G = \sigma_B = 1)$

Figure 1 plots the optimal efforts of each party and the likelihood of being shamed as a function of the climate commitment y. The left panel plots G's optimal effort in green (solid line) and B's optimal effort in brown (dashed line). Optimal efforts are non-monotonic in the commitment y. If y is not too large, parties may find it in their interest to comply with the target as a means of avoiding shame. However, this incentive dissipates if y is set too ambitiously; as the costs of the effort to avoid being shamed grow, parties resign themselves to being shamed and pull back the effort to close to their ideal point. The Green party makes a greater effort than the Brown party in equilibrium because their marginal costs of effort are smaller, and making a greater effort means that G will be shamed with a smaller probability than B, as illustrated in the right panel.

Leaders' incentives to comply ex post with international mitigation targets thus depend on how ambitiously the commitment was set relative to the ideal level and the chances that they could be shamed for noncompliance. Of course, the government in power when commitments were set need not be the government tasked with implementing policy to meet those commitments: this depends on how voters

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perceive the costs of future mitigation policies and the extent to which these policy concerns affect the electoral outcome.

Voting Behavior

We now consider the behavior of the median voter. When choosing whether to elect the Green government or the Brown government, M anticipates the mitigation efforts each party will make and how costly these policies will be for her. Empirical work has found that voters' willingness to support mitigation policy is highly sensitive to the costs of those policies,[53] and the median voter's electoral decision reflects this sensitivity. Moreover, we acknowledge that the salience of climate policy may be low to voters—although it is increasing over time[54]—so the median voter also evaluates the two possible governments along other electorally relevant considerations, captured by the valence terms μ_g. Quite simply, M votes for the Green government over the Brown government when

$$u_{\mathrm{M}}\left(a_{\mathrm{G}}^{*}\right)+\mu_{\mathrm{G}} \geq u_{\mathrm{M}}\left(a_{\mathrm{B}}^{*}\right)+\mu_{\mathrm{B}} \quad \Leftrightarrow \quad \mu \leq u_{\mathrm{M}}\left(a_{\mathrm{G}}^{*}\right)-u_{\mathrm{M}}\left(a_{\mathrm{B}}^{*}\right) \quad \equiv \quad \Delta\left(a_{\mathrm{G}}^{*}, a_{\mathrm{B}}^{*} ; y\right).$$

Climate commitments affect voting outcomes through the expected cost to the median voter of the effort needed to fulfill those commitments. For any y, parties implement their optimal a_g^* after the election, which the voter can anticipate. This means that, in the model, the voter observes the commitment prior to the election, and forms an expectation of the policies each party would implement should they come to office. This is not the same as punishing a party who failed to meet their commitment. Instead, the voter adjudicates the relative costliness of G and B's expected policies against other electorally salient issues. Straightforwardly, as the Green government proposes more and more ambitious commitments relative to the Brown government, the median voter's expected cost of voting for the Green government increases, which makes the Green party less attractive electorally. We call the difference in M's policy utility from G versus B's equilibrium efforts their "bias" toward the Green party, denoted Δ; the Green party is therefore elected with probability $F(\Delta)$.

Optimal Climate Commitments

We now turn to the optimal pledges that different governments would set. Leaders care about the policy returns from committing to a pledge y, and about holding office. These concerns in turn affect the median voter's willingness to re-elect incumbents based on the prospective mitigation policies to be chosen after the election. The choice of climate commitment affects party G's payoff as follows.

$$V_{\mathrm{G}}(y)=F(\Delta)\left(\Psi+u_{\mathrm{G}}\left(a_{\mathrm{G}}^{*}\right)-\sigma_{\mathrm{G}} \Phi\left(\sqrt{\beta}\left(y-a_{\mathrm{G}}^{*}\right)\right)\right)+(1-F(\Delta)) u_{\mathrm{G}}\left(a_{\mathrm{B}}^{*}\right).$$

53. Ansolabehere and Konisky 2014; Bechtel and Scheve 2013; Gaikwad, Genovese, and Tingley 2022.
54. Egan, Konisky, and Mullin 2022.

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With probability $F(\Delta)$, G wins the election, gets office benefits Ψ, and implements effort a_{G}^*, knowing that with probability $\Phi\left(\sqrt{\beta}\left(y - a_{\mathrm{G}}^*\right)\right)$ they will be shamed. However, with probability $1 - F(\Delta)$, party B wins the election and G receives the policy payoff associated with B's equilibrium effort.

Likewise, party B's payoff is

$$V_{\mathrm{B}}(y) = F(\Delta)u_{\mathrm{B}}\left(a_{\mathrm{G}}^*\right) + (1 - F(\Delta))\left(\Psi + u_{\mathrm{B}}\left(a_{\mathrm{B}}^*\right) - \sigma_{\mathrm{B}}\Phi\left(\sqrt{\beta}\left(y - a_{\mathrm{B}}^*\right)\right)\right).$$

We write y_g^* for the optimal climate commitment party g chooses, maximizing their payoff,

$$y_g^* \in \arg\max_{y \in \mathbb{R}_+} V_g(y).$$

Given our backward induction analysis, we can now straightforwardly summarize the preceding discussion of optimal effort, voting decisions, and selection of climate commitments.

Proposition 1: In subgame perfect equilibria, party G selects y_G^* and implements effort a_G^* if elected; party B selects y_B^* and implements effort a_B^* if elected. The median voter votes for G if and only if $\mu \leq \Delta\left(a_G^*, a_B^*; y\right)$; and G is elected with probability $F\left(\Delta\left(a_G^*, a_B^*; y\right)\right)$.

