Electoral Competition with Targeted Voting Costs

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Abstract

How do voting laws impact elections? We model electoral competition with endogenous turnout and highlight how targeted changes to voting costs for a specific group of citizens—such as those that arise from restrictive voting laws like voter identification requirements—can affect not only turnout, but also policy platforms. Each party anticipates the direct effect, which discourages targeted citizens from voting, and therefore both platforms shift towards the untargeted group. Thus, policy shifts away from the targeted group regardless of who wins. These adjustments mobilize targeted citizens and demobilize the untargeted, which mutes the impact on turnout and party vote shares— explaining scant evidence that restrictive voting laws impact electoral outcomes. Our results shed new light on party competition, voter participation, and representation, as well as normative and empirical evaluations of restrictive voting laws.

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Introduction

In recent years, election law watchdogs have documented a "tidal wave" of new restrictive voting laws in the United States (Brennan Center 2021). Since 2021, state legislatures have enacted over sixty laws making it harder for citizens to register to vote, stay registered, or cast their ballots—ranging from strict voter identification requirements to laws that criminalize passing out water to people waiting at the polls (Brennan Center 2021, 2022, 2023). Voting rights advocates have issued dire warnings about these new laws, admonishing that "we need to be very, very serious about this moment" and that "[o]ur democracy is in peril" (Johnson 2021). Scholars have also joined the fray, using these laws as a basis to conclude that states have been sites for significant democratic backsliding (Grumbach 2023). One common complaint has been that the laws appear *partisan*, with right-leaning state legislatures changing rules in ways designed to make it harder for left-leaning citizens to vote.

Despite these grave concerns, the empirical evidence on the electoral impact of restrictive voting laws has been decidedly muted. Across a range of policies, researchers studying the impact of these laws on turnout and party vote shares have found little evidence of effects large enough to actually swing elections.[1] Summarizing the available evidence, Grimmer and Hersh (2023) conclude that "the laws have small effects on turnout and essentially no effect on partisan advantage." This suggests a mismatch between the invective surrounding restrictive voting laws and their actual impact.

In this paper, we attempt to gain traction on the puzzle suggested by this apparent mismatch by studying how partisan voting restrictions can affect not only voter participation,

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[1]For example, researchers have found relatively small effects when studying policies related to voter identification (Fraga and Miller 2022; Grimmer and Yoder 2021; Barreto et al. 2019; Hood and Bullock 2012; Cantoni and Pons 2021; Ansolabehere 2009; Harden and Campos 2023), voting by mail (Gerber, Huber and Hill 2013; Bonica et al. 2021; Barber and Holbein 2020; Thompson et al. 2020; Yoder et al. 2021), same-day registration (Grumbach and Hill 2022), automatic registration (Kim 2022; Fowler 2017), early voting (Walker, Herron and Smith 2019), changes to polling locations (Cantoni 2020; Bagwe, Margitic and Stashko 2022), long lines (Pettigrew 2021; Cottrell, Herron and Smith 2021), felon disenfranchisement (Miles 2004; Meredith and Morse 2015; Morse 2021), and postcards (Bryant et al. 2022). We treat a policy that makes voting easier as undoing a voting restriction.

but also *parties*, and specifically *party competition*. Reorienting the debate about these laws toward classic concerns with policy convergence and divergence (Downs 1957), we argue that partisan voting restrictions may affect not only which citizens turn out to vote, but also which *policies* parties choose when competing for votes. In exploring the impact of these restrictions on party competition, we highlight crucial policy effects that existing empirical studies on restrictive voting laws may have missed[2] and contribute to longstanding literatures about participation and representation.

To unpack the complex, strategically determined effects of partisan voting restrictions, we analyze a game-theoretic model of electoral competition with endogenous turnout and voting costs related to ideology. In our model, parties play the starring role, strategically choosing their policy platforms based on citizens' policy preferences and potential voting costs. Voters play a supporting role, deciding whether to vote and for whom based on the parties' platforms and their own costs of voting. We capture voting costs in a flexible reduced-form way that allows for various possible shifts, spreads, and skews among citizens. To capture the potential partisan slant of voting restrictions, we allow voting costs to vary by citizen ideology. We also allow for different sizes for each bloc of citizens.

