Ideological Argumentation in Party Competition

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Abstract

Political parties' rhetorical strategies play a crucial role in shaping public opinion and electoral outcomes. In this perspective, what kind of rhetorical arguments to present to the public is a strategic choice of critical importance. In this paper, we present a model of rhetorical argumentation where parties compete to persuade voters before engaging in platform competition. Our model allows us to explore when parties present positive arguments to highlight the strengths of their preferred policies, as opposed to when they aim to expose the weaknesses of their opponents' ideology or redirect voter focus to other issues. We also characterize conditions under which both parties try to persuade voters on the same issues, and those under which they instead engage on different issues. Finally, we describe instances where parties tacitly collude, neither truly attempting to change voters' preferences on some issues.

Introduction

Political parties are "opinion-forming agencies of great importance" (Campbell et al. 1960, p. 128). They continually disseminate rhetorical messages to voters through interviews, televised congressional debates, public speeches and social media posts. These rhetorical strategies play a crucial role in shaping public opinion and, consequently, electoral outcomes (Druckman, Fein and Leeper, 2012). Indeed, scholars often highlight that a major challenge for parties lies in fostering positive attitudes among the broader public towards their preferred policy alternatives (Nelson, 2004).

Deciding what kind of rhetorical arguments to present to the public thus becomes a strategic imperative. A widely shared perspective is that, in order to successfully sway public opinion, parties need to "identify—and then emphasize—those considerations that work to their advantage," (Jerit, 2008 p. 2). Parties must carefully choose which issues to prioritize when persuading voters, the nature of arguments to articulate, and whether to attempt to influence the salience voters attribute to various issues or, instead, their ideological preferences.

The political science literature has paid little attention to providing a theoretical framework for understanding these important strategic choices. Here, we aim to address this gap. We introduce a game-theoretic model of rhetorical argumentation within a spatial elections framework, where parties compete to persuade voters and then set their electoral platforms. We analyze multiple variations of the model to better understand the incentives that shape political parties' rhetorical strategies in different contexts. While existing works in this tradition usually focus on how parties design platforms to cater to voters' exogenous preferences, our contribution complements this literature by exploring how parties may influence voters' preferences and shape the political environment in which they operate *before* engaging in platform competition.

Rhetoric and Persuasion: Our Approach

We consider two parties competing on multiple issues for the support of a voter. The model has two stages: a persuasion stage, in which the parties present rhetorical arguments, and an electoral stage, in which they set platforms. The players face common uncertainty about which issues are relevant for the voter and the location of her optimal platform on these issues. For example, consider a middle-class voter contemplating whether to support a re-distributive policy. While this voter may not directly benefit from such a program, indirect advantages may arise if redistribution stimulates consumer spending and economic growth. Conversely, potential indirect harm may occur if increased taxation dampens investments and adversely affects the economy. Alternatively, both of these effects may be implausible, or the consequence of this policy on voter's welfare may be minimal, and so the corresponding issue may be best seen as irrelevant for the voter. Thus, on each issue, the voter can be one of three types: left-wing, right-wing, or unconcerned (for whom this issue is welfare-irrelevant).[1]

While the voter's unknown type describes her *innate* preferences, parties' rhetorical arguments may influence her beliefs about her type and thus her *induced* preferences over policies.[2] On each issue, parties have the option to present *supporting* arguments that aim to convince the voter that a policy aligned with their own ideology is the best choice for her, *refuting* arguments that aim to discredit the policies aligned with the opponent, or *vacuous* arguments that do not meaningfully engage with the issue at hand. In our framework, such vacuous arguments have no effect on the voter's beliefs and preferences.

As an example of politicians using refuting arguments, consider a recent speech by Elizabeth Warren on the issue of redistribution.[3] Warren's rhetoric focused on a critique of trickle-down

[1] Our approach does not assume that all voters must face this type of uncertainty nor that uncertainty must permeate all policy issues. However, in order for persuasion to be possible, at least *some* voters must be unsure of what the optimal policy is on at least *some* issues. It is these voters and these issues that we focus on.

[2] Following the presentation of the setup, we will comment on a broader interpretation of our model in which special interest groups, rather than the parties themselves, shape public opinion through rhetorical argumentation. For studies emphasizing the role of special interest groups in this process, see Truman (1951); Dür and Mateo (2014); Dür (2019).

[3] https://www.warren.senate.gov/newsroom/press-releases/senator-warren-and-039s-remarks-at-afl-cio-national-summit-on-raising-wages

economics: "When all the varnish is removed, trickle-down just means helping the biggest corporations and the richest people in this country, and claiming that those big corporations and rich people could be counted to create an economy that would work for everyone else." These claims, she goes on to argue, "never really made much sense ... The top 10% got all the growth in income over the past 30 years–all of it–and the economy stopped working for everyone else." This example illustrates the essence of refuting arguments in our model: Warren's rhetorical approach aimed to expose weaknesses and pitfalls in the arguments commonly adopted to support conservative economic policies, rather than offering reasons to persuade voters of the merits of her own preferred redistributive platforms.

Contrast this with a statement by former U.S. President Barack Obama,[4] exemplifying the use of supporting arguments:"You don't have to take a vow of poverty just to say, 'Well, let me help out... let me look at that child out there who doesn't have enough to eat or needs some school fees, let me help him out. I'll pay a little more in taxes... When economic power is concentrated in the hands of the few, history also shows that political power is sure to follow — and that dynamic eats away at democracy." In this case, rather than criticizing trickle-down economic theories, Obama presents an argument directly *in support* of redistribution, by emphasizing moral aspects of the issue as well as the importance of reducing inequalities for growth and democratic stability.

Regardless of the types of arguments articulated by the parties, both theoretical intuition and existing empirical findings underscore that voters are not merely passive recipients of political parties' persuasive efforts (Chong and Druckman, 2007). Instead, they engage in a process of "deliberate integration," evaluating the relevance and significance of each idea presented by the parties and subsequently forming their own opinions on policy matters (Nelson, Clawson and Oxley 1997, p. 578).

Our model of argumentation aims to capture these features. As such, we depart from the asymmetric-information framework typically used in the formal literature to examine verbal persuasion. That approach emphasizes the speaker's credibility: the speaker possesses information

[4]https://www.cnbc.com/2018/07/18/barack-obama-on-wealth-inequality-only-so-much-you-can-eat.html

that is unknown to the receiver, and persuasion is successful when the receiver is convinced, to some extent, that the speaker is telling the truth.[5]This asymmetric information framework, then, "cannot make sense of the internal persuasive force" of an argument (Minozzi and Siegel 2010 , p. 7).

In contrast, we think about a setting where politicians do not have private information about which policy is best for the voter. Their arguments aim to invoke knowledge the voter already possesses, and encourage her to apply this knowledge to the issue at hand to draw the intended logical, factual, or normative conclusions (Hafer and Landa, 2007). Arguments that convince do so because they "make sense" to the voter; arguments that fail to convince inadvertently expose weaknesses in the party's case (Wood and Porter 2019 p. 141).

Formally, the voter's type dictates both which arguments resonate with her *and* where her optimal policy aligns on each issue. The types of voters who are more easily swayed by left-wing (right-wing) arguments are also the ones who tend to prefer left-wing (right-wing) policies. Following Bayesian updating, then, when an argument resonates it moves the voter's beliefs (and induced preferences) in the speaker's optimal direction; when it doesn't, it moves the voter in the opposite direction. The possibility of arguments not only failing to persuade, but ultimately leading the receiver to update *against* the speaker, is in line with the "backfiring effect" documented in the empirical literature (see, e.g., Bail et al. 2018. Slothuus and De Vreese 2010).

In this framework, refuting and supporting arguments have two subtle but critical differences in their effects. To understand the first, consider a voter who, when presented with both an argument supporting the left-wing policy and another supporting the right-wing policy, would find both unpersuasive (in the language of the model, because she is the unconcerned type). Suppose this voter receives only a single argument, one in which the left-wing party attempts to refute the right-wing policy. In this scenario, the voter finds this argument persuasive, for the same reason that she would find an argument supporting the right-wing policy unpersuasive. As a result, her induced policy preference on this issue shifts leftward. However, if this same voter were to receive

[5]A related approach based on private information with verifiable disclosure assumes that arguments are always persuasive when they are presented (see, e.g., Dziuda, 2011).

instead only the supporting argument for the left-wing policy, she would (by assumption) find it unpersuasive and react by shifting her induced preference rightward. Thus, only the refuting argument enables the party to shift the induced policy preference of the unconcerned voter type in its favor, on that issue. In this sense, because the parties do not know the voter's type ex ante, refuting arguments are in expectation more likely to move the voter's preference in the party's preferred direction, and so are more effective on the extensive margin of persuasion.

Relying exclusively on the refuting argument may come at a cost, however. To understand this, consider the effects of supporting and refuting arguments on, for example, a voter whose underlying type is left-wing. This voter would always find an argument presented by the left-wing party persuasive, regardless of whether the argument is a supporting or refuting one, and both types of arguments would have the same directional effect on the voter's induced preferences on the issue. However, the effects on the voter's evaluation of the salience of the issue would be very different. After a persuasive supporting argument, the voter's posterior belief about the salience of the issue increases, whereas after a persuasive refuting argument, it decreases. In this sense, supporting arguments are more effective on the intensive margin.

Preview of Results

Our analysis uncovers rich results. We find that, on issues that are ex ante likely to be highly salient for the voter, parties may tacitly collude, both presenting vacuous arguments without attempting to sway the voter's opinion. It's important to note that this does not mean parties avoid discussing these issues, nor that they put less emphasis on these issues in their rhetorical strategies. Rather, the emergence of these vacuous arguments aligns with the observation that politicians often talk "without saying anything at all,"[6] speak in "ringing generalities,"[7] evade questions, and answer without actually answering.[8] In Italy, there's a term for this phenomenon: *politichese*, which describes a rhetorical style aimed precisely at not informing or explaining anything. Our model

[6]https://www.mic.com/articles/13722/the-politics-of-fluff-how-politicians-say-everything-without-saying-anything-at-allgoog$_{r}ewarded$

[7]https://slate.com/news-and-politics/2007/06/why-do-politicians-talk-like-that.html

[8]https://www.livescience.com/14074-politicians-question-dodging-debates.html

rationalizes this kind of behavior within a framework where politicians strategically choose when to talk but say nothing and when to present substantive arguments in an attempt to change voters' views.

Indeed, on issues that are ex-ante likely to be less salient to the voter, the parties present non-vacuous arguments, aiming to persuade. The nature of the arguments articulated by the parties on such issues depends on whether features of the electoral environment induce them to commit to similar platforms in the election, or to present the voter with distinct policy proposals. Parties prioritize refuting arguments over supporting arguments when the voters' ultimate choice of party is driven solely by policy concerns. This is because, in such circumstances, the parties' equilibrium platforms converge to the voter's expected ideal point on all salient issues. As a consequence, the intensity of the voter's preferences on each dimension is inconsequential, and the intensive margin of persuasion entirely yields to the extensive margin.

However, supporting arguments can emerge in equilibrium when the voter has non-policy considerations in her choice of the party. In this case, equilibrium platforms do not fully converge, and political parties can gain from increasing the relative salience of specific policy issues for the voter. Thus, the incentives from the intensive margin of persuasion can come to dominate those induced by the extensive margin.

In the baseline model, parties face no resource constraint and are free to attempt persuasion on all issues; in equilibrium, they do. In extending the baseline model, we consider a setting where such constraints are present. We show that when the parties must select a subset of issues to prioritize, and one of the parties has a strong advantage on some issue, equilibrium behavior may feature one-sided persuasion. In this case, the parties talk past each other, attempting to persuade the voter on different issues.

Finally, in the last extension we consider in the main body of the paper, we allow parties to present salience arguments–devoid of ideological connotation–that have the objective of convincing the voter that a specific issue is, or is not, relevant for her. We find that such arguments can emerge when one of the parties has a large initial disadvantage (i.e., the voter's initial beliefs heavily favor the other party's ideology). Because the disadvantaged party has little hope of changing the voter's directional preference in its favor, this party instead tries to reduce the electoral salience of the corresponding issue by persuading the voter that changing policy on it will have little impact on her welfare.

Related Literature

As detailed above, our approach departs from (much of) the existing formal treatments of persuasion, that rely on the assumption of asymmetric information between speakers and receivers and equate persuasiveness with credibility. Building on Hafer and Landa (2007), we model a setting where speakers do not possess private information about the receivers' optimal policy, and arguments are persuasive when they resonate with the audience (formally, they align with the audience's type). However, the focus of the present paper is distinct. Hafer and Landa (2007) study a group deliberation setting and focus on characterizing each member's choice of how much time to devote to presenting arguments versus listening to those advanced by others, without distinguishing between different types of arguments actors can present. In contrast, we embed the argumentation framework in an electoral competition model, and study parties' strategic choice of which issues to engage on and whether to present arguments that emphasize the strengths of their preferred policies or ones focused on the weaknesses of their opponents' stances.

Our approach also connects to the literature on Bayesian persuasion (Kamenica and Gentzkow, 2011), as presenting arguments in our framework is analogous to running experiments. For clarity of exposition, we defer discussion of the differences between these approaches until after the presentation of the model.