A party's choice of the commitment y shapes downstream mitigation efforts after the election through several channels. Climate commitments can thus be useful in policy terms because parties may be able to tie the hands of their competitors through their choice of pledge. Moreover, because pledges affect effort levels, they affect who wins the election. This latter factor is encapsulated in the commitment's effect on Δ, the net electoral value of G relative to B. In such a general setting, it is difficult to isolate the substantive impact of these competing policy and office incentives. As the online supplement explores, party payoffs may look very different depending on which incentives dominate. To isolate the influence of each factor on climate commitments, we look at a series of limiting cases. These limiting cases also help demonstrate how variation in primitives isolates different concerns governments have in choosing their climate commitments, and thus ultimately drives variation in observed outcomes.

Limiting Case: Precise Shaming

We now present a special case of our model in which the uncertainty around shaming vanishes, $\beta \to \infty$, meaning leaders know with certainty whether they will be shamed. Optimal efforts are fairly simple in this case: the election winner will either comply with the target or implement their ideal effort level. If the target y is low enough, leaders can implement their ideal point and avoid shaming. Increasing the ambition of the climate commitment ($y > \tilde{a}_g$) means leaders face a trade-off between

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implementing the target versus implementing their ideal point and incurring the costs of being shamed. If a party complies with the pre-existing target, their payoff is $y_g - \frac{\lambda_g}{2} y_g^2$, where the first term corresponds to the benefits of implementing the target and the quadratic term represents the costs. Alternatively, the party might implement its ideal point and get shamed, for a payoff of $\tilde{a}_g - \frac{\lambda_g}{2}\tilde{a}_g^2 - \sigma_g$. Hence, whenever $y \leq \hat{y}_g = \frac{1+\sqrt{2\lambda_g \sigma_g}}{\lambda_g}$, leaders prefer to comply with the target instead of implementing their ideal point and getting shamed. If the pledge is set too ambitiously, $y > \hat{y}_g$, then leaders will revert to implementing their ideal level of effort, knowing they will be shamed. Thus:

Corollary 1: Let $\beta \to \infty$. Government g pursues the mitigation effort

$$a_g^*(y) = \begin{cases} \tilde{a}_g & if y < \tilde{a}_g \\ y & if \tilde{a}_g \leq y \leq \hat{y}_g \\ \tilde{a}_g & if y > \hat{y}_g. \end{cases}.$$

This tells us the downstream policies each party will implement if elected, given pledge y. We now turn to thinking about the incentives parties face when choosing the commitments themselves. Parties might pick a commitment in order to tie the hands of an opposition party to implement a policy they like. Alternatively, a party might pick a commitment to gain an electoral advantage. We examine each of these mechanisms, using the precise shaming technology.

Tying Hands

Suppose first that parties choose climate commitments solely for their policy value. To isolate this mechanism, we assume that holding office is irrelevant, $\Psi \to 0$, and that elections are not sensitive to climate policy, $F' \to 0$. Setting a commitment is valuable insofar as it ties politicians' hands when enacting future mitigation efforts. Since climate commitments serve as endogenous reference points, they define the scope of policies that could be implemented in the future. Thus, choosing a commitment has value if incumbents can ensure that potential electoral opposition will not deviate from climate policies they like. Parties set commitments to affect the implementation of effort a_g^* after the election.

Tying hands is particularly important for G, who sets a commitment y that forces B to increase its climate investments over what they would be without that commitment. Ideally, G would like B to implement G's ideal point, which relies on the possibility that B could be sufficiently shamed for failing to follow through on this policy. If the shaming effect σ_B is insufficient for G to force B to implement G's ideal point, then G sets the target to the largest policy that B would be willing to fulfill, should B come to power after the election.

Formally, we define $\hat{\sigma} = \frac{(\lambda_B - \lambda_G)^2}{2\lambda_G^2 \lambda_B}$ as the smallest shaming cost such that B would be willing to adhere to a climate commitment at G's ideal point (that is, $u_B(\tilde{a}_G) = u_B(\tilde{a}_B) - \hat{\sigma}$). For large costs of shaming, in particular $\sigma_B \geq \hat{\sigma}$, G can fully tie B's hands and force it to implement G's ideal point by choosing $y_G^* = \tilde{a}_G$. This ensures that effort will be set at G's ideal point, regardless of who wins the election. However, if shaming costs are lower ($\sigma_B < \hat{\sigma}$), G cannot induce B to exert effort at G's ideal point $\tilde{a}_G$; B would rather be shamed than implement such ambitious climate reforms. Instead, G ties B's hands to the greatest extent possible by setting $y_G^* = \hat{y}_B = \frac{1+\sqrt{2\lambda_B \sigma_B}}{\lambda_B}$. This pledge is the greatest y that B would be willing to comply with, making B indifferent between (a) exerting effort at the pledge y and avoiding shaming, and (b) implementing its ideal point $\tilde{a}_B$ and incurring the shaming cost σ_B.