Our model highlights how changes to voting costs can affect not only turnout, but also policy platforms. In equilibrium, the direct effect of a targeted increase in voting costs is a reduction in turnout for the targeted group, but each party anticipates this direct effect and adjusts its platform accordingly. Specifically, anticipating that fewer members of the targeted group will turn out to vote, each party will shift its platform away from the policies preferred by that group. For example, a targeted increase in voting costs for the left-leaning group would cause both parties to shift their platforms to the right. Because *both* parties make this adjustment, partisan voting restrictions bias policy away from the targeted group regardless

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[2]Two rare exceptions of empirical studies on the impact of restrictive voting laws that consider policy effects include Fujiwara (2015), which links the adoption of easier voting technology to higher spending on healthcare, and Bertocchi et al. (2020), which studies how pre-registration policies can increase education spending by increasing participation among young voters. These findings are consistent with the predictions generated by our model.

of who wins the election. These results starkly illustrate a more general theoretical point: policy-motivated parties that receive an exogenous electoral boost will try to convert some of it into policy gains.

In contrast to these policy effects, we show that the effects on relative voter participation and party vote shares may be minimal. Although partisan voting restrictions have direct effects reducing the targeted group's turnout, the indirect effects on policy platforms feed back into turnout for both groups of citizens, who vote or abstain based on the adjusted platforms. This feedback blunts the relative impact of the direct effects on turnout by mobilizing the targeted side—whose moderate voters find the other side's platform more offensive and their own side's platform more appealing—and demobilizing the untargeted side—whose moderate voters find the other side's platform less offensive and their own side's platform less appealing. The overall effects of partisan voting restrictions therefore include (i) a direct effect on the targeted side's turnout and (ii) indirect effects on policy platforms and voter turnout for both sides. Ultimately, these direct and indirect effects combine to yield a negligible impact on each party's chances of winning the election.

We also explore how these effects depend on group size. We find that the shares of citizens who lean toward each party mediate some of these effects, but not others. For example, platform shifts grow with the share of the electorate on the targeted side. Therefore, we should not expect large effects when the affected group is small. We also show that voting restrictions that equally affect both groups can affect policy by shifting platforms away from the larger group and toward the smaller group. Thus, even seemingly neutral voting restrictions can bias policy by shifting platforms away from the preferences of the majority of citizens.

Our results have important implications for both normative evaluations of restrictive voting laws and empirical research on the impact of these laws. The key insight from our model is that partisan voting restrictions can have important policy consequences even if they have limited effects on election outcomes. An implication for normative evaluations of these laws is that regardless of their electoral impact, partisan voting restrictions can meaningfully

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affect party and voter welfare by shifting policy away from the preferences of the targeted group, and even seemingly neutral restrictions may affect welfare by shifting policy away from the preferences of the majority. An implication for empirical research on the effects of these laws is that researchers should look beyond electoral outcomes and consider policy effects as well. Finding that a law does not affect who wins or loses does not mean that the law does not have other important consequences for electoral competition. Empirical research finding small effects on turnout and party vote shares may have simply been looking in the wrong places. We use our model to provide guidance for empirical researchers going forward.

Our results also speak to longstanding concerns with participation and representation. Existing studies on restrictive voting laws have largely focused on the impact of the laws on participation. Consistent with research linking participation to policies (Cascio and Washington 2014; Godefroy and Henry 2016; Lo Prete and Revelli 2021; Aggeborn 2016; Peress 2011; Fujiwara 2015; Bertocchi et al. 2020; Oprea, Martin and Brennan 2024), our analysis of the policy consequences of restrictive voting laws highlights representation—and specifically *substantive representation*, meaning the alignment between policy and the interests of the represented (Pitkin 1967)—as another important consideration. These policy consequences are also relevant to legal analyses of voting restrictions based on the "alignment approach" to election law, which emphasizes this alignment as a relevant factor in determining the constitutional validity of a law (Stephanopoulos 2014).

Related Literature

We shed new light on the consequences of voting laws and their empirical implications. Broadly, we echo Grimmer and Hersh (2023) in emphasizing that the electoral consequences of voting laws will depend in large part on exactly which voters are impacted and by how much. In particular, they highlight how electoral effects will usually be muted in practice because feasible voting laws cannot isolate a large bloc on one side *and* substantially decrease its turnout propensity. We complement their insights by showing that even powerful and

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partisan voting laws can have muted electoral consequences, due to important shifts in party platforms. Furthermore, by highlighting those platform shifts, we provide a rationale for why parties might persist through practical challenges to seek voting laws targeting their opposition's supporters. Taken together with the empirical evidence in Grimmer and Hersh (2023), our analysis suggests that many recent voting laws have likely had fairly muted impacts on electoral outcomes. We highlight the importance of measuring platform effects, which may contain key information about the welfare consequences of voting laws that would not be apparent from an exclusive focus on electoral outcomes.