Additionally, our work is in conversation with a recent literature in behavioral political economy that studies the role of narratives in political persuasion (e.g., Eliaz and Spiegler 2020, Benabou and Tirole 2006, Levy, Razin and Young 2022). In Izzo, Martin and Callander (2023), which is most closely related to our paper, parties present alternative models of the world that encompass all issue dimensions. Voters evaluate each model, or narrative, as a whole. They choose the model that best explains their experiences, and adopt the beliefs induced by this model on *all* issues. In contrast, in our framework, voters evaluate each argument and issue *separately*, assessing individual arguments based on their merit. As we elaborate further below, this separability is an important difference that allows us to capture parties' incentives when they compete to shape public opinion *before* committing to policy positions across the various issues.[9] Furthermore, existing works in this tradition assume behavioral receivers that are constrained in their ability to process information. In contrast, voters in our model are not similarly constrained, and we maintain the assumption of Bayesian updating.

Finally, this paper differs from but complements an important body of work, both theoretical and empirical, about electoral campaigns. Aragonès, Castanheira and Giani (2015) and Dragu and Fan (2016), among others, formally analyze parties' choices of campaign messages aimed at manipulating voters' policy attitudes.[10] On the empirical side, several authors study parties' choices of positive versus negative campaign strategies (e.g., Walter and Nai, 2015; Geer, 2008; Brooks and Geer, 2007; Carraro and Castelli, 2010; Lipsitz and Geer, 2017).[11]Another strand of research empirically investigates whether and when campaigns feature parties talking past each other versus engaging on the same issues (see, e.g., Ansolabehere and Iyengar, 1994); Petrocik, 1996; Sides, 2006; Sigelman and Buell Jr, 2004, Kaplan, Park and Ridout, 2006).

These works study parties' strategic behavior in the last few months, or even weeks, before the elections, *after* electoral platforms have been set. Our paper shares obvious similarities but focuses on parties' choice of rhetorical strategies to shape voter preferences *before* the platform competition stage, precisely with the aim of manipulating the electoral environment in which they set their policy platforms. Our paper provides insight into the distinct strategic incentives parties face during this process. We return to this point after the presentation of our the model.

Furthermore, we note that the formal works in this literature typically assume that parties can

[9]This separability concern does not emerge in Izzo, Martin and Callander (2023), since they consider a multidimensional world but a unidimensional policy space.

[10]Less related to our work, other formal papers analyze candidates' choice of campaign messages when they are privately informed about their (and/or their opponent's) quality (e.g., Polborn and Yi, 2006).

[11]Our model of refuting arguments is closer to the kind of negative campaigning that entails criticisms of the opponent's positions rather than "dirty tricks" or personalistic attacks.

only influence the various issues' relative electoral salience and/or model this effect in a reduced form.[12] In contrast, we allow parties to influence voters' *directional* preferences on different issues, and consider a microfounded model of argumentation and persuasion that delves into the mechanisms of *how* parties can shape voters' preferences.

The Baseline Model

Players and actions. We consider the strategic interaction between two policy-motivated parties– L and R– and a voter V. The parties compete in an N-dimensional policy space $\mathbb{R}^N$. Players face common uncertainty over which dimensions of the policy space are relevant to the voter and what her optimal policy is for each relevant dimension. On each dimension, the parties choose whether to present ideological arguments to try to persuade the voter and, if so, of what kind. Following the arguments, the voter updates her beliefs about her optimal policy. Once the voter's updated preferences become public, the parties commit to a policy platform. The voter then decides which party to elect, and the elected party implements the announced platform.

Information and payoffs. On each dimension $j \in N$ the voter could be a left-wing type, $\theta_j = -1$, a right-wing type, $\theta_j = 1$, or unconcerned $\theta_j = \emptyset$, with θ_j i.i.d. on each dimension. An unconcerned type is one for whom the dimension has no impact on her welfare (an alternative interpretation is that all policies are equally good or equally bad for the voter). Formally, the voter's utility is given by

$$U_v = -\sum_j \mathbf{I}_j \left(\theta_j - x_j\right)^2, \tag{1}$$

where $\mathbf{I}_j = 0$ if $\theta_j = \emptyset$ and $\mathbf{I}_j = 1$ otherwise. x_j is the implemented policy on dimension j. Note that, if dimension j is relevant for the voter (that is, $\theta_j \neq \emptyset$), her ideal policy takes value 1 or -1.

[12]Roemer (1994) allows parties to shape voters' directional preferences but also does so in a reduced-form, assuming that when voters are exposed to a party's messages their preferences become more aligned with the party's. Skaperdas and Grofman (1995) consider a setup where positive campaign messages are assumed to mobilize party's supporters while negative messages demobilize the opponent's.

At the beginning of the game, the voter's true type is unknown to all players, including the voter herself. That is, neither the parties nor the voter can perfectly anticipate the consequences of each policy choice for the voter's welfare, or how she would feel upon experiencing different policies being implemented. All players share common prior beliefs that

- $p(\theta_j = -1) = \pi_j \lambda_j$,
- $p(\theta_j = 1) = \pi_j(1 - \lambda_j)$, and
- $p(\theta_j = 0) = 1 - \pi_j$.

Here π_j captures the players' expectations that dimension j is salient for voter welfare, hereafter referred to as welfare salience.[13] λ_j is the probability that, if dimension j is welfare-salient for the voter, her ideal policy on this dimension has value -1. Notice that parties have no private information about the voter's type. As highlighted in the introduction, we make this assumption to study persuasiveness as a function of the quality and content of the arguments, rather than as a function of the speaker's trustworthiness (as in the classic asymmetric information setting).

Finally, for party $i \in \{L, R\}$, utility is given by

$$U_i = -\sum_j (\tilde{x}_j^i - x_j)^2, \tag{2}$$

where $\tilde{x}_j^i$ is party i's optimal policy on dimension j. For simplicity, we assume that $\tilde{x}_j^R = -\tilde{x}_j^L = 1$ for all dimensions $j \in N$. In the Online Appendix, we relax this assumption and show that the results from the baseline setup continue to hold as long as parties' ideal points are not too polarized (see Appendix E). Furthermore, our results would remain unchanged if we assumed that parties also obtain a benefit from winning elections per se (i.e., care about both policy and office).

Argumentation. On each dimension $j \in N$, parties simultaneously choose what kind of argument to present.[14] In particular, each party i can present a **supporting** argument ($a_j^i = s$) that aims

[13]We use this wording to distinguish our notion of salience from other common uses of this term in the literature, where it connotes how frequently a certain issue is talked about, or how prominent an issue is in an election.

[14]Our results would be unchanged if instead parties present arguments sequentially. We briefly return to this point

to convince the voter that a policy program aligned with the party's own preferences is the best choice for her, a **refuting** argument ($a^i_j = r$) that aims to discredit policies aligned with the opponent's preferences, or a **vacuous** argument ($a^i_j = v$) that lacks any real persuasive content. In our framework, presenting a vacuous argument is the same as ignoring dimension j in the rhetorical discussion. In other words, a vacuous argument has no impact on the voter's beliefs.[15] In contrast, non-vacuous arguments may successfully persuade the voter, or may backfire.

Specifically, non-vacuous arguments *resonate* with the voter if and only if their claim aligns with her underlying type θ_j. Then, an argument supporting a left-wing (right-wing) policy resonates with the voter *if and only if* she is a left-wing (right-wing) type. In contrast, an argument refuting the left-wing (right-wing) policy resonates *unless* the voter is a left-wing (right-wing) type.

Let $\rho_{a^i_j} = 1$ denote the event that argument a^i_j resonates with the voter, and $\rho_{a^i_j} = 0$ denote the event that it does not. The following table summarizes our assumptions on when arguments resonate, conditional on the receiver type (we omit the subscript a^i_j for readability):

	$\theta_j = 1$	$\theta_j = -1$	$\theta_j = \emptyset$
$a^R_j = s$	$\rho = 1$	$\rho = 0$	$\rho = 0$
$a^R_j = r$	$\rho = 1$	$\rho = 0$	$\rho = 1$
$a^L_j = s$	$\rho = 0$	$\rho = 1$	$\rho = 0$
$a^L_j = r$	$\rho = 0$	$\rho = 1$	$\rho = 1$

Table 1: Argument resonance conditional on voter type and argument. a^R_j (a^L_j) denotes an argument presented by R (L).

Underlying these assumptions is the notion that each policy is associated with a set of reasons that most effectively showcase its merits. A supporting argument for a given policy highlights these reasons, while a refuting argument provides the voter with a rationale to discredit them. A

at the end of this section.

[15]Outside the model, simply mentioning an issue may increase its electoral salience. Although we abstract away from this possibility, incorporating this effect of arguments in our setup would have no impact on our baseline findings.

refuting argument may then highlight logical, factual, or normative flaws in what would be the best supporting argument the opponent might use. Then, in this framework, an argument supporting a policy and one refuting the same policy partition the voter-type space in the same way: if one argument resonates with the voter, the other cannot, and vice versa. In contrast, the argument supporting the right-wing policy and the one supporting the left-wing alternative emphasize distinct sets of attributes or reasons, and therefore partition the type-space in different ways. It is possible that the voter would find both arguments unpersuasive (because she is the unconcerned type).

Finally, note that this implies that an unconcerned voter type finds refuting arguments persuasive.[16] A refuting argument aims to convince the voter that the corresponding policy will not positively impact her welfare. For an unconcerned type, whose welfare is unaffected by policies on this issue, this argument must make sense.

In this interpretation of our model, the voter is an objective interpreter of the force of the arguments. That is, an argument resonates if and only if the voter finds its claims regarding the effect of the policy for her welfare to be true. Under an alternative interpretation, which also fits our formal framework, whether the arguments reflect the true state of the world is less relevant than whether the receiver is the sort that is more or less readily swayed by left- vs right- wing arguments.

Timing. To sum up, the timing of the game is as follows:

1. Parties simultaneously present N-dimensional argument vectors $\mathbf{a}^L$ and $\mathbf{a}^R$;
2. on each dimension $j \in N$, V observes arguments and whether they resonate and then updates beliefs on θ_j using Bayes' Rule;
3. parties observe whether arguments resonated, and simultaneously commit to platforms $\mathbf{x}^L \in \mathbf{R}^N$ and $\mathbf{x}^R \in \mathbf{R}^N$;
4. the voter chooses whom to elect;
5. the elected party implements its announced platform.

[16]Henceforth, when we use the term "persuasive" we specifically refer to the argument resonating.

Equilibrium concept We consider Perfect Bayesian Equilibria in pure strategies (henceforth, equilibria). When multiple equilibria exist, we eliminate those that are Pareto-inferior from the parties' perspective (henceforth, Pareto-undominated equilibria).[17] In the context of our model, the set of equilibria surviving this selection criterion exactly coincides with the equilibria of the variant of the game in which parties present arguments sequentially rather than simultaneously, while those that are Pareto-inferior exist only in the game with simultaneous moves. This holds true regardless of which party moves first in the sequential game. The choice to focus on Pareto-undominated equilibria should, thus, be interpreted as robustness- rather than merely efficiency-based.

Comments on the Baseline Model

In this section, we provide several comments on our model setup. First, while the model described above treats unitary political parties as the players of the argumentation stage, our framework could be applied more broadly. Since the different dimensions are separable in our setup (i.e., the voter evaluates arguments on each issue separately),[18] the model can accommodate parties as coalitions of different groups with aligned preferences, each caring predominantly about a different issue. We can then envision argumentation on the various issues being conducted by different groups within the party, or even by ideologically aligned interest groups.

Second, our focus on argumentation shaping public opinion *before* electoral competition produces incentives that may differ significantly from those faced by parties during electoral campaigns. Two key features of our framework producing these differences are that parties (1) observe the outcome of the argumentation stage before selecting their electoral policy positions and (2) need not (yet) be making across-issue aggregate arguments to support their platform. The former allows parties to experiment with rhetorical arguments they might be unwilling to pursue during electoral campaigns, since the subsequent choice of policy platform allows them to mitigate the downside risk of attempting to sway the voters. The latter allows parties to focus argumentation on individual

[17]That is, we eliminate an equilibrium if, for the same parameter values, there exists another equilibrium that yields higher utility for at least one of the parties, without decreasing the utility of the other.

[18]And, importantly, in equilibrium the dimensions are always treated as separate in the platform game, as we will show in Lemma 1.

issues separately, capturing the flexibility parties may have early in the electoral cycle, when they are not yet required to present bundled positions across issues to attract voters.