By contrast, B cannot tie G's hands at all because G ideally prefers to exert more effort than B. The best B can do is to set a target at no more than its ideal point; this allows B to remain in compliance with the agreement should *B* win the election. If G wins the election, G would implement its own ideal point. Thus:

Proposition 2: Let $\beta \to \infty$, $\Psi \to 0$, and $F' \to 0$. *G*'s optimal commitment is

$$y_G^* = \begin{cases} \hat{y}_B = \frac{1+\sqrt{2\lambda_B \sigma_B}}{\lambda_B} & if \sigma_B < \hat{\sigma} \\ \tilde{a}_G & if \sigma_B \geq \hat{\sigma}. \end{cases}.$$

B's optimal commitment is any

$$y_B^* \leq \tilde{a}_B.$$

Figure 2 illustrates the optimal climate commitments as a function of the shaming cost σ_B. The solid green and dot-dashed brown lines plot the two parties' optimal commitment. If parties care about only the policy value of climate commitments, then the Green party can use climate pledges to drag the Brown party's effort on climate change as close to Green's ideal point as possible. Ideally, each party would like to implement their own ideal point, $y_g = \tilde{a}_g$, fully tying the hands of the other party. However, if σ_B is too small, G cannot completely tie B's hands; instead, G sets y_G^* such that B invests the most effort it would be willing to without being shamed. This is seen on the left-hand side of the figure as G's increasing optimal target when $\sigma_B \leq \hat{\sigma}$. B, who cannot tie G's hands, simply sets the most ambitious commitment that allows the implementation of its ideal point.

Winning Office

We now examine how parties can use climate commitments to help them remain in elected office. To model these electoral incentives, we let the value of office-holding grow large enough that winning office becomes the dominant incentive for parties,

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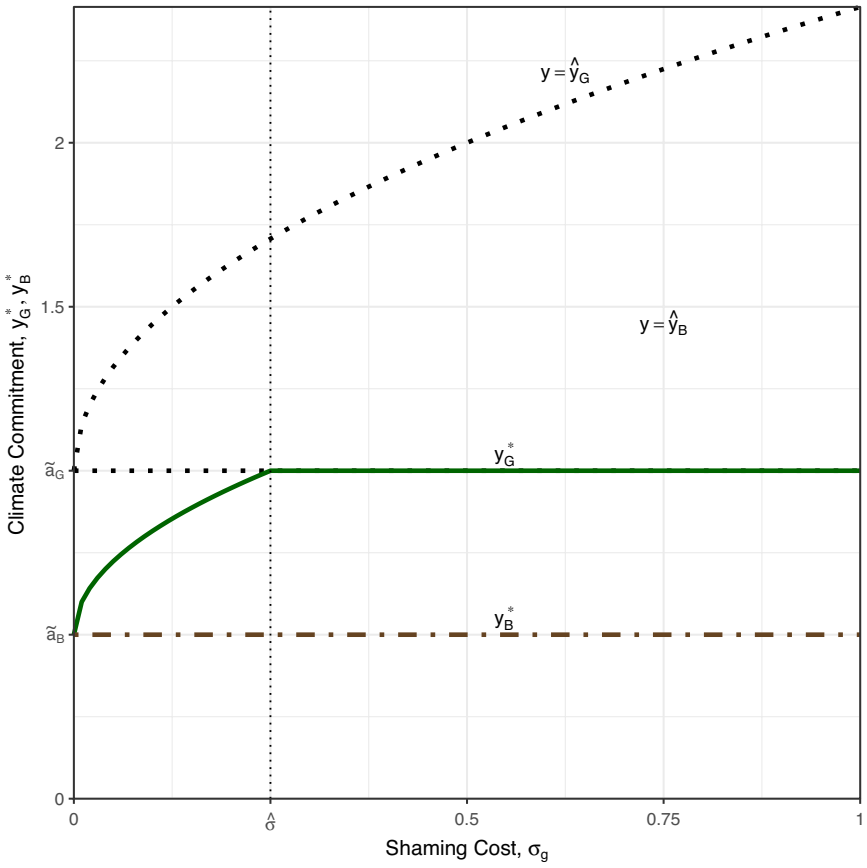

FIGURE 2. *Climate commitments with hands-tying incentives*

$\Psi \to \infty$. The choice of pledge then depends on maximizing the probability of winning the election; recall that the median voter votes for G with probability $F\left(\Delta\left(a_{\mathrm{G}}^{*}, a_{\mathrm{B}}^{*}; y\right)\right)$, where $\Delta\left(a_{\mathrm{G}}^{*}, a_{\mathrm{B}}^{*}; y\right) = u_{\mathrm{M}}\left(a_{\mathrm{G}}^{*}\right) - u_{\mathrm{M}}\left(a_{\mathrm{B}}^{*}\right)$ is the voter's "bias" toward the Green party. The intuition is fairly simple: the Green party wants to maximize this bias, while the Brown party seeks to minimize it. At each party's baseline—that is, the scenario in which they would commit to their ideal points—the Brown party has an electoral edge over the Green party, $\Delta(\tilde{a}_{\mathrm{G}}, \tilde{a}_{\mathrm{B}}; y) < 0$, because Brown would impose fewer costs on the voter with its target.[55] In the online

55. Given our working assumption that $\lambda_{\mathrm{M}} = \frac{\lambda_{\mathrm{G}} + \lambda_{\mathrm{B}}}{2}$, there is a slight electoral bias toward the Brown party if both parties are expected to enact their ideal points, $\Delta(\tilde{a}_{\mathrm{G}}, \tilde{a}_{\mathrm{B}}) = -\frac{(\lambda_{\mathrm{B}} - \lambda_{\mathrm{G}})^3}{4\lambda_{\mathrm{G}}^2 \lambda_{\mathrm{B}}^2} < 0$. This bias emerges because the voter's utility function exhibits quadratic loss: it is more costly to move to a more ambitious policy in the direction of the Green party's ideal point than to move to a less ambitious policy in the direction of the Brown party's ideal point.