Finally, we introduce an analogy to illustrate the mechanics of our argumentation technology and clarify the connections of the paper to the formal literature on persuasion. Imagine a scenario where the voter has three cups in front of her, labelled as her three possible types, with a ball hidden under one cup indicating her true type. Neither the voter nor the parties know where the ball is. We can think of presenting a non-vacuous argument as conducting an experiment that reveals whether the voter's type aligns with the argument. In the context of this example, this is equivalent to flipping one of the cups. In particular, a supporting argument flips the cup corresponding to the speaker's preferred position, with the hope of revealing to the voter that the ball is hiding under that exact cup; a refuting argument flips the cup corresponding to the policy aligned with the opponent, in hopes of revealing that that cup is empty.[19]

From this perspective, our approach has similarities with the Bayesian persuasion framework (Kamenica and Gentzkow, 2011), as previously noted. However, significant differences exist between the two approaches. In particular, our model imposes the restriction that an argument can never resonate with the voter (i.e., $\rho = 1$) if it does not align with her type. In contrast, in the Bayesian persuasion framework, the persuader can design *any* experiment, including one where, in the language of our model, an argument supporting a right-wing policy may resonate with a $\theta = -1$ voter type.[20]

This restriction in our model captures the idea that arguments provide the receiver with logical ammunition that she employs to form her own opinions and beliefs on the subject. When viewing arguments as experiments, their outcomes must then be correctly understood by the receiver, since they are determined by the receiver's own deliberation and reasoning. To put it simply, the receiver

[19]In the baseline model, each party is thus restricted to flipping only one cup on each dimension, representing either the -1 type or the $+1$ type. Parties cannot flip multiple cups, and they cannot flip the cup corresponding to the unconcerned voter type. We consider this richer argument space in an extension analyzed below.

[20]The implication is that, whereas the Bayesian-persuasion framework allows the information designer to choose any partition of the state space, our framework allows the parties to choose only whether the experiment groups the unconcerned type with the right-wing type (by choosing an argument that reveals whether $\theta = -1$ or not) or with the left-wing type (by choosing an argument that reveals whether $\theta = +1$ or not).

cannot be tricked into thinking that a certain argument does or does not make sense to *her*. As such, this restriction makes our framework particularly suitable for studying *verbal* persuasion that works by tapping into the audience's own existing knowledge, experiences, values, or systems of beliefs (rather than by generating new evidence, as in the Bayesian persuasion framework).

Preliminary Analysis

Arguments and Persuasion: Single-Party Case

Before delving into equilibrium analysis, we focus on characterizing how our voter responds to ideological arguments. To fix ideas, suppose first that the voter is only interacting with one speaker - the right-wing party R. Denote x_j^v the voter's preferred policy on dimension j, given her posterior beliefs. Table 2 displays x_j^v conditional on the resonance events indicated:

	$\rho = 1$	$\rho = 0$
$a_j^R = s$	$x_j^v = 1$	$x_j^v = -1$
$a_j^R = r$	$x_j^v = 1$	$x_j^v = -1$
$a_j^R = v$	$x_j^v = 1 - 2\lambda_j$	$x_j^v = 1 - 2\lambda_j$

Table 2: Voter's induced policy preferences, single speaker case.

To understand the effect of refuting arguments, say the voter finds an argument refuting the left-wing policy persuasive; in this case, left-wing policies cannot be optimal for her. However, she remains uncertain about how she would feel if confronted with an argument advocating for the merits of right-wing alternatives. It's plausible that such an argument would be persuasive, implying that right-wing policies are optimal for the voter. Yet, there's also the possibility that this argument would fail to resonate, suggesting that different policy alternatives on this dimension are inconsequential for the voter (i.e., she is the unconcerned type on this dimension). Because of this uncertainty regarding whether right-wing policies are optimal or merely on par with other alternatives, the voter's best choice on this dimension is policy +1. If instead the voter finds the refuting argument unpersuasive, then it must be the case that the corresponding policy is optimal for her, and she revises her preferences accordingly, i.e., $x_j^v = -1$. A symmetric logic applies when the voter receives a supporting argument.

Table 2 might lead one to conclude that supporting and refuting arguments are strategically equivalent since they have the same effect on voter's induced preferences when they resonate with her.[21] However, and crucially for our results, the two types of arguments have different probabilities of resonating and, therefore, different effects on the voter's *expected* induced preferences.

A right-wing supporting argument resonates with the voter if and only if dimension j is relevant for the voter *and* her optimal policy is a right-wing one. The probability of this event is $\pi_j(1-\lambda_j)$. In contrast, a refuting argument by the right-wing party resonates with the voter *unless* left-wing policies are actually optimal for her, i.e., with probability $1-\pi_j\lambda_j$. Thus, the refuting argument is more likely to resonate and so yields a higher expected induced preference for the voter, $(1-\pi_j\lambda_j)-\pi_j\lambda_j > \pi_j(1-\lambda_j)-(1-\pi_j(1-\lambda_j))$. This result emerges because, as described earlier, refuting arguments capitalize on the ambiguity the voter encounters when she only hears one side of the story, allowing parties to capture the unconcerned type and sway her in their preferred direction (and thus reducing the risk of backfiring).

In concluding, we note that, for the same reasons described above, refuting arguments are less effective than supporting ones in persuading the voter of the relevance of a particular dimension to her welfare (i.e., in increasing the voter prior π_j). When a supporting argument resonates, it *must* be the case that $\theta_j \neq \emptyset$, and the voter updates accordingly. In contrast, the resonance of a refuting argument moves the voter's directional preferences closer to the party's but, at the same time, induces her to believe that the issue at hand is *less* likely to be relevant than she previously thought. In this sense, refuting arguments are better on the extensive margin of persuasion, while supporting ones are better on the intensive margin.

[21] This starkness is, of course, not necessary for the logic of our findings. Following the presentation of our results we discuss their robustness if the voter is intrinsically more skeptical of refuting arguments.

Competing Rhetorical Messages

Next, we move back to our analysis of competition in persuasion, with both parties, L and R, allowed to present arguments.

	$a_j^L = s$	$a_j^L = r$	$a_j^L = v$
$a_j^R = s$	$x_j^v = \begin{cases} \mathbb{R} & \text{with probability } 1-\pi_j \\ -1 & \text{with probability } \pi_j\lambda_j \\ +1 & \text{with probability } \pi_j(1-\lambda_j) \end{cases}$	$x_j^v = \begin{cases} -1 & \text{with probability } 1-\pi_j(1-\lambda_j) \\ +1 & \text{with probability } \pi_j(1-\lambda_j) \end{cases}$	$x_j^v = \begin{cases} -1 & \text{with probability } 1-\pi_j(1-\lambda_j) \\ +1 & \text{with probability } \pi_j(1-\lambda_j) \end{cases}$
$a_j^R = r$	$x_j^v = \begin{cases} -1 & \text{with probability } \pi_j\lambda_j \\ +1 & \text{with probability } (1-\pi_j\lambda_j) \end{cases}$	$x_j^v = \begin{cases} \mathbb{R} & \text{with probability } 1-\pi_j \\ -1 & \text{with probability } \pi_j\lambda_j \\ +1 & \text{with probability } \pi_j(1-\lambda_j) \end{cases}$	$x_j^v = \begin{cases} -1 & \text{with probability } \pi_j\lambda_j \\ +1 & \text{with probability } (1-\pi_j\lambda_j) \end{cases}$
$a_j^R = v$	$x_j^v = \begin{cases} -1 & \text{with probability } \pi_j\lambda_j \\ +1 & \text{with probability } (1-\pi_j\lambda_j) \end{cases}$	$x_j^v = \begin{cases} -1 & \text{with probability } 1-\pi_j(1-\lambda_j) \\ +1 & \text{with probability } \pi_j(1-\lambda_j) \end{cases}$	$x_j^v = 1 - 2\lambda_j$

Table 3: Probability distributions over x_j^v given competition in persuasion.

If only one party presents a non-vacuous argument, then voter learning is as in the single-speaker case. Assume instead that both parties present supporting arguments. With a probability of $\pi_j\lambda_j$, the left-wing argument resonates with the voter and leads her to update that dimension j is relevant, and the optimal policy is -1. With a probability of $\pi_j(1-\lambda_j)$, the right-wing argument resonates with the voter, and she concludes that dimension j is relevant and policy 1 is the optimal choice for her. Finally, with a probability of $1-\pi_j$, neither argument resonates, and the voter updates that she must be the unconcerned type i.e., she becomes indifferent between policy alternatives on this dimension and will focus on other issues when making her electoral decisions. A symmetric logic applies if both present refuting arguments.

Equilibrium Analysis

We proceed by backward induction, beginning with the platform competition stage. Recall that, in our setting, parties observe whether arguments resonated or not with the voter *before* they commit to their platform. This implies that, in equilibrium, the parties converge on x_j^v (as characterized in Table 3) on each dimension j the voter believes to be relevant with strictly positive probability. On any dimension that the voter instead considers irrelevant, electoral competition is not a constraint, and the parties simply commit to their ideal policy ($\tilde{x}_j^R$ and $\tilde{x}_j^L$). The parties always win with equal probability.[22] Formally, denote $\widehat{\pi}_j$ to be the posterior probability that $\theta_j \neq \emptyset$. We have:

Lemma 1. *In equilibrium the parties always win with equal probability. Further, for all j,*

- *if $\widehat{\pi}_j = 0$, then in equilibrium $x_j^R = \tilde{x}_j^R$ and $x_j^L = \tilde{x}_j^L$;*
- *if $\widehat{\pi}_j > 0$, then in equilibrium $x_j^R = x_j^L = x_j^v$.*

Notice that equilibrium x_j^R and x_j^L depend on whether the voter assigns positive probability to the welfare-salience of the issue, but do not otherwise depend on the magnitude of the voter's posterior $\widehat{\pi}_j$.

The Parties' Rhetorical Strategies

We can now characterize the parties' rhetorical strategies in equilibrium. Lemma 1 implies that the equilibrium platforms on each dimension are not a function of the arguments presented on the other issues. Further, in equilibrium, parties always win the election with equal probability. As a consequence, at the argumentation stage, the parties treat each dimension separately, as if it were the only one available.

First, we show that supporting arguments can never be sustained in equilibrium in this baseline model:

Lemma 2. *Given the equilibrium of the platform stage in the baseline model, parties always prefer refuting arguments to supporting arguments.*

[22] To simplify the statement of Lemma 1, we set aside additional equilibria that may arise if the voter learns that her type is the same on all issues. In this limiting case, there exist multiple equilibria in which the party whose preferences align with the voter's wins the election with probability one by proposing its own ideal policy (which coincides with the voter's) on each dimension. The opponent is indifferent between all platforms. Notice however that these equilibria are payoff-equivalent to the one characterized in Lemma 1, since parties do not care about platforms directly but only about the policy outcome.

Consider party L, and suppose R presents a vacuous argument. Then, Table 3 and Lemma 1 directly imply that L must strictly prefer a refuting argument to a supporting one, since the former is more likely to resonate and move the voter's preferences on the issue to the left. Symmetrically, if R presents a supporting argument, L is better off presenting a refuting argument to exploit the high probability of the opponent's argument backfiring.[23] Finally, if R presents a refuting argument, L maximizes its payoff by countering with a refuting argument as well, to avoid the opponent capturing the unconcerned type, as described above.

This result is a consequence of the fact that, in the baseline model, political parties are incentivized to focus exclusively on the extensive margin of persuasion. This is because the parties' equilibrium platforms converge on all (relevant) dimensions, making the voter's beliefs on the issues' *relative* welfare-salience inconsequential. In turn, platform convergence arises because the baseline model assumes no friction in the electoral process (e.g., no noise, no valence considerations, etc.). As we show in an extension below, the intensive margin of persuasion can become relevant, and sometimes dominate, when substantial electoral frictions generate platform divergence in equilibrium.

We now characterize the equilibrium arguments of the baseline model:

Proposition 1. *There exists a unique* $\bar{\pi}_j(\lambda_j)$ *such that*

- *in every equilibrium, both parties present refuting arguments on any dimension* $j \in N$ *for which* $\pi_j < \bar{\pi}_j(\lambda_j)$*;*
- *in every Pareto-undominated equilibrium, both parties present vacuous arguments on any dimension* $j \in N$ *for which* $\pi_j > \bar{\pi}_j(\lambda_j)$*.*

Furthermore, $\bar{\pi}_j(\lambda_j)$ *increases in* λ_j*'s distance from* $\frac{1}{2}$*.*

We can always sustain an equilibrium in which both parties present refuting arguments in an attempt to undermine the attractiveness of each other's preferred policy. If one's opponent offers a refuting argument, neither a supporting nor a vacuous argument offers additional information in

[23] Recall that a party's refuting argument is informationally equivalent to the opponent's supporting argument.

response. Only a refuting argument does, and its only possible effect, given the opponent's choice of the refuting argument, is to move the unconcerned types from supporting the opponent to being indifferent between the parties, on that dimension.

However, for some conditions, there is also an equilibrium in which both parties present vacuous arguments, and that equilibrium is preferred by both parties. As previously mentioned, we adopt the selection criterion that eliminates Pareto-dominated equilibria because only the Pareto-undominated ones are robust to allowing parties to present arguments sequentially.

To understand the conditions under which this equilibrium exists, consider the extreme case in which we assume that the issue is certainly salient, $\pi_j = 1$. In this case, if the voter receives a non-vacuous argument from either party, she learns her true position is -1 with probability λ_j and +1 with $(1 - \lambda_j)$ (from Table 3). If the parties were risk-neutral, they would be indifferent ex ante between this lottery and a certain policy $(1 - 2\lambda_j)$, but, being risk-averse, they prefer to collude tacitly on keeping the voter uninformed.

Consider what happens to their incentives to tacitly collude on vacuous arguments as π_j decreases. Suppose the left-wing party deviates to a refuting argument: as before, it risks that the voter will update that left-wing policies cannot be optimal, but, the probability of this event is now only $\pi_j(1 - \lambda_j) < (1 - \lambda_j)$; at the same time, the probability that the voter will adopt the left-wing position has risen to $(1 - \pi_j) + \pi_j\lambda_j > \lambda_j$. If π_j is sufficiently small, the party's ability to capture the unconcerned type improves the lottery induced by its argumentation enough to outweigh the risk associated with it, relative to the certain policy preference of the uninformed voter. Similar logic holds for the right-wing party.[24] Furthermore, as shown in the last part of Proposition 1, as the voter's initial attitudes become more strongly favorable towards one party, the opponent has stronger incentives to break the collusion and try to persuade the voter.

[24] As we note above, in the present model, the Pareto-based selection criterion selects equilibria that would remain equilibria of the sequential version of our game. To see this, note that in the latter version, the party moving last will prefer to make a vacuous argument if $\pi_j > \bar{\pi}_j(\lambda_j)$ and her opponent made a vacuous argument. Otherwise, it prefers to refute. If $\pi_j \geq \bar{\pi}_j(\lambda_j)$, then, anticipating her opponent's response, the party moving first prefers making a vacuous argument if (v, v) yields her greater utility than would (r, r). As we show in the appendix, both parties prefer (v, v) to (r, r) when $\pi_j > \bar{\pi}_j(\lambda_j)$, therefore (v, v) is the unique equilibrium in the sequential game for $\pi_j > \bar{\pi}_j(\lambda_j)$, regardless of which party is the first-mover. In contrast, in the simultaneous-move version, both (v, v) and (r, r) are supported in equilibrium when $\pi_j > \bar{\pi}_j(\lambda_j)$.

We conclude this section with a comment concerning our simplifying assumption that the only difference between refuting and supporting arguments is how they partition the voter-type space, i.e., their likelihood of resonating with the voter. One may worry that the effect of the two types of argument may also be different in other respects, e.g., the voter may be intrinsically more skeptical of a refuting argument (see, e.g., Ansolabehere and Iyengar 1995), and therefore, successful persuasion may be harder to achieve with this form of rhetoric.

We can allow for this possibility without altering the qualitative insights emerging from the baseline model: Suppose that when a party presents a refuting argument, it reaches the voter with probability $p < 1$, but when it makes a supporting argument, it always reaches the voter. This version of the model is isomorphic to the baseline. To see this, suppose R presents a refuting argument on dimension j. In the event that R's argument does not reach the voter, L would always prefer a refuting or vacuous argument over a supporting one, as presenting a supporting argument would mean the opponent could benefit from false positives. In the event that R's argument instead does reach the voter, presenting a supporting or vacuous argument would have no impact on the voter's beliefs and would not affect the equilibrium of the platform game (L's supporting argument would be informationally redundant). Thus, L would still be better off presenting a refuting argument, even if there is a risk that it may not reach the voter. In short, this risk affects the expected payoffs of the parties for different rhetorical strategies, but it does not alter their best responses and so leaves the equilibrium results unchanged.

Persuasion with Constrained Parties

In the baseline model, parties may present non-vacuous arguments on all policy dimensions, should they wish to do so. Next, we consider the consequences of constraining the number of issues on which parties may attempt to persuade voters. Such constraints may arise because voters have limited attention spans and cognitive resources, making it difficult to absorb and process multiple arguments on different policy dimensions, or because arguments may be effective only if they are repeated frequently, which may not be feasible across a broad range of issues. While these constraints are irrelevant for groups or actors that only care about a single dimension, they become crucial when the party must coordinate its rhetorical strategy across multiple issues.

In this section, we assume that there are two policy dimensions, 1 and 2, but that each party is allowed to make a non-vacuous argument on one dimension at most. To simplify the statements of our results, we impose the restriction that λ_1 and λ_2 are neither both very low nor both very high. In other words, the voter is not ex-ante too right-leaning or left-leaning on both dimensions at once. This assumption is substantively plausible given the focus of the model on the two-party electoral competition between a right and a left party. Technically, it ensures the existence of pure-strategy equilibria but does not alter our qualitative insights.

As in the baseline model, if any issue is ex-ante sufficiently likely to be relevant for the voter (i.e., $\pi_j > \overline{\pi}_j(\lambda_j)$), parties implicitly collude to exclude it from their competition in persuasion in any Pareto-undominated equilibrium. In this case, the constraint that parties must choose at most one issue on which to engage does not bind, and so for Proposition 2 below, we assume $\pi_j < \bar{\pi}_j(\lambda_j)$ for all dimensions $j \in \{1, 2\}$ to focus on the cases where the constraint is relevant.

Proposition 2. *There exist unique* $\widetilde{\lambda}_1(\pi_1, \pi_2)$ *and* $\widetilde{\lambda}_2(\pi_2, \pi_1)$*, henceforth* $\widetilde{\lambda}_1$ *and* $\widetilde{\lambda}_2$*, such that*

- *there is an equilibrium in which both parties make refuting arguments on* j *if and only if* $\lambda_{-j} \in [\widetilde{\lambda}_{-j}, 1 - \widetilde{\lambda}_{-j}]$*, i.e., neither party has a strong initial disadvantage on the other issue,* $-j$*;*
- *there is a unique equilibrium in which the parties present refuting arguments on different issues if and only if for some* j*,* $\lambda_j < \widetilde{\lambda}_j$ *and* $\lambda_{-j} > 1 - \widetilde{\lambda}_{-j}$*. Furthermore, in this equilibrium,* L *makes a refuting argument on* j *and* R *on* $-j$*, i.e., each party makes a refuting argument on the issue on which it has an ex ante relative disadvantage.*

The constraint does not affect the prevalence of refuting arguments in equilibrium. However, in contrast to the baseline model where parties always counter each other's persuasion attempts, constrained parties talk past each other (trying to persuade the voter on different issues) if, on every issue, the voter's ex ante position strongly favors one of the parties over the other.

To understand this result, assume that the voter initially leans heavily to the left on dimension 2 (i.e., λ_2 is high), and conjecture an equilibrium in which both parties engage on dimension 1. In our framework, parties have strong incentives to counteract each other's persuasion attempt by engaging on the same issue. However, because λ_2 is high, the right-wing party has a lot to gain from deviating from the conjectured equilibrium and exploiting the benefits of one-sided persuasion to change the voter's preferences on dimension 2. Thus, the conjectured equilibrium does not exist. A similar but symmetric rationale applies to the left-wing party when λ_2 is low.

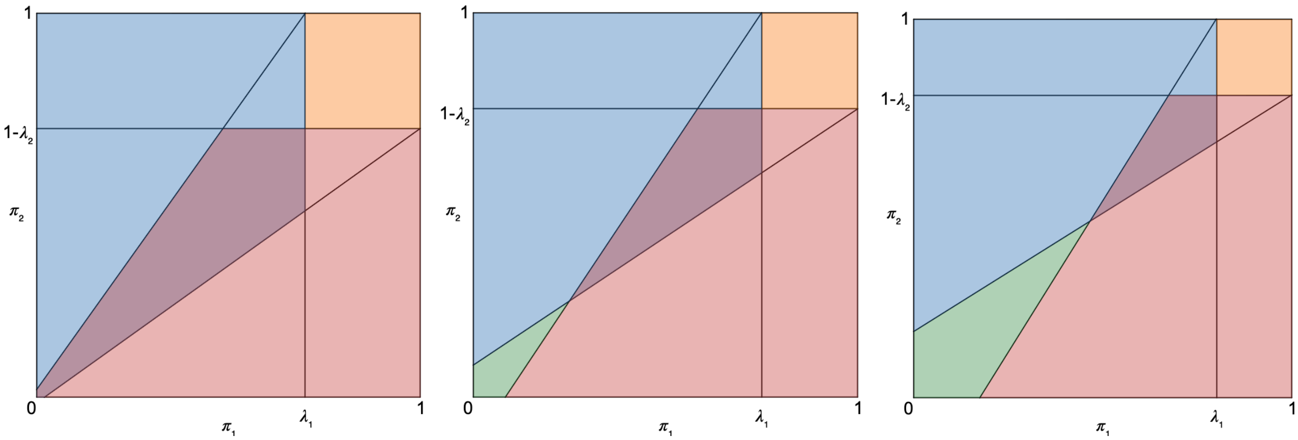
Furthermore, when in equilibrium parties talk past each other, they each present a refuting argument on the issue over which they have a relative disadvantage. Recall that an unopposed refuting argument can capture an unconcerned voter type. It is this potential that makes a refuting argument on one's disadvantaged issue so attractive. It is important to note that the implication is not that political parties avoid discussing issues where they have an advantage. Rather, when the condition given above hods, when parties do discuss such issues, they do so by presenting vacuous arguments and do not actively seek to change voter's preferences (i.e., they talk in *politichese*). If a party is already favored by the electorate on a certain issue, it has little incentive to accept the risks involved in attempting to persuade.

Figure 1 below provides a graphical representation of our findings in the (π_1, π_2) space.[25] As the values of λ_1 and λ_2 become increasingly extreme (moving rightward from the left-most panel), the size of the (green) region, where parties talk past each other, increases at the expense of the (red and blue) regions where both parties make refuting arguments on the same issue.

Argumentation and Frictions in Elections

So far, we have assumed a friction-less electoral process – no noise, no cost of voting, and no valence considerations. As a result, in the platform game, parties always converge on the voter's preferred

[25]Recall that in the regions where $\pi_1 > \bar{\pi}_1$ and/or $\pi_2 > \bar{\pi}_2$ the constraint does not bind. In Figure 1, these are the regions above the $\pi_2 = 1 - \lambda_2$ line, and to the right of the $\pi_1 = \lambda_1$ line. Thus, these regions shrink as λ_1 and λ_2 become more extreme.



(a) $\lambda_1 = 0.7, \lambda_2 = 0.3$ (b) $\lambda_1 = 0.75, \lambda_2 = 0.25$ (c) $\lambda_1 = 0.8, \lambda_2 = 0.2$

Figure 1: Comparison of Pareto-undominated pure-strategy equilibrium behavior at different (λ_1, λ_2) with constrained parties. Red region: both parties present refuting arguments on issue 2. Blue: both present refuting arguments on issue 1. (Purple: both present refuting on issue 1 and both present refuting on issue 2.) Green: L presents a refuting argument on issue 2 and R on issue 1. Orange: both present vacuous arguments on both issues.

policy on each dimension (given her posterior beliefs). The relative importance the voter assigns to different policy issues is irrelevant for determining the equilibrium policy outcome.

This has important implications for the parties' behavior during the argumentation stage because it incentivizes the parties to concentrate their efforts solely on the extensive margin of ideological persuasion. Because refuting arguments are more likely to resonate with the voter, supporting arguments cannot be sustained in equilibrium.

However, frictions may arise in real-world elections. For example, party affiliation or the leaders' popularity may influence voters' decisions at the ballot box, even fixing their induced policy preferences. In such scenarios, voters would have to balance policy/platform considerations against other factors. This, in turn, implies that the weight they attach to each issue, and not only their preferences along the left-right spectrum, would be relevant for their choices. As a consequence, parties would care about both the intensive and extensive margins of political persuasion, with incentives to pull the voter's ideological beliefs in their preferred direction *and* to increase the salience she places on the issue.

This generates an extensive-intensive margin trade-off for political parties. Refuting arguments are more likely to resonate with the voter, and thus are more effective on the extensive margin. However, supporting arguments induce higher salience (i.e., a higher posterior $\widehat{\pi}_j$ that issue j is relevant for the voter) when they resonate and are thus better on the intensive margin.

In order to study this trade-off, we amend the baseline model to incorporate a commonly modeled source of friction – a valence shock influencing the voter's behavior, orthogonal to policy considerations. In particular, we assume that, after the argumentation stage but before the platform game, a valence shock δ in favor of one of the parties is realized and publicly observed. If, for example, the shock favors the left-wing party, then voting for this party gives the voter a higher utility, everything else being equal. For simplicity, we consider a unidimensional policy space.

In this context, the party favored by the realization of valence shock is able to win the election with a platform closer to its own preferred point than is the case in the baseline model. The magnitude of this effect is a function of the voter's posterior beliefs over the welfare-salience of the policy issue under consideration, $\widehat{\pi}$. The higher $\widehat{\pi}$, the more the voter cares about policy versus valence considerations, and thus the stronger the constraint that the voter's induced policy preferences place on the valence-advantaged party. Conditional on directional persuasion being successful, increasing the electoral salience of the policy choice therefore limits a party's potential loss from an unfavorable valence shock.[26]

The larger the value of δ, the higher the equilibrium advantage of the party favored by the shock. Thus, when the magnitude of such a shock is higher, parties value the intensive margin more; when it is lower, they continue to concentrate on the extensive margin of persuasion, as in the baseline model.