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supplement, we provide a more technical explanation of this bias and discuss how it changes as a function of possible commitments given a sufficiently large shaming cost σ_g.

If parties care primarily about holding office, then G pledges a commitment that maximizes the electoral bias, while B wants to minimize it. For the Green party, the best-case scenario occurs if the commitment motivates both parties to make the same effort downstream, taking Brown's electoral edge to zero. If shaming costs are large enough, such that the Brown party would abide by pledges above its ideal point, Green commits to its own ideal point $y^*_{\mathrm{G}} = \tilde{a}_{\mathrm{G}}$. This is the largest commitment that Green would prefer and, if Brown complies with it too, nullifies the electoral bias. However, if σ_{B} is small, then the Green party chooses the largest commitment that the Brown party would follow, thus minimizing but not entirely removing Brown's electoral advantage. By contrast, to maximize its electoral prospects, the Brown party wants to pick a commitment that exacerbates the costs imposed on the voter should the Green party win the election. This makes the Brown party look even more electorally attractive in comparison.

The next proposition specifies the optimal commitments for office-seeking parties for all possible shaming costs. For ease of exposition we focus on the special case where both parties face the same shaming cost, $\sigma_{\mathrm{B}} = \sigma_{\mathrm{G}} = \sigma$. In the online supplement, Proposition A.1 relaxes this assumption and finds largely identical behavior.

Proposition 3: Let $\beta \to \infty$, $\Psi \to \infty$, $F' > 0$ and $\sigma_B = \sigma_G = \sigma$. There exist thresholds $\bar{\sigma}$, $\hat{\sigma}$, and $\hat{\hat{\sigma}}$ such that G's optimal climate commitment is

$$y^*_G = \begin{cases} y \leq \tilde{a}_B \, or \, y \in (\hat{y}_B, \tilde{a}_G] & if \sigma_B < \bar{\sigma} \\ \hat{y}_B = \frac{1+\sqrt{2\sigma_B \lambda_B}}{\lambda_B} & if \bar{\sigma} \leq \sigma_B \leq \hat{\sigma} \\ \tilde{a}_G & if \sigma_B > \hat{\sigma}. \end{cases}$$

B's optimal commitment is

$$y^*_B = \begin{cases} \min\left\{\tilde{a}_M, \quad \hat{y}_B = \frac{1+\sqrt{2\sigma_B \lambda_B}}{\lambda_B}\right\} & if \sigma_G < \hat{\hat{\sigma}} \\ \hat{y}_G = \frac{1+\sqrt{2\sigma_G \lambda_G}}{\lambda_G} & if \sigma_G > \hat{\hat{\sigma}}. \end{cases}$$

Figure 3 plots the optimal climate commitments given shaming costs σ_g, as characterized in Proposition 3. First suppose that shaming costs are large ($\sigma_{\mathrm{B}} \geq \hat{\sigma}$). By setting the commitment y^*_{G} at its ideal point, Green can remove any electoral bias in favor of the Brown party and simultaneously commit itself and the Brown party to its ideal point. This is clearly the best-case scenario for the Green party, illustrated as the flat solid-green line on the right-hand side of Figure 3. However, it requires that B's shaming cost σ_{B} is large enough that B would follow through on this commitment.

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As B's shaming cost falls below the level sufficient to enforce G's ideal point ($\bar{\sigma} \leq \sigma_B \leq \hat{\sigma}$), then G's optimal commitment becomes less ambitious. G sets y^*_G to the highest downstream effort that commits B to compliance with the target, though it is less ambitious than G's ideal point. This is shown by the curved solid-green segment on the line $y = \hat{y}_B$ in the figure. Such a commitment is partially beneficial for G in both policy and electoral terms: the target ties B's hands to implement a policy closer to G's ideal point and (as seen in Figure A.2 in the online supplement) partially reduces B's electoral edge. If B's shaming costs are even smaller ($\sigma_B \leq \bar{\sigma}$), then from an electoral perspective G can do no better than set the commitment to B's ideal point, which is the flat solid-green line on the left-hand side of the figure. In summary, as shaming costs increase, the Green party can leverage the possibility of being shamed to enforce a more ambitious commitment (although never above its ideal point) while also reducing any electoral bias in B's favor.

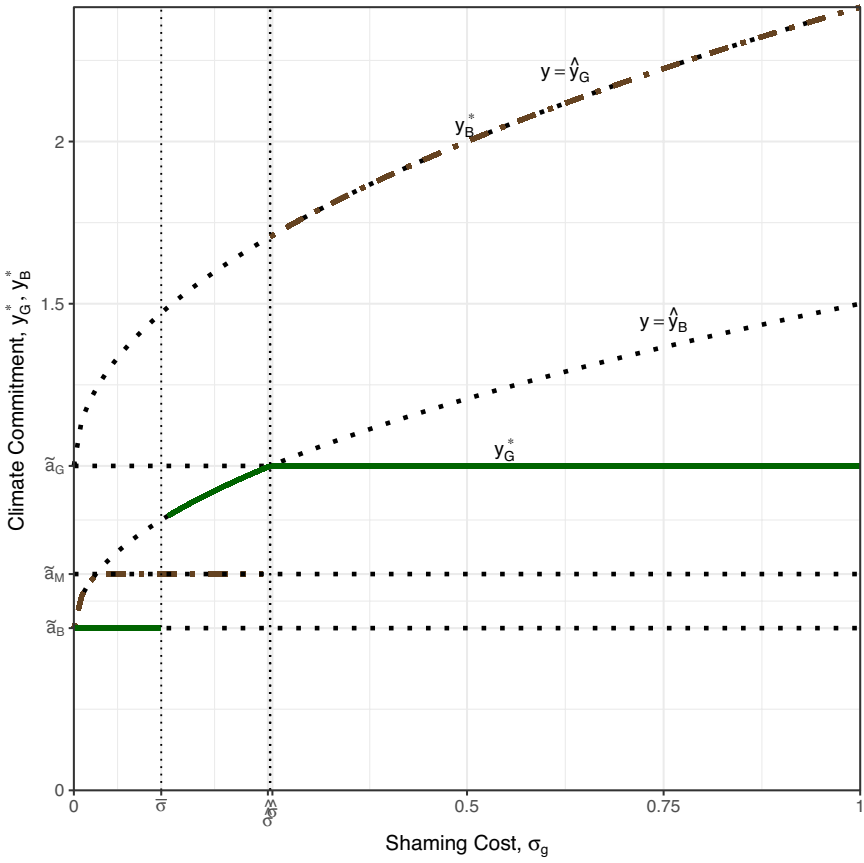

FIGURE 3. *Climate commitments and shaming costs for office-seeking parties*

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Turning to B's optimal commitments, the Brown party has an electoral advantage because, ex ante, it would impose lower costs on the median voter to implement downstream climate policies than the Green party would. To retain this edge, the optimal strategy for B entails setting a commitment that would maximally exploit G's willingness to implement climate reforms by imposing large costs on the median voter if the commitment were to be fulfilled after the election. That is, the Green party is willing to commit to more ambitious pledges, and the Brown party can exploit this by setting a lofty target they do not intend to implement themselves but the Green party would. Counterintuitively, this furthers B's electoral prospects. The intuition for this result is that, despite being costly for the median voter, the Green party would follow through on the commitment. In particular, if the Green party's shaming costs are large enough ($\sigma_G > \hat{\hat{\sigma}}$), the optimal commitment would be $y_B^* = \hat{y}_G$, which makes the Green party indifferent between following through and being shamed. This is the curved dot-dashed brown segment on the line $y = \hat{y}_G$ in the figure. Obviously, this is not a target that the Brown party would fulfill themselves if elected, but it is B's optimal strategy because the shaming cost σ_B is small relative to the value of holding office.

Finally, if the Green party's shaming cost takes moderate values, the Brown party cannot fully exploit the Green party's willingness to abide by a lofty target. Instead, B's optimal strategy involves a commitment that zeroes in on the preferences of the median voter. Indeed, if σ_G is moderate, the Brown party commits itself exactly to the median voter's ideal point $y_B^* = \tilde{a}_M$; this is an electorally popular strategy because the Brown party would offer the policy most preferred by the voter, while the Green party would ultimately implement its own ideal effort, which would be costlier to the voter. This is seen by the flat dot-dashed brown line toward the left of Figure 5. But if the shaming costs are insufficient to motivate the Brown party to implement the median voter's preferred policies, B picks a target to partially tie its own hands, moving as close as it credibly can toward $\tilde{a}_M$, seen by the increasing dot-dashed brown line on the left of the figure. In summary, at low-to-moderate shaming costs, the Brown party will increase its commitment by moving toward the preferences of the median voter. However, when shaming costs are high enough, Brown has a dominant electoral strategy to commit to a pledge that it will paradoxically never implement but the Green party will; and despite the downstream shaming, this enhances Brown's electoral odds.

Propositions 2 and 3 demonstrate that commitments are always weakly increasing in the cost of being shamed, σ_g. As internationally imposed shaming costs for failing to meet national targets increase, leaders are willing to make greater efforts to meet such targets and therefore avoid being shamed. Note that this intuition does not rely on the parties being shamed at the same level, or shaming costs being uniform by party. For example, if the Brown party paid scant attention to their international reputation, then the Green party could do little to tie the Brown party's hands. By contrast, the counterintuitive result that the Brown party can set a lofty climate target that it does not intend to meet and yet still increase its electoral odds is further strengthened if the Green party faces higher shaming costs. Indeed, the Brown party

would choose targets of increasing ambition, which the Green party would comply with to avoid being shamed.

Discussion

We provide a model in which domestic political incentives shape international climate commitments. We demonstrate how domestic political competition can affect parties' willingness to commit to different pledges and how the downstream implementation of policies to meet those pledges affects elections. Our model provides insights into the expected ambition of pledges, membership in the Paris Agreement, and the consequences of institutional strength.

Whether an NDC is "ambitious" is often defined against some type of equity benchmark, such as whether the NDC induces a nation to commit to reducing emissions commensurate with its "fair share."[56] Robiou du Pont and Meinshausen propose five "equity approaches," and compare NDCs with fair-share contributions to Paris's 1.5° C and 2° C reduction targets. They find that none of the world's top emitters submitted NDCs consistent with any of the equity approaches, and conclude that these NDCs are not ambitious enough.[57] Rather than focusing on fairness, our analysis implicitly proposes a positive measure of ambition, which is how much effort a government exerts above its ideal point given its climate commitment. We demonstrate that pledges can be ambitious because of their domestic political value. For example, when the cost of being shamed is relatively modest and leaders care primarily about holding office, the Brown party can propose a commitment that would force it to implement the median voter's ideal point. This commitment is ambitious because it is greater than the Brown party's ideal point, and it is electorally advantageous because it imposes fewer costs on the voters than the Green party's policy.