Proposition 3. *There exist unique thresholds $\widehat{\delta}$, $\widetilde{\delta}$, and $\pi^\dagger$ such that*

- *an equilibrium in which some party makes a supporting argument can be sustained only if $\delta > \widetilde{\delta}$;*
- *if $\delta > \widehat{\delta}$ and $\pi < \pi^\dagger$, then, in the unique equilibrium both parties present supporting arguments.*

When δ is small, electoral frictions do not alter the results of the baseline model, and refuting

[26]Notice that, while in the baseline model the outcome of the argumentation stage influences the equilibrium policy only, in this extended setup the expected identity of the winner of the election is also impacted.

arguments continue to dominate supporting ones. When δ is high, instead, parties must articulate supporting arguments in equilibrium.

The empirical literature has uncovered a positive association between closeness of elections and parties' use of negative rhetoric in campaigns (Banda, 2022). In our framework, the electoral environment is ex-ante more competitive when δ is small. Proposition 3, thus, predicts that a pattern similar to one observed in campaigns should emerge throughout the electoral cycle.

We note that the trade-off between intensive and extensive margins that underlies this result is not confined to settings where voters have preferences over non-policy aspects. It arises whenever parties don't converge on every dimension in the platform game. For instance, there might be uncertainty about how voters update their policy preferences, or parties might have less flexibility on some of the issues and be exogenously associated with certain stances. In these scenarios, the relative salience the voter places on the different issues becomes relevant for equilibrium outcomes, similarly to what described above. As such, parties again need to balance the intensive and extensive margins of persuasion, sometimes leading to the adoption of supporting arguments in equilibrium.

A Richer Argument Space

So far, we have assumed that each party can make only one non-vacuous argument, either supporting or refuting, on each dimension. Here, we return to the baseline model (where the voter only cares about policy and no valence considerations arise) and augment it with a richer argument space. As we previously mentioned, we can think about arguments as experiments. In this extension, we allow parties to run *any* experiment, only maintaining the restriction that the outcome (i.e., the resonance of the argument) must be truthful. This implies that parties can choose to present a refuting, supporting, or vacuous argument, as in the baseline model; a *salience* argument, which aims to persuade the voter that she should or should not care about a specific dimension; or a combination of multiple arguments.[27]

We assume that each party pays an arbitrarily small cost for each non-vacuous argument it

[27]To use our cups analogy, we allow each party to flip any subset of cups.

presents.[28] This has no effect on the results of the baseline model, but ensures equilibrium uniqueness in this richer argument space. Then, we have:

Proposition 4. *There exist unique thresholds $\widetilde{\pi}_j(\lambda_j)$, $\underline{\lambda}_j$, and $\overline{\lambda}_j$, $\underline{\lambda}_j < \frac{1}{2} < \overline{\lambda}_j$, such that*

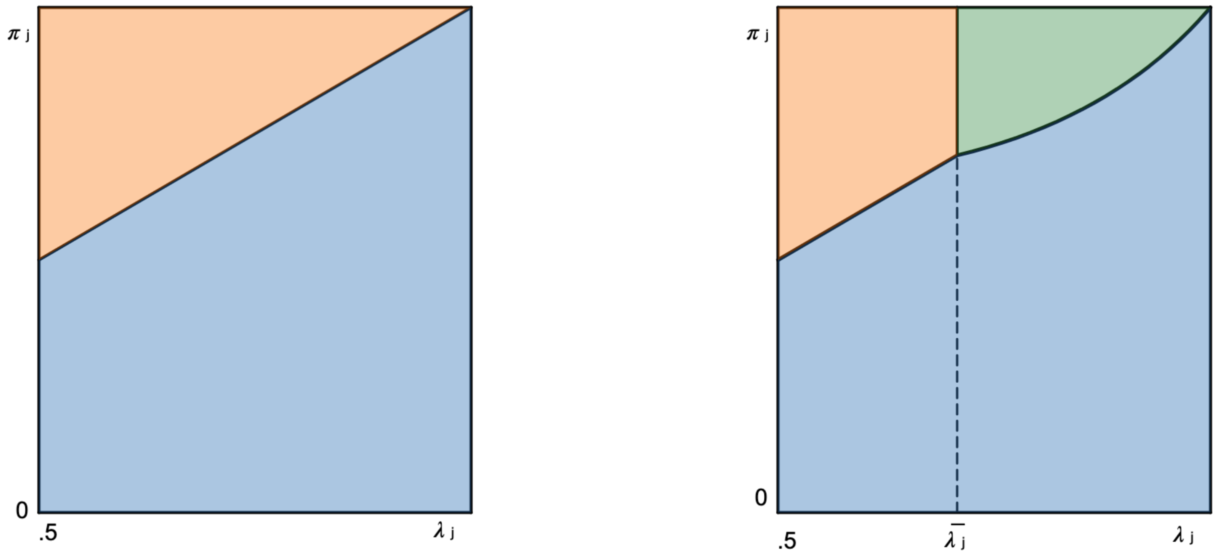
- *if $\pi_j > \widetilde{\pi}_j(\lambda_j)$, then, in any Pareto-undominated equilibrium, on dimension j*
  - *both parties present vacuous arguments if $\lambda_j \in (\underline{\lambda}_j, \overline{\lambda}_j)$;*
  - *L presents a salience argument and R a vacuous one if $\lambda_j \leq \underline{\lambda}_j$;*
  - *R presents a salience argument and L a vacuous one if $\lambda_j \geq \overline{\lambda}_j$;*
- *if $\pi_j < \widetilde{\pi}_j(\lambda_j)$, then in any equilibrium both parties present refuting arguments.*

The results of the baseline continue to hold when λ_j takes an intermediate value, so that neither party is initially strongly advantaged on dimension j. In this scenario, both parties present refuting arguments when π_j is low, and they implicitly collude by presenting vacuous arguments when π_j is high.

However, when λ_j is either very high or very low, and the dimension is initially highly likely to be welfare-salient for the voter (i.e., π_j is high), the disadvantaged party strategically chooses to present a salience argument. The goal is to persuade the voter that she should not prioritize or be concerned about this particular issue, rather than trying to change her directional preferences. To understand the intuition, suppose that λ_j is very high, implying that the voter initially has a strong left-leaning inclination on this dimension. In such cases, if no argument is presented, the equilibrium policy will be highly unfavorable for the right-wing party. However, precisely because λ_j is high, an ideological argument attempting to shift the voter to the right is likely to be ineffective. Consequently, the disadvantaged right-wing party adopts a different approach and strategically opts for a salience argument, in hopes of diminishing the electoral relevance of this particular issue. Figure 2 illustrates the results, focusing w.l.o.g. on a case in which $\lambda_j > \frac{1}{2}$.

As an example, consider the rhetoric Republican politicians have recently adopted on the issue of reproductive rights. Following a streak of ballot-box wins for reproductive rights groups, GOP

[28]Flipping two cups is twice as costly as flipping one (although the cost remains arbitrarily small).



(a) baseline model

(b) model with richer argument space

Figure 2: Comparison of equilibrium behavior on issue j. Orange region: both parties present vacuous arguments. Blue region: both present refuting arguments. Green region: L presents a refuting argument and R a salience argument.

politicians are becoming wary of the issue. In line with the logic of our model, many Republicans are now claiming that abortion should not be a relevant concern for voters in federal elections–see e.g., Nikki Haley's claim "No Republican president can ban abortions, any more than a Democrat president can ban any state law."[29]

Conclusion

We present a model of rhetorical argumentation where political parties compete to persuade a voter before engaging in platform competition, and analyze several extensions to gain a better understanding of the trade-offs and strategic incentives underlying parties' rhetorical choices. Our model fills an important gap in the formal theoretical literature, which has largely ignored the crucial role that rhetorical strategies play in shaping the public opinion that sets the stage for platform competition. Unlike most existing work, which takes voters' policy preferences as exogenous, our

[29]Nikki Haley https://rollcall.com/2024/01/25/gop-pivots-on-abortion-stance-as-2024-nears/

model details the endogenous determination of these preferences as the outcome of a prior partisan argumentation stage.

Having summarized our results in detail in our Preview of Results section, we forego doing it here. We conclude by pointing to two directions that, given our analysis, seem particularly promising for future research. First, for convenience, our model features a single voter. A natural next step is to extend the model to account for multiple constituencies and investigate how this impacts parties' rhetorical strategies. In such a context, parties' optimal strategies may entail a different set of trade-offs between the extensive and intensive margins associated with responses to argumentation, mapping now into different kinds of support from different parts of the electorate.

Second, our discussion highlights that the existing literature on parties' rhetorical strategies primarily examines electoral campaigns, concentrating on the weeks or days leading up to elections *after* the parties' electoral platforms have been established. Our paper underscores the importance of augmenting this body of work, to study parties' strategies *throughout* the electoral cycle and the impact of their competition for rhetorical persuasion on the platforms *subsequently* proposed during elections. Our results provide a useful starting point for empirical analysis exploring the role of rhetorical argumentation in shaping public opinion and electoral outcomes in the earlier, much less studied, stage of party competition.

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Appendix

Contents

A Proofs for Baseline Model

Lemma 1. *In equilibrium the parties always win with equal probability. Further,*

- *if* $\widehat{\pi}_j = 0$*, then in equilibrium* $x_j^R = \tilde{x}_j^R$ *and* $x_j^L = \tilde{x}_j^L$*;*
- *if* $\widehat{\pi}_j > 0$*, then in equilibrium* $x_j^R = x_j^L = x_j^v$*.*

Proof. The proof follows the usual logic in Downsian models and is therefore omitted. □

Lemma 2. *Given the equilibrium of the platform stage in the baseline model, parties always prefer refuting arguments to supporting arguments.*

Proof. Denote with $\boldsymbol{\mathcal{V}^i}(\boldsymbol{a^R}, \boldsymbol{a^L})$ i's continuation value given argument vectors $\boldsymbol{a^R}$ and $\boldsymbol{a^L}$. This continuation value incorporates expectations over the optimal platforms given the pair of argument vectors presented in the argumentation stage, and the corresponding distribution of resonance events. As established in Lemma 1, parties always win with equal probability in equilibrium, and the optimal platforms on dimension j are not a function of the arguments presented on the other dimensions. Given separability of the parties' utility over dimensions, we can express $\boldsymbol{\mathcal{V}^i}(\boldsymbol{a^R}, \boldsymbol{a^L})$ as $\Sigma_j \mathcal{V}_j^i(a_j^R, a_j^L)$. Recall that $\tilde{x}_j^i$ is i's bliss point on dimension j. Then, we have

$$\begin{aligned} \mathcal{V}_j^i(a_j^R = r, a_j^L = r) = \mathcal{V}_j^i(a_j^R = s, a_j^L = s) \\ = -\frac{(1-\pi_j)}{2}(\tilde{x}_j^i - \tilde{x}_j^{-i})^2 - \pi_j\lambda_j(-1-\tilde{x}_j^i)^2 - \pi_j(1-\lambda_j)(1-\tilde{x}_j^i)^2 \end{aligned} \tag{3}$$

$$\begin{aligned} \mathcal{V}_j^i(a_j^R = r, a_j^L = s) = \mathcal{V}_j^i(a_j^R = r, a_j^L = v) = \mathcal{V}_j^i(a_j^R = v, a_j^L = s) \\ = -\pi_j\lambda_j(-1-\tilde{x}_j^i)^2 - (1-\pi_j\lambda_j)(1-\tilde{x}_j^i)^2 \end{aligned} \tag{4}$$

$$\begin{aligned} \mathcal{V}_j^i(a_j^R = s, a_j^L = r) = \mathcal{V}_j^i(a_j^R = s, a_j^L = v) = \mathcal{V}_j^i(a_j^R = v, a_j^L = r) \\ = -\pi_j(1-\lambda_j)(1-\tilde{x}_j^i)^2 - \Big(1-\pi_j(1-\lambda_j)\Big)(-1-\tilde{x}_j^i)^2 \end{aligned} \tag{5}$$

$$\mathcal{V}_j^i(a_j^R = v, a_j^L = v) = -(1 - 2\lambda_j - \tilde{x}_j^i)^2 \tag{6}$$

Substituting $\tilde{x}_j^R = -\tilde{x}_j^L = 1$, we obtain that

$$\begin{aligned}\mathcal{V}_j^L(a_j^R = s, a_j^L = r) = \mathcal{V}_j^L(a_j^R = s, a_j^L = v) = \mathcal{V}_j^L(a_j^R = v, a_j^L = r)\\ > \mathcal{V}_j^L(a_j^R = r, a_j^L = r) = \mathcal{V}_j^L(a_j^R = s, a_j^L = s)\\ > \mathcal{V}_j^L(a_j^R = r, a_j^L = s) = \mathcal{V}_j^L(a_j^R = r, a_j^L = v) = \mathcal{V}_j^L(a_j^R = v, a_j^L = s).\end{aligned} \tag{7}$$

Similar results hold for party R. □

Proposition 1. *There exists a unique $\bar{\pi}_j(\lambda_j)$ such that*

- *on any dimension $j \in N$ for which $\pi_j < \bar{\pi}_j(\lambda_j)$, both parties present refuting arguments in the unique equilibrium;*
- *on any dimension $j \in N$ for which $\pi_j > \bar{\pi}_j(\lambda_j)$, both parties present vacuous arguments in any Pareto-undominated equilibrium.*

Proof. The inequalities in 7 imply that we cannot sustain an equilibrium with one party presenting a refuting argument and the other a vacuous one, as the latter can profitably deviate to a refuting argument. Given Lemma 2, this only leaves two equilibrium candidates: $(a_j^R = v, a_j^L = v)$ and $(a_j^R = r, a_j^L = r)$.

First, conjecture an equilibrium in which both parties present vacuous arguments on dimension j. The equilibrium exists if an only if the following conditions are jointly satisfied:

$$\begin{aligned}-\Big(\tilde{x}_j^L - (1-2\lambda_j)\Big)^2 > \max \in \Big\{ -\pi_j\lambda_j\Big(\tilde{x}_j^L + 1\Big)^2 - (1-\pi_j\lambda_j)\Big(\tilde{x}_j^L - 1\Big)^2;\\ -\pi_j(1-\lambda_j)\Big(\tilde{x}_j^L - 1\Big)^2 - \Big(1 - \pi_j(1-\lambda_j)\Big)\Big(\tilde{x}_j^L + 1\Big)^2\Big\}\end{aligned} \tag{8}$$

and

$$-\Big(\tilde{x}_j^R - (1-2\lambda_j)\Big)^2 > \max \in \Big\{ -\pi_j\lambda_j\Big(\tilde{x}_j^R + 1\Big)^2 - (1-\pi_j\lambda_j)\Big(\tilde{x}_j^R - 1\Big)^2; \\ -\pi_j(1-\lambda_j)\Big(\tilde{x}_j^R - 1\Big)^2 - \Big(1-\pi_j(1-\lambda_j)\Big)\Big(\tilde{x}_j^R + 1\Big)^2\Big\} \tag{9}$$

Setting $\tilde{x}_j^R = -\tilde{x}_j^L = 1$, rearranging and simplifying, we obtain that the equilibrium exists if and only if $\pi_j > \bar{\pi}_j(\lambda_j) \equiv \max\Big\{\lambda_j, 1-\lambda_j\Big\}$.

Finally, conjecture an equilibrium in which both parties present refuting arguments. Following a similar analysis as above, we can verify that the equilibrium exists if and only if $(\tilde{x}_j^R - x_j^L)^2 \leq \min \in \{2(x_j^L - 1)^2; 2(\tilde{x}_j^R + 1)^2\}$, which is always satisfied under $\tilde{x}_j^R = -\tilde{x}_j^L = 1$.

To conclude our proof, we apply our equilibrium selection criterion by showing that, when an equilibrium in which both parties present vacuous arguments exists, it gives both parties higher expected payoff than an equilibrium in which both present refuting arguments. This holds if and only if

$$-(1-2\lambda_j - \tilde{x}_j^i)^2 > -\frac{1-\pi_j}{2}(\tilde{x}_j^R - \tilde{x}_j^L)^2 - \pi_j\lambda_j(-1-\tilde{x}_j^i)^2 - \pi_j(1-\lambda_j)(1-\tilde{x}_j^i)^2,$$

for all $i \in \{L, R\}$. This is always satisfied under condition $\pi_j > \bar{\pi}_j(\lambda_j)$.

The result that $\bar{\pi}_j(\lambda_j)$ increases as λ_j moves away from $\frac{1}{2}$ follows immediately from $\bar{\pi}_j \equiv \max\{\lambda_j, 1-\lambda_j\}$. □

B Proofs for Persuasion with Constrained Parties

Proposition 2.

There exist unique $\widetilde{\lambda}_1(\pi_1,\pi_2)$ and $\widetilde{\lambda}_2(\pi_2,\pi_1)$, henceforth $\widetilde{\lambda}_1$ and $\widetilde{\lambda}_2$, such that

- *there is an equilibrium in which both parties make refuting arguments on j if and only if $\lambda_{-j} \in [\widetilde{\lambda}_{-j}, 1-\widetilde{\lambda}_{-j}]$, i.e., neither party has a strong initial disadvantage on the other issue, $-j$;*

- *there is a unique equilibrium in which the parties present refuting arguments on different issues if and only if for some j, $\lambda_j < \widetilde{\lambda}_j$ and $\lambda_{-j} > 1 - \widetilde{\lambda}_{-j}$. Furthermore, in this equilibrium, L makes a refuting argument on j and R on $-j$, i.e., each party makes a refuting argument on the issue on which it has an ex ante relative disadvantage.*

Proof. We know from the proof of Proposition 1 that, absent a constraint, (1) refuting arguments dominate supporting ones (from the comparison of the continuation values in equations (3)-(6)); and (2) if $\pi_j > \bar{\pi}_j(\lambda_j)$, vacuous is a best response to vacuous on j, and both parties obtain higher utility from (v, v) than from (r, r). Because these results are independent of other dimensions, they hold here, too.

Suppose $\pi_j < \bar{\pi}_j(\lambda_j)$ for all j. Given the above results, the only reason why party i may choose not to present a refuting argument on j is to be able to present a refuting argument on $-j$.

Assuming that party R chooses argument r on dimension j, it is better for L to choose r on j than to choose r on dimension $-j$ iff

$$-4[\pi_j(1-\lambda_j) + \frac{1}{2}(1-\pi_j) - (1-\pi_j\lambda_j)] \geq -4[\pi_{-j}(1-\lambda_{-j}) - (1-\lambda_{-j})^2],$$

which reduces to

$$\frac{2-\pi_{-j}-\sqrt{\pi_{-j}^2+2(1-\pi_j)}}{2} \leq \lambda_{-j} \leq \frac{2-\pi_{-j}+\sqrt{\pi_{-j}^2+2(1-\pi_j)}}{2}. \tag{10}$$

Similarly, assuming that party L chooses argument r on dimension j, it is better for R to choose r on j than to choose r on dimension $-j$ iff

$$\frac{\pi_{-j}-\sqrt{\pi_{-j}^2+2(1-\pi_j)}}{2} \leq \lambda_{-j} \leq \frac{\pi_{-j}+\sqrt{\pi_{-j}^2+2(1-\pi_j)}}{2}. \tag{11}$$

Letting

$$\widetilde{\lambda}_{-j}(\pi_{-j},\pi_j) := \frac{2-\pi_{-j}-\sqrt{\pi_{-j}^2+2(1-\pi_j)}}{2} = 1-\Big(\frac{\pi_{-j}+\sqrt{\pi_{-j}^2+2(1-\pi_j)}}{2}\Big),$$

and noting that $\sqrt{\pi_{-j}^2+2(1-\pi_j)} > \pi_{-j}$ and that $\lambda_{-j}\in[0,1]$, (10) and (11 reduce to $\widetilde{\lambda}_{-j}(\pi_{-j},\pi_j) < \lambda_{-j}$ and $\lambda_{-j} < 1-\widetilde{\lambda}_{-j}(\pi_{-j},\pi_j)$, respectively.

Thus:

1. there exists an equilibrium in which both parties refute on dimension 1 iff $\widetilde{\lambda}_2(\pi_2,\pi_1) \leq \lambda_2 \leq 1-\widetilde{\lambda}_2(\pi_2,\pi_1)$;

2. there exists an equilibrium in which both parties refute on dimension 2 iff $\widetilde{\lambda}_1(\pi_1,\pi_2) \leq \lambda_1 \leq 1-\widetilde{\lambda}_1(\pi_1,\pi_2)$;

3. there exists an equilibrium in which L refutes on dimension 1 while R refutes on dimension 2 iff $\lambda_1 < \widetilde{\lambda}_1(\pi_1,\pi_2)$ and $\lambda_2 > 1-\widetilde{\lambda}_2(\pi_2,\pi_1)$;

4. there exists an equilibrium in which L refutes on dimension 2 while R refutes on dimension 1 iff $\lambda_2 < \widetilde{\lambda}_2(\pi_2,\pi_1)$ and $\lambda_1 > 1-\widetilde{\lambda}_1(\pi_1,\pi_2)$.

Note that if the conditions in the third case hold, it is not possible to satisfy the conditions for any of the other three cases, guaranteeing uniqueness. The same is true for the fourth case.

Finally, given $\lambda_j < \widetilde{\lambda}_j(\pi_j,\pi_{-j})$ and $\lambda_{-j} > 1-\widetilde{\lambda}_{-j}(\pi_{-j},\pi_j)$, $\lambda_j < \lambda_{-j}$ if $\widetilde{\lambda}_j(\pi_j,\pi_{-j}) < 1-\widetilde{\lambda}_{-j}(\pi_{-j},\pi_j)$, which is equivalent to

$$2 < \pi_j+\pi_{-j}+\sqrt{\pi_j^2+2(1-\pi_{-j})}+\sqrt{\pi_{-j}^2+2(1-\pi_j)},$$

which holds for all $(\pi_1,\pi_2)\in[0,1]^2$. $\square$

In what follows, let Λ_j be a mapping from the $[0,1]^2$ interval into the power set of $[0,1]$ which associates a set of λ_{-j} with a given pair (π_2,π_2). Λ_j contains all values of λ_{-j} such that, given

(π_1, π_2), *both parties presenting refuting arguments on* j *is an equilibrium. Recall that the ability to support this equilibrium does not depend on* λ_j, *but only on* λ_{-j}.

Proposition 1B. *Let* $\pi_1' > \pi_1''$. *Then,*

- $\Lambda_1(\pi_1', \pi_2)$ *is a subset of* $\Lambda_1(\pi_1'', \pi_2)$*;*
- $\Lambda_2(\pi_1'', \pi_2)$ *is a subset* $\Lambda_2(\pi_1', \pi_2)$ *.*

Proof. Follows from inspection of (10) and (11). □

C Proofs for Argumentation and Frictions in Elections

Proposition 3. *There exist unique thresholds* $\widehat{\delta}$, $\widetilde{\delta}$, *and* $\pi^{\dagger}$ *such that*

- *an equilibrium in which some party makes a supporting argument can be sustained only if* $\delta > \widetilde{\delta}$*;*
- *if* $\delta > \widehat{\delta}$ *and* $\pi < \pi^{\dagger}$, *then, in the unique Pareto-undominated equilibrium, both parties present supporting arguments.*

Proof. In order to prove Proposition 4, we will proceed with the following steps. First, we characterize the equilibrium of the platform game (Claim 1). Second, we establish the existence of the unique threshold $\widetilde{\delta}$ (Claim 2). Finally, we establish the existence of the unique pair $(\widehat{\delta}, \pi^{\dagger})$ (Claim 3).

Claim 1. *If the realization of the valence shock is in L's favor, then in equilibrium* $x = \max\{-1, 1 - 2\widehat{\lambda} - \sqrt{\frac{\delta}{\widehat{\pi}}}\}$. *If, instead, the realization of the valence shock is in R's favor, then, in equilibrium* $x_j = \min\{+1, 1 - 2\widehat{\lambda} + \sqrt{\frac{\delta}{\widehat{\pi}}}\}$.

Proof. Recall that x is the policy implemented in equilibrium, while $\widehat{\lambda}$ and $\widehat{\pi}$ denote the voter's posterior beliefs on the policy dimension. If no non-vacuous argument is presented, $\widehat{\pi} = \pi$. If two supporting or refuting arguments are presented, then $\widehat{\pi}$ will either take value 0 or 1. When instead only one non-vacuous argument is presented, then $\widehat{\pi}$ will either take value 1, or an interior value strictly smaller than the prior π. In particular, applying Bayes rule, we can verify that $p(\theta \neq \emptyset | a^R = r, a^L = v, \rho_{a^R} = 1) = p(\theta = \emptyset | a^R = v, a^L = s, \rho_{a^L} = 0) = \frac{\pi(1-\lambda)}{\pi(1-\lambda)+(1-\pi)} \equiv \widehat{\pi}_l^L < \pi$. Similarly, $p(\theta \neq \emptyset | a^R = s, a^L = v, \rho_{a^R} = 0) = p(\theta = \emptyset | a^R = v, a^L = r, \rho_{a^L} = 1) = \frac{\pi\lambda}{\pi\lambda+(1-\pi)} \equiv \widehat{\pi}_l^R < \pi$.

We must thus consider six different cases:

1. $\widehat{\pi} = 1$ and $\widehat{\lambda} = 0$;
2. $\widehat{\pi} = 1$ and $\widehat{\lambda} = 1$;
3. $\widehat{\pi} = 0$;
4. $\widehat{\pi} = \widehat{\pi}_l^L$ and $\widehat{\lambda} = 0$;
5. $\widehat{\pi} = \widehat{\pi}_l^R$ and $\widehat{\lambda} = 1$;
6. $\widehat{\lambda} = \lambda$ and $\widehat{\pi} = \pi$.

We will assume that the shock realization favors the right-wing party (a similar analysis establishes the result for the case in which the shock favors L).

Case 1: $\widehat{\pi} = 1$ **and** $\widehat{\lambda} = 0$**.**

Here, the voter learns that the policy dimension is relevant for her welfare and her optimal policy is 1, which is also R's bliss point. Party R is favored by the shock, by assumption, therefore if R proposes policy 1 it wins with probability 1. Thus, it must be the case that in equilibrium $x = 1$. To establish a contradiction, conjecture an equilibrium in which $x \neq 1$. Then, it must be the case that R is proposing a policy $x \neq 1$. However, R can always move to policy 1 and win for sure, which is a profitable deviation.