The Paris Agreement is often lauded because it attracted a wide membership, going against the conventional wisdom that international environmental agreements often garner only small coalitions.[58] This resembles the canonical "broader–deeper trade-off" in the literature on international cooperation.[59] Broad agreements are sometimes castigated because they require little adjustment; however, our analysis suggests that leaders are attracted to this type of agreement because of the way that climate commitments can affect policy outcomes. If leaders are primarily interested in the value of policy, they may be able to use commitments as a tool to tie the hands of their political rivals. Without ex ante commitments, leaders would simply implement their ideal points; however, the Green party can leverage the use of commitments within the Paris framework to bind the Brown party to more ambitious climate action.

56. Sælen et al. 2019.
57. Robiou du Pont and Meinshausen 2018.
58. Calvo and Rubio 2013; Caparrós 2016; Harstad 2023b.
59. Downs, Rocke, and Barsoom 1998; Edry 2020; Gilligan 2004; Johns 2014.

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Moreover, leaders also have incentives to ensure that Paris's enforcement mechanism, naming and shaming, has sufficient bite when reviewing climate pledges. While most literature lauds Paris for its flexibility and lack of formal enforcement,[60] the costs of being shamed need to be sufficiently high in order for leaders to exploit the agreement's structure for political gain. Indeed, if being shamed is costly, a policy-oriented Green party can force the Brown party into implementing the Green party's ideal point through the choice of its climate commitment.

However, depending on leaders' incentives, the model also provides a cautionary tale of how the terms of strong international agreements can be exploited by domestic political actors and can facilitate outcomes counterproductive to international cooperative goals. When the shaming cost is high, an office-seeking Brown party, looking to enhance its electoral prospects, optimally commits to a lofty target, knowing full well that, if elected, it will not satisfy that pledge and will be shamed. However, if the Green party were to come to power after the election, they would pursue mitigation policies that would satisfy this target, imposing large costs on the voters in the process. Knowing this, voters are more likely to elect the Brown party to avoid paying for intense mitigation measures. That is, leaders of anti-environmental parties can enhance their electoral prospects by promising something they cannot deliver.

Conclusion

This study probes the domestic political incentives leaders have to choose climate commitments that affect the nature of future policymaking. Our formal model demonstrates the complexity of strategic calculations that leaders face when forging pledges, but also distills decision making along two primary mechanisms: making commitments for policy value and making commitments for electoral gain. When policy concerns dominate, climate pledges can be valuable in tying the hands of political competitors, ensuring greater mitigation effort. But if office concerns are more influential, then commitments can be exploited by leaders based on the expected cost of downstream mitigation efforts relative to the median voter's willingness to pay. Paradoxically, this leads to lofty commitments by leaders who never intend to fulfill them, but have used them only to make environmentally friendly parties electorally unattractive.

Supplementary Material

Supplementary material for this research note is available at <https://doi.org/10.1017/S0020818325000074>.

60. Bodansky 2016; Falkner 2016.

References

Aklin, Michaël, and Matto Mildenberger. 2020. Prisoners of the Wrong Dilemma: Why Distributive Conflict, Not Collective Action, Characterizes the Politics of Climate Change. *Global Environmental Politics* 20 (4):4–27.

Aldy, Joseph Edgar, William Pizer, Massimo Tavoni, Lara Aleluia Reis, *et al.* 2016. Economic Tools to Promote Transparency and Comparability in the Paris Agreement. *Nature Climate Change* 6:1000–1004.

Andrews, Talbot M., and Scott E. Bokemper. 2024. The Road to Reelection Is Paved with Good Intentions: Experiments on the Role of Outcomes and Intentions in Voting Behavior. *Journal of Politics* 87 (1).

Ansolabehere, Stephen, and David M. Konisky. 2014. *Cheap and Clean: How Americans Think about Energy in the Age of Global Warming*. MIT Press.

Bagashka, Tanya, and Randall W. Stone. 2013. Risky Signals: The Political Costs of Exchange Rate Policy in Post-Communist Countries. *International Studies Quarterly* 57 (3):519–31.

Battaglini, Marco, and Bård Harstad. 2020. The Political Economy of Weak Treaties. *Journal of Political Economy* 128 (2):544–90.

Bechtel, Michael M., and Kenneth F. Scheve. 2013. Mass Support for Global ClimateAgreements Depends on Institutional Design. *Proceedings of the National Academy of Sciences* 110 (34):13763–68.

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* 15 (5):054019.

Bodansky, Daniel. 2016. The Legal Character of the Paris Agreement. *Review of European, Comparative and International Environmental Law* 25 (2):142–50.

Buisseret, Peter, and Dan Bernhardt. 2018. Reelection and Renegotiation: International Agreements in the Shadow of the Polls. *American Political Science Review* 112 (4):1016–1035.

Calvo, Emilio, and Santiago J. Rubio. 2013. Dynamic Models of International Environmental Agreements: A Differential Game Approach. *International Review of Environmental and Resource Economics* 6 (4):289–339.