Case 2: $\widehat{\pi} = 1$ **and** $\widehat{\lambda} = 1$**.**

The voter learns that the policy dimension is relevant for her welfare, and her optimal policy is -1. Denote x' the policy that makes the voter indifferent between electing the valence-favored party R and getting policy x', and electing L and getting policy -1. x' thus solves $0 = \delta - (-1-x)^2$, which yields $x' = -1 + \sqrt{\delta}$.

Straightforwardly, the highest utility L can offer to the voter is by proposing -1. Therefore, by definition of x', R can always win by proposing $x = \min\{1, x'\}$, regardless of what policy L proposes. If $x' > 1$, in equilibrium R must win with probability 1 by proposing policy 1. For any other possible equilibrium, R can deviate closer to 1 without decreasing its probability of winning. If $x' < 1$, then in equilibrium L must propose -1 and R must propose x', and the voter must break indifference by electing the valence-favored R. Notice that the voter must use this indifference breaking rule in equilibrium, as otherwise party R always has a profitable deviation to make an arbitrarily small move to the left.

Case 3: $\widehat{\pi} = 0$.

The voter is indifferent between all policies, and therefore votes based solely on the valence dimension. R is favored by the valence realization, by assumption, therefore in equilibrium always proposes its preferred policy and wins with probability 1.

Case 4: $\widehat{\pi} = \widehat{\pi}_l^L$ and $\widehat{\lambda} = 0$.

This case is similar to case 1. Even though the voter does not learn whether the policy dimension is relevant, she learns that, if it is, her optimal policy must take value 1. Because R is favored by the valence shock, it can always win by proposing its preferred policy 1, and no other outcome can be sustained in equilibrium.

Case 5: $\widehat{\pi} = \widehat{\pi}_l^R$ and $\widehat{\lambda} = 1$.

Symmetrically to the previous case, the voter does not learn whether the policy dimension is relevant, but she learns that, if it is, her optimal policy must take value 1. This case is analogous to case 3, and the proof proceeds in the same way, with x' now solving $0 = \delta - \widehat{\pi}_l^R(-1-x)^2$.

Case 6: $\widehat{\pi} = \pi$ and $\widehat{\lambda} = \lambda$.

This case is similar to cases 2 and 5, but x' now solves $-\pi\Big(\lambda(-1-x^L)^2 + (1-\lambda)(1-x^L)^2\Big) = \delta - \pi\Big(\lambda(-1-x)^2 + (1-\lambda)(1-x)^2\Big)$, with $x^L = 1 - 2\lambda$. □

Claim 2. *There exists a unique $\widetilde{\delta}$ s.t. an equilibrium in which some party makes a supporting argument can be sustained only if $\delta > \widetilde{\delta}$.*

Proof. Focusing w.l.o.g. on party L, there are three argument profiles we must consider:

1. $(a^R = s, a^L = s)$;

2. $(a^R = v, a^L = s)$;

3. $(a^R = r, a^L = s)$.

We will establish, for each profile, that a necessary condition for L to have no profitable deviation is that δ is sufficiently high. To reduce the number of cases under consideration, we will assume that $\delta < \max\{4\widehat{\pi}_l^L, 4\widehat{\pi}_l^R\}$. Further, denote ν_R the probability that the valence shock favors the right-wing party.

Case 1: $(a^R = s, a^L = s)$**.**

Recall that the shock will favor one party or the other, so that the probability of it favoring L is simply $1 - \nu_R$. Then, given the policies implemented in equilibrium, as characterized in Claim 1, in the conjectured equilibrium, L gets expected payoff

$$-(1-\pi)\nu_R 4 - \pi\lambda\nu_R\delta - \pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2.$$

Consider now a deviation. Recall that, in our setting, a supporting argument from one party on dimension j provides the same information as a refuting argument from the other party on the same dimension. Then, given $a^R = s$, for party L a deviation to a vacuous or refuting argument is payoff-equivalent, and, assuming $\delta < 4\widehat{\pi}_l^R$, yields

$$-\pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 - (1-\pi(1-\lambda))\nu_R\frac{\delta}{\widehat{\pi}_l^R}.$$

Thus, the deviation is profitable iff

$$\begin{aligned}&-(1-\pi)\nu_R 4 - \pi\lambda\nu_R\delta - \pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 \\ &+\pi(1-\lambda)\nu_R 4 + \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 + (1-\pi(1-\lambda))\nu_R\frac{\delta}{\widehat{\pi}_l^R} < 0.\end{aligned} \tag{12}$$

the LHS is continuous and strictly increasing in δ, and the condition is satisfied when $\delta = 0$ and fails at $\delta = 4\widehat{\pi}_l^R$.

Suppose instead that $\delta \in (4\widehat{\pi}_l^R, 4\widehat{\pi}_l^L)$. Then, for party L a deviation to a vacuous or refuting argument yields expected payoff

$$-\pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 - (1-\pi(1-\lambda))\nu_R 4,$$

and is profitable iff

$$\begin{aligned} &-(1-\pi)\nu_R 4 - \pi\lambda\nu_R\delta - \pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 \\ &+\pi(1-\lambda)\nu_R 4 + \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 + (1-\pi(1-\lambda))\nu_R 4 < 0. \end{aligned} \tag{13}$$

This condition is never satisfied.

Thus, there must exist a unique threshold strictly smaller than $4\widehat{\pi}_l^R$ s.t. L has no profitable deviation iff δ above the threshold.

Case 2: $(a^R = v, a^L = s)$**.** Assuming δ is sufficiently small to guarantee that the equilibrium platforms are always interior, in the conjectured equilibrium L's expected payoff is

$$-\pi\lambda\nu_R\delta - (1-\pi\lambda)\nu_R 4 - (1-\pi\lambda)(1-\nu_R)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2.$$

Recall that in this claim we want to establish necessary conditions to sustain an equilibrium with supporting arguments. Thus, it is enough to show that, for δ sufficiently low, one of the players has a profitable deviation. For L, a deviation to a vacuous argument yields

$$-\nu_R(1-2\lambda+\sqrt{\frac{\delta}{\pi}}+1)^2 - (1-\nu_R)(1-2\lambda-\sqrt{\frac{\delta}{\pi}}+1)^2,$$

and is therefore profitable iff

$$-\nu_R(1-2\lambda+\sqrt{\frac{\delta}{\pi}}+1)^2-(1-\nu_R)(1-2\lambda-\sqrt{\frac{\delta}{\pi}}+1)^2 \tag{14}$$
$$+\pi\lambda\nu_R\delta+(1-\pi\lambda)\nu_R 4+(1-\pi\lambda)(1-\nu_R)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2>0.$$

Observe that the LHS of this inequality is continuous in δ, and the condition is satisfied at $\delta=0$. Thus, there exists a threshold of δ s.t. L always has a profitable deviation if δ is below this threshold.

Case 3: $(a^R=r, a^L=s)$**.** Assuming $\delta<4\widehat{\pi}_l^L$, in the conjectured equilibrium L's expected payoff is

$$-\pi\lambda\nu_R\delta-(1-\pi\lambda)\nu_R 4-(1-\pi\lambda)(1-\nu_R)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2.$$

A deviation to a refuting argument yields

$$-(1-\pi)\nu_R 4-\pi\lambda\nu_R\delta-\pi(1-\lambda)\nu_R 4-\pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2,$$

and is profitable unless

$$-\pi\lambda\nu_R\delta-(1-\pi\lambda)\nu_R 4-(1-\pi\lambda)(1-\nu_R)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2$$
$$(1-\pi)\nu_R 4+\pi\lambda\nu_R\delta+\pi(1-\lambda)\nu_R 4+\pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2>0.$$

The LHS of this inequality is concave in δ on $[0,4\widehat{\pi}_l^L]$, and is always satisfied at $\delta=4\widehat{\pi}_l^L$ and never satisfied at $\delta=0$. Thus, as above, there must exist a unique threshold of δ on $[0,4\widehat{\pi}_l^L]$ s.t. the deviation is profitable iff δ is below that threshold.

Therefore, in each of the three cases, there exists a threshold in δ s.t. L always has profitable deviation if δ is smaller than the corresponding threshold. Following the same logic as above one can establish the same result for party R. The threshold $\widetilde{\delta}$ is then characterized by identifying the most binding no-deviation condition (across all three cases and both players), and choosing the δ that satisfies the condition with equality. □

Claim 3. *There exists a unique pair* $(\widehat{\delta}, \pi^{\dagger})$ *s.t., if* $\delta > \widehat{\delta}$ *and* $\pi < \pi^{\dagger}$*, then, in the unique equilibrium both parties present supporting arguments.*

Proof. First, we know from the above analysis that there exists a unique threshold in δ s.t. an equilibrium in which both parties present supporting arguments exists iff δ is above this cutoff (see conditions (12) and (13)). This also implies that above this cutoff we cannot sustain equilibria in which only one party presents a supporting argument, as the other party will have a profitable deviation to a supporting argument.

Next, we show that an equilibrium with two vacuous arguments cannot be sustained when δ is sufficiently high, as each party has a profitable deviation to a supporting one. To see this, suppose first that $\lambda > \frac{1}{2}$. This implies that $\widehat{\pi}_l^L < \widehat{\pi}_l^R$. Furthermore, $4\pi\lambda^2 < \widehat{\pi}_l^R$. Recall that we are assuming $\delta < \max\{4\widehat{\pi}_l^L, 4\widehat{\pi}_l^R\}$. Suppose then that $\delta \in (max\{4\widehat{\pi}_l^L, 4\pi\lambda^2\}, 4\widehat{\pi}_l^R)$. Then, using the equilibrium policies characterized in Claim 1, L's no-deviation condition (condition (14))[30] becomes

$$-\nu_R 4 + \pi\lambda\nu_R\delta + (1-\pi\lambda)\nu_R 4 > 0,$$

which is never satisfied. Thus, the conjectured equilibrium can never be sustained. A similar analysis establishes that R has a profitable deviation from the conjectured equilibrium when $\delta \in (max\{4\widehat{\pi}_l^R, 4\pi(1-\lambda)^2\}, 4\widehat{\pi}^L)$ and $\lambda < \frac{1}{2}$.

Next, conjecture an equilibrium where both parties present a refuting argument. If $\delta < 4\widehat{\pi}_l^L$,

[30] Condition (14) assumes that δ is sufficiently small that the equilibrium platforms are always interior. Here, we instead assume that it is sufficiently high that $1 - 2\lambda - \sqrt{\frac{\delta}{\pi}} < -1$, $1 - 2\lambda + \sqrt{\frac{\delta}{\pi}} > 1$ and $1 - \sqrt{\frac{\delta}{\widehat{\pi}_l^L}} < -1$.

the no-deviation condition for L is

$$-(1-\pi)\nu_R 4 - \pi\lambda\nu_R\delta - \pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2$$
$$+\pi\lambda\nu_R\delta + (1-\pi\lambda)\nu_R 4 + (1-\pi\lambda)(1-\nu_R)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2 \geq 0.$$

The LHS of the above condition is continuous in δ, and the condition is never satisfied at $\delta = 4\widehat{\pi}_l^L$. If instead $\delta \in (4\widehat{\pi}_l^L, 4\widehat{\pi}_l^R)$, then the no-deviation condition for L is

$$-(1-\pi)\nu_R 4 - \pi\lambda\nu_R\delta - \pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2 + \pi\lambda\nu_R\delta \geq 0,$$

and is never satisfied. Therefore, there must exist a threshold strictly smaller than $4\widehat{\pi}_l^L$ s.t. the condition always fails above this threshold and the equilibrium cannot be sustained.

Finally, conjecture an equilibrium where L presents a vacuous argument and R a refuting one. Assume first $\lambda < \frac{1}{2}$, which implies $4\widehat{\pi}_l^L > 4\widehat{\pi}_l^R$ and therefore $\delta < 4\widehat{\pi}_l^L$. Then, a deviation to a refuting argument is profitable for L whenever:

$$-\pi\lambda\nu_R\delta - (1-\pi\lambda)\nu_R 4 - (1-\pi\lambda)(1-\nu_R)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2 <$$
$$-(1-\pi)\nu_R 4 - \pi\lambda\nu_R\delta - \pi(1-\lambda)\nu_R 4 - \pi(1-\lambda)(1-\nu_R)(2-\sqrt{\delta})^2.$$

This condition reduces to

$$-(1-\pi\lambda)(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^L}})^2 < -\pi(1-\lambda)(2-\sqrt{\delta})^2.$$

Which always holds for a sufficiently small π.

Assume instead $\lambda > \frac{1}{2}$, which implies $4\widehat{\pi}_l^L < 4\widehat{\pi}_l^R$ and therefore $\delta < 4\widehat{\pi}_l^R$. Suppose $\delta \in (4\widehat{\pi}_l^L, 4\widehat{\pi}_l^R)$.

A deviation to a supporting argument is profitable for R iff

$$
\begin{aligned}
& -\nu_R\pi\lambda(-2+\sqrt{\delta})^2-(1-\nu_R)\pi\lambda 4-(1-\nu_R)(1-\pi\lambda)4 \\
< & -\nu_R(1-\pi(1-\lambda))(2-\sqrt{\frac{\delta}{\widehat{\pi}_l^R}})^2-(1-\nu_R)\pi(1-\lambda)\delta-(1-\nu_R)(1-\pi(1-\lambda))4
\end{aligned}
$$

which is always satisfied at $\delta = 4\widehat{\pi}_l^R$. By continuity in this range, there is a cutoff strictly smaller than $4\widehat{\pi}_l^R$ s.t. the deviation is profitable if δ is above this cutoff.

A similar analysis establishes the results for a conjecture in which R presents a vacuous argument and L a refuting one.

Thus, there must exist cutoffs $\widehat{\delta} \geq \widetilde{\delta}$ s.t. and $\pi^\dagger$ s.t. when $\delta > \widehat{\delta}$ and $\pi < \pi^\dagger$, the game has a unique equilibrium, in which both parties present supporting arguments. □

□

D Proofs for Richer Argument Space

Proposition 4. *There exist unique thresholds $\widetilde{\pi}_j(\lambda_j)$, $\underline{\lambda}_j$, and $\overline{\lambda}_j$, $\underline{\lambda}_j < \frac{1}{2} < \overline{\lambda}_j$, such that*

- *if $\pi_j > \widetilde{\pi}_j(\lambda_j)$, then, in any Pareto-undominated equilibrium, on dimension j*
  - *both parties present vacuous arguments if $\lambda_j \in (\underline{\lambda}_j, \overline{\lambda}_j)$;*
  - *L presents a salience argument and R a vacuous one if $\lambda_j \leq \underline{\lambda}_j$;*
  - *R presents a salience argument and L a vacuous one if $\lambda_j \geq \overline{\lambda}_j$;*
- *if $\pi_j < \widetilde{\pi}_j(\lambda_j)$, then in any equilibrium both parties present refuting arguments.*

Proof. Recall that any action profile where parties present two or more arguments allows for full learning for the voter. This also holds if the arguments are presented by the same party. Further, notice that our assumption on the arbitrarily small cost of presenting non-vacuous arguments implies that informationally redundant arguments cannot be sustained in equilibrium. These observations, combined with the results of the baseline model, leave six equilibrium candidates, which we consider below.

1. Party i presents a fully informative argument, and party $-i$ presents a vacuous argument.

This equilibrium cannot be sustained, as a deviation to a refuting argument is always profitable. To establish a contradiction, conjecture an equilibrium in which R presents a fully informative argument and L presents a vacuous one (an analogous argument applies to the symmetric conjecture). R's expected payoff in the conjectured equilibrium is $-\pi_j\lambda_j 4 - (1-\pi_j)4\frac{1}{2}$. A deviation to $a_j^R = r$ yields a strictly higher expected payoff $-\pi_j\lambda_j 4$.

2. Party i presents a salience argument and party $-i$ a supporting one.

The same logic as in the previous case implies that such an equilibrium cannot be sustained, as $-i$ has profitable deviation to presenting a vacuous argument. Suppose that L presents a supporting argument and R a salience one. In the conjectured equilibrium, R's expected payoff is $-\pi_j\lambda_j 4 - (1-\pi_j)4\frac{1}{2}$. A deviation to a vacuous argument yields a strictly higher expected payoff $-\pi_j\lambda_j 4$. Similar analysis establishes the result for the symmetric case.

3. Party i presents a salience argument and party $-i$ a refuting one.

Suppose R presents a salience argument and L a refuting one (the analysis and the conclusion in the symmetric case are analogous). From the analysis of the baseline model we know that R has no profitable deviation from the conjectured strategy (see (7)). Party L's expected payoff in the conjectured equilibrium is

$$-\pi_j(1-\lambda_j)4 - (1-\pi_j)\frac{1}{2}4.$$

Given R's salience argument, a deviation to L still allows for full learning, and therefore is payoff-irrelevant. Suppose instead L deviates to a vacuous or salience argument. The deviation yields expected payoff

$$-\pi_j\big(-1-(1-2\lambda_j)\big)^2 - (1-\pi_j)\frac{1}{2}4,$$

which reduces to

$$-\pi_j 4(1-\lambda_j)^2 - (1-\pi_j)\frac{1}{2}4,$$

and is therefore always profitable.

4. Party i presents a salience argument and party $-i$ a vacuous one.

Consider a conjecture in which L presents a salience argument and R a vacuous one. From the previous analysis of equilibrium candidates 2 and 3, R has no profitable deviation. In the conjectured equilibrium, L's expected payoff is

$$-\pi_j 4(1-\lambda_j)^2 - (1-\pi_j)\frac{1}{2}4.$$

We know from the above analysis that a deviation to a fully informative argument is not profitable. Suppose instead L deviates to a refuting argument. This yields expected utility $-\pi_j(1-\lambda_j)4$. Thus, the deviation is profitable iff

$$-\pi_j 4(1-\lambda_j)^2 - (1-\pi_j)\frac{1}{2}4 < -\pi_j(1-\lambda_j)4. \tag{15}$$

This establishes a cutoff $\tilde{\pi}_j$ s.t. the deviation is profitable iff π_j is below this cutoff.

A deviation to a supporting argument yields L expected payoff $-(1-\pi_j\lambda_j)4$ and is therefore never profitable.

Finally, a deviation to a vacuous argument yields party L expected payoff $-4(1-\lambda_j)^2$ and is profitable iff

$$-\pi_j 4(1-\lambda_j)^2 - (1-\pi_j)\frac{1}{2}4 < -4(1-\lambda_j)^2.$$

Rearranging and cancelling terms, we obtain

$$(1-\lambda_j)^2 < \frac{1}{2}. \tag{16}$$

This establishes a cutoff $\underline{\lambda}_j$ s.t. the deviation is profitable iff λ_j is above this cutoff.

From (15) and (16), we have that there exist unique $\tilde{\pi}_j$ and $\underline{\lambda}_j < \frac{1}{2}$ s.t. an equilibrium in which L presents a salience argument and R presents a vacuous one exists iff $\pi_j > \tilde{\pi}_j^L$ and $\lambda_j < \underline{\lambda}_j$.

A similar argument establishes the result for an equilibrium in which R presents a salience argument and L a vacuous one: there exists a unique $\overline{\lambda}_j$ and $\tilde{\pi}_j^R$ s.t. the conjectured equilibrium exists iff $\pi_j > \tilde{\pi}_j^R$ and $\lambda > \overline{\lambda}_j > \frac{1}{2}$.

5. Both parties present refuting arguments.

A deviation from the conjectured equilibrium to salience or complex arguments is still fully revealing and thus payoff-irrelevant, therefore the availability of these arguments has no effect on the equilibrium analysis. As a consequence, our results from the baseline continue to apply: this equilibrium can always be sustained, but it does not survive our selection criterion when π_j is sufficiently high.

6. Both parties present vacuous arguments.

Following the previous analysis of equilibrium candidate 4, a unilateral deviation to a salience argument is profitable for L iff $\lambda_j < \underline{\lambda}_j$. Similarly, a unilateral deviation to a salience argument is profitable for R when λ_j is sufficiently large, $\lambda_j > \overline{\lambda}_j$. Finally, the baseline model establishes that a necessary condition to sustain this equilibrium is that π_j is sufficiently large (see conditions (8) and (9)).

To conclude the proof, we must only establish that, when an equilibrium with a salience argument exists, it yields higher expected payoff for both parties than does the equilibrium in which both parties present a refuting argument. Consider party L. An equilibrium in which only a salience argument is presented yields

$$-\pi_j 4(1-\lambda_j)^2 - (1-\pi_j)\frac{1}{2}4.$$

An equilibrium in which both present a refuting arguments yields for the L a strictly lower expected utility

$$-\pi_j 4(1-\lambda_j) - (1-\pi_j)\frac{1}{2}4.$$

The corresponding argument shows that R's expected utility is higher under a salience argument.

□

E Proofs for Extension with Generalized Bliss Points

Proposition 2E. *Suppose $\tilde{x}_j \geq 1$ for all $j \in N$. Then, there exists a unique pair $\bar{\pi}_j(\tilde{x}_j, \lambda_j)$ and $\bar{x}_j > 1$ s.t.,*

- *on any dimension for which $\pi_j > \bar{\pi}_j(\tilde{x}_j, \lambda_j)$, both parties present vacuous arguments in any Pareto-undominated equilibrium;*
- *on any dimension for which $\pi_j < \bar{\pi}_j(\tilde{x}_j, \lambda_j)$ and $\tilde{x}_j < \bar{x}_j$, both parties present refuting arguments in any equilibrium;*
- *on any dimension for which $\pi_j < \bar{\pi}_j(\tilde{x}_j, \lambda_j)$ and $\tilde{x}_j > \bar{x}_j$*
  - *there exist one-sided persuasion equilibria where only one party presents a non-vacuous argument (a refuting argument), and*
  - *there exist equilibria where both parties present a non-vacuous argument, with one presenting a refuting argument and the other presenting a supporting one;*
  - *all of these equilibria induce the same lottery over policies.*

Proof. The proof uses equations (3)-(6), setting $\tilde{x}_j^L < -1 < 1 < \tilde{x}_j^R$.

First, we note that there exists no equilibrium in which both parties present supporting arguments on dimension j. A necessary condition for such an equilibrium would be

$$(\tilde{x}_j^R - \tilde{x}_j^L)^2 \leq \min \in \{2(\tilde{x}_j^L + 1)^2; 2(\tilde{x}_j^R - 1)^2\},$$

which can never be satisfied under $\tilde{x}_j^L \leq -1 < 1 \leq \tilde{x}_j^R$. Next, conjecture an equilibrium in which $a_j^R = s$ and $a_j^L = r$. Again comparing (3)-(6), we can show that this equilibrium exists if and only if $(\tilde{x}^R - \tilde{x}^L)^2 \geq 2(-1 - \tilde{x}^R)^2$. Symmetric logic reveals that an equilibrium in which $a_j^R = r$ and $a_j^L = a$ exists if and only if $(\tilde{x}^R - \tilde{x}^L)^2 \geq 2(1 - \tilde{x}^L)^2$.

Next, we show that if, in equilibrium, only one party presents a non-vacuous argument on dimension j, then it must be the case that the presented argument is a refuting one. Conjecture an equilibrium in which $a_j^L = \emptyset$ and $a_j^R = s$. Party R always has a profitable deviation to $a_j^R = r$ if and only if:

$$-\pi_j(1-\lambda_j)(1-\tilde{x}_j^R)^2 - \Big(1 - \pi_j(1-\lambda_j)\Big)(-1-\tilde{x}_j^R)^2 < -\pi_j\lambda_j(-1-\tilde{x}_j^R)^2 - (1-\pi_j\lambda_j)(1-\tilde{x}_j^R)^2.$$

This reduces to

$$(1-\tilde{x}_j^R)^2 - (-1-\tilde{x}_j^R)^2 < 0,$$

which is always true. Similar argument applies to $a_j^R = \emptyset$ and $a_j^L = s$.

We next establish conditions under which one-sided persuasion equilibria involving negative campaigning can be sustained. In particular, applying (3)-(6), we obtain that an equilibrium in which $a_j^R = \emptyset$ and $a_j^L = r$ exists if and only if the following conditions are jointly satisfied:

$$-\pi_j(1-\lambda_j)(1-\tilde{x}_j^L)^2 - \Big(1 - \pi_j(1-\lambda_j)\Big)(-1-\tilde{x}_j^L)^2 \geq -(1-2\lambda_j - \tilde{x}_j^L)^2$$

and

$$-\pi_j(1-\lambda_j)(1-\tilde{x}_j^R)^2 - \Big(1-\pi_j(1-\lambda_j)\Big)(-1-\tilde{x}_j^R)^2$$
$$\geq -\pi\lambda_j(-1-\tilde{x}_j^R)^2 - \pi_j(1-\lambda_j)(1-\tilde{x}_j^R)^2 - \frac{1-\pi_j}{2}(\tilde{x}_j^L-\tilde{x}_j^R)^2.$$

These reduce, respectively, to

$$\pi_j \leq 1 + \frac{\lambda_j}{\tilde{x}_j^L}$$

and

$$-2(-1-\tilde{x}_j^R)^2 + (\tilde{x}_j^L-\tilde{x}_j^R)^2 \geq 0.$$

Symmetric logic applies to $a_j^L = \emptyset$ and $a_j^R = r$, and yields that this equilibrium exists if and only if $\pi_j \leq 1 - \frac{(1-\lambda_j)}{\tilde{x}_j^R}$ and $(\tilde{x}_j^L - \tilde{x}_j^R)^2 \geq 2(\tilde{x}_j^L - 1)^2$.

Finally, from the proof of Proposition 1 and allowing for $1 < \tilde{x}_j^R \neq \tilde{x}_j^L < -1$, we obtain the conditions for existence of a vacuous-vacuous equilibrium and a refuting-refuting one. Applying our equilibrium selection criterion, we obtain the statements of the Proposition. □