Caparrós, Alejandro. 2016. Bargaining and International Environmental Agreements. *Environmental and Resource Economics* 65 (1):5–31.

Casler, Don, Richard Clark, and Noah Zucker. 2023. Do Pledges Bind? The Mass Politics of International Climate Targets, Available at <https://static1.squarespace.com/static/65d64df20aab017d8f9f03e6/t/66b3b70edced392d3986fb8e/1723053838869/CCZ_July2024.pdf>.

Chapman, Terrence L., Johannes Urpelainen, and Scott Wolford. 2013. International Bargaining, Endogenous Domestic Constraints, and Democratic Accountability. *Journal of Theoretical Politics* 25 (2):260–83.

Creamer, Cosette D., and Beth A. Simmons. 2019. Do Self-Reporting Regimes Matter? Evidence from the Convention Against Torture. *International Studies Quarterly* 63 (4):1051–64.

Dai, Xinyuan. 2002. Information Systems in Treaty Regimes. *World Politics* 54 (4):405–436.

Dai, Xinyuan. 2007. *International Institutions and National Policies*. Cambridge University Press.

Dannenberg, Astrid, Marcel Lumkowsky, Emily K. Carlton, and David G. Victor. 2023. Naming and Shaming as a Strategy for Enforcing the Paris Agreement: The Role of Political Institutions and Public Concern. *Proceedings of the National Academy of Sciences* 120 (40):e2305075120.

Downs, George W., David M. Rocke, and Peter N. Barsoom. 1998. Managing the Evolution of Multilateralism. *International Organization* 52 (2):397–419.

Edry, Jessica. 2020. Shallow Commitments May Bite Deep: Domestic Politics and Flexibility in International Cooperation. *International Interactions* 46 (5):669–95.

Egan, Patrick J., David M. Konisky, and Megan Mullin. 2022. Ascendant Public Opinion: The Rising Influence of Climate Change on Americans' Attitudes About the Environment. *Public Opinion Quarterly* 86 (1):134–48.

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

Fearon, James D. 1994. Domestic Political Audiences and the Escalation of International Disputes. *American Political Science Review* 88 (3):577–92.

Gaikwad, Nikhar, Federica Genovese, and Dustin Tingley. 2022. Creating Climate Coalitions: Mass Preferences for Compensating Vulnerability in the World's Two Largest Democracies. *American Political Science Review* 116 (4):1165–83.

Gazmararian, Alexander F., Matto Mildenberger, and Dustin Tingley. 2024. Public Opinion Foundations of the Clean Energy Transition. Working paper, Princeton University. Available at <https://osf.io/preprints/osf/m9edk_v1>.

Gazmararian, Alexander F., and Dustin Tingley. 2023. *Uncertain Futures: How to Unlock the Climate Impasse*. Cambridge University Press.

Gilligan, Michael J. 2004. Is There a Broader–Deeper Trade-Off in International Multilateral Agreements? *International Organization* 58 (3):459–84.

Hafner-Burton, Emilie M. 2005. Trading Human Rights: How Preferential Trade Agreements Influence Government Repression. *International Organization* 59 (3):593–629.

Hafner-Burton, Emilie M. 2008. Sticks and Stones: Naming and Shaming the Human Rights Enforcement Problem. *International Organization* 62 (4):689–716.

Hafner-Burton, Emilie M. 2012. International Regimes for Human Rights. *Annual Review of Political Science* 15 (1):265–86.

Hafner-Burton, Emilie M., Brad L. LeVeck, and David G. Victor. 2017. No False Promises: How the Prospect of Non-compliance Affects Elite Preferences for International Cooperation. *International Studies Quarterly* 61 (1):136–49.

Harrison, Rodrigo, and Roger Lagunoff. 2017. Dynamic Mechanism Design for a Global Commons. *International Economic Review* 58 (3):751–82.

Harstad, Bård. 2023a. Pledge-and-Review Bargaining. *Journal of Economic Theory* 207 (C).

Harstad, Bård. 2023b. Pledge-and-Review Bargaining: From Kyoto to Paris. *Economic Journal* 133 (651):1181–1216.

Hermwille, Lukas, and Nicolas Kreibich. 2018. Article 6 and the Global Stocktake. JIKO Policy Paper, Wuppertal Institute for Climate, Environment and Energy.

Holz, Ceecee, Sivan Kartha, and Tom Athanasiou. 2018. Fairly Sharing 1.5: National Fair Shares of a 1.5° C–Compliant Global Mitigation Effort. *International Environmental Agreements: Politics, Law and Economics* 18 (1):117–34.

Iida, Keisuke. 1993. When and How Do Domestic Constraints Matter? Two-Level Games with Uncertainty. *Journal of Conflict Resolution* 37 (3):403–426.

Iida, Keisuke. 1996. Involuntary Defection in Two-Level Games. *Public Choice* 89 (3):283–303.

Jacquet, Jennifer, and Dale Jamieson. 2016. Soft but Significant Power in the Paris Agreement. *Nature Climate Change* 6 (7):643–46.

Johns, Leslie. 2014. Depth Versus Rigidity in the Design of International Trade Agreements. *Journal of Theoretical Politics* 26 (3):468–95.

Kennard, Amanda, and Keith E. Schnakenberg. 2023. Comment: Global Climate Policy and Collective Action. *Global Environmental Politics* 23 (1):133–44.

Keohane, Robert O., and Michael Oppenheimer. 2016. Paris: Beyond the Climate Dead End Through Pledge and Review? *Politics and Governance* 4 (3):142–51.

Köke, Sonja, and Andreas Lange. 2017. Negotiating Environmental Agreements Under Ratification Constraints. *Journal of Environmental Economics and Management* 83 (C):90–106.

Kotchen, Matthew J., Kevin J. Boyle, and Anthony A. Leiserowitz. 2013. Willingness-to-Pay and Policy-Instrument Choice for Climate-Change Policy in the United States. *Energy Policy* 55:617–25.

Leinaweaver, Justin, and Robert Thomson. 2021. The Elusive Governance of Climate Change: Nationally Determined Contributions as Commitments and Negotiating Positions. *Global Environmental Politics* 21 (2):73–98.

Linos, Katerina, and Tom Pegram. 2016. The Language of Compromise in International Agreements. *International Organization* 70 (3):587–621.

McAllister, Jordan H., and Keith E. Schnakenberg. 2022. Designing the Optimal International Climate Agreement with Variability in Commitments. *International Organization* 76 (2):469–86.

McGillivray, Fiona, and Alastair Smith. 2008. *Punishing the Prince: A Theory of Interstate Relations, Political Institutions, and Leader Change*. Princeton University Press.

Melnick, Justin, and Alastair Smith. 2023. International Negotiations in the Shadow of Elections. *Journal of Conflict Resolution* 67 (7-8):1452–81.

Milkoreit, Manjana, and Kate Haapala. 2017. *Designing the Global Stocktake: A Global Governance Innovation*. Center for Climate and Energy Solutions, Arlington.

Milner, Helen V. 1997. *Interests, Institutions, and Information*. Princeton University Press.

Milner, Helen V., and B. Peter Rosendorff. 1997. Democratic Politics and International Trade Negotiations: Elections and Divided Government as Constraints on Trade Liberalization. *Journal of Conflict Resolution* 41 (1):117–46.

Mo, Jongryn. 1995. Domestic Institutions and International Bargaining: The Role of Agent Veto in Two-Level Games. *American Political Science Review* 89 (4):914–24.

Nemet, Gregory F., and Evan Johnson. 2010. Willingness to Pay for Climate Policy: A Review of Estimates, Available at <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1626931>.

Porter, Robert H. 1983. Optimal Cartel Trigger Price Strategies. *Journal of Economic Theory* 29 (2):313–38.

Putnam, Robert D. 1988. Diplomacy and Domestic Politics: The Logic of Two-Level Games. *International Organization* 42 (3):427–60.

Raiser, Kilian, Başak Çalı, and Christian Flachsland. 2022. Understanding Pledge and Review Learning from Analogies to the Paris Agreement Review Mechanisms. *Climate Policy* 22 (6):711–27.

Robiou du Pont, Yann, and Malte Meinshausen. 2018. Warming Assessment of the Bottom-Up Paris Agreement Emissions Pledges. *Nature Communications* 9 (1):4810.

Rosendorff, B. Peter, and Helen V. Milner. 2001. The Optimal Design of International Trade Institutions: Uncertainty and Escape. *International Organization* 55 (4):829–57.

Rowan, Sam S. 2019. Pitfalls in Comparing Paris Pledges. *Climatic Change* 155 (4):455–67.

Sælen, Håkon, Vegard Tørstad, Ceecee Holz, and Tobias Dan Nielsen. 2019. Fairness Conceptions and Self-Determined Mitigation Ambition Under the Paris Agreement: Is There a Relationship? *Environmental Science and Policy* 101:245–54.

Slechten, Aurélie. 2020. Environmental Agreements Under Asymmetric Information. *Journal of the Association of Environmental and Resource Economists* 7 (3):455–81.

Spilker, Gabriele, and Tobias Böhmelt. 2013. The Impact of Preferential Trade Agreements on Governmental Repression Revisited. *Review of International Organizations* 8 (3):343–61.

Terman, Rochelle. 2023. *The Geopolitics of Shaming: When Human Rights PressureWorks—and When It Backfires*. Princeton University Press.

Terman, Rochelle, and Erik Voeten. 2018. The Relational Politics of Shame: Evidence from the Universal Periodic Review. *Review of International Organizations* 13 (1):1–23.

Tingley, Dustin, and Michael Tomz. 2022. The Effects of Naming and Shaming on Public Support for Compliance with International Agreements: An Experimental Analysis of the Paris Agreement. *International Organization* 76 (2):445–468.

Tørstad, Vegard, Håkon Sælen, and Live Standal Bøyum. 2020. The Domestic Politics of International Climate Commitments: Which Factors Explain Cross-Country Variation in NDC Ambition? *Environmental Research Letters* 15 (2):024021.

Tørstad, Vegard, and Vegard Wiborg. 2023. Commitment Ambiguity and Ambition in Climate Pledges. Working paper 18, UC Institute on Global Conflict and Cooperation. Available at <https://ucigcc.org/wp-content/uploads/2023/11/2023_wp18_vegard-v3-FINAL.pdf>.

UNFCCC. 2015. Paris Agreement. Available at <https://unfccc.int/sites/default/files/english_paris_agreement.pdf>.

Victor, David G., Marcel Lumkowsky, and Astrid Dannenberg. 2022. Determining the Credibility of Commitments in International Climate Policy. *Nature Climate Change* 12 (9):793–800.

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