Our analysis emphasizes the feedback between voting behavior and politician behavior. To do so, we endogenize both turnout and platforms. Thus, we shed new light on classic works isolating one or the other. On the voter behavior side, models with costly voting typically fix candidates and focus on voters' turnout decisions (Borgers 2004; Myatt 2015; Taylor and Yildirim 2010; Krishna and Morgan 2012; Tyson 2016; Arzumanyan and Polborn 2017).[3] Alternatively, on the politician behavior side, classic studies of electoral competition do not feature abstention (Downs 1957; Calvert 1985; Wittman 1983).[4] By integrating these settings, we shed new light on how turnout and platforms can impact each other (Adams and Merrill III 2003; Hortala-Vallve and Esteve-Volart 2011; Bierbrauer, Tsyvinski and Werquin 2022).[5]

The key gap we fill is parsing competitive consequences of partisan-biased changes to voting costs. Specifically, we highlight how politicians and parties may shift their platforms if certain citizens' voting costs are altered. In this vein, Bertocchi et al. (2020) also allow voting costs to differ between voting blocs. That is not their main focus, however, and we allow for more general differences in voting costs in order to analyze a broader range of partisan-biased

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[3]That emphasis descends from classic works probing the rationality of voting (e.g., Palfrey and Rosenthal 1983; Ledyard 1984; Hansen, Palfrey and Rosenthal 1987) that are outside the purview of this article (for a summary, see Feddersen (2004)). In that vein, recent works studies *ethical voting*, where voters want to match the voting decisions of their group members (Ali and Lin 2013; Feddersen and Sandroni 2006; Bouton and Ogden 2021).

[4]For a wider overview of electoral models in that vein, see Dewan and Shepsle (2011); Ashworth (2012) and Duggan and Martinelli (2017).

[5]Aldashev (2015) and Hodler, Luechinger and Stutzer (2015) also endogenize policy choice, but in the specific case of public good expenditures rather than our spatial setting.

changes.[6] Additionally, they study purely office-motivated candidates, whereas we study policy-motivated candidates. Due largely to this difference, interesting equilibrium behavior in their setting requires incumbency advantage. In contrast, we set incumbency aside because it is not central to our interest in studying targeted changes to voting costs.

Model

We analyze a spatial model of an election with binding campaign platforms and policy-motivated parties. There are two groups of citizens, left-leaning citizens and right-leaning citizens. To vote, each citizen must bear a cost. Crucially, we allow voting costs to differ between the two groups. Moreover, to capture uncertainty about the impacts of recent targeted voting restrictions, both parties are uncertain about the left group's voting costs. Additionally, to reflect that voting blocs can differ in size, we allow the groups to have different shares of the population. We comment on modeling assumptions after describing the environment.

Players. There are two parties, L and R, as well as a unit mass of citizens. Citizens are split into two groups, with a share $\alpha \in (0, 1)$ in G_L and the remaining $1 - \alpha$ in G_R.

Timing. First, the parties L and R simultaneously choose policies in the one-dimensional policy space $X = [-1, 1]$.[7] Second, each citizen chooses whether to vote and, if so, which party to vote for. We refer to citizens who turn out to vote as *voters*. Finally, the party with the greater vote share wins the election and enacts their policy.[8]

Preferences. Both parties are purely policy motivated and evaluate the winning policy with linear loss. Specifically, each party j has associated ideal point denoted $\hat{x}_j$ and its utility from elected platform x is

$$u_j(x) = -|x - \hat{x}_j|. \tag{1}$$

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[6]Specifically, in their appendix they study a related model featuring uniformly distributed voting costs, a special case of the log-concave cost distributions that we study. Consequently, we can analyze a broader array of changes to voting costs and their various effects.

[7]We can interpret these choices as committing to platforms or choosing ideal points of their candidates.

[8]For simplicity, we assume L wins in the event of a tie. This has no effect on our results.

Throughout, we assume $\hat{x}_L = -1$ and $\hat{x}_R = 1$.

Citizens are policy motivated and incur a cost if they turn out to vote. Each citizen i has an ideal point, $\hat{x}_i$, and a voting cost, c_i. Formally, if x is the winning candidate's platform, then citizen i's payoff is

$$u_i(x) = -|x - \hat{x}_i| - c_i \cdot \mathbb{I}(i \text{ votes}), \tag{2}$$

where $\mathbb{I}(i \text{ votes})$ indicates whether i voted.

Crucially, citizen ideology and voting cost are related to group membership. In G_R, citizen ideal points are uniformly distributed on $[0, 1]$ and every citizen has voting cost $c_R \geq 0$. In G_L, citizen ideal points are uniformly distributed on $[-1, 0)$ and every citizen has voting cost $c_L \geq 0$.

Information. For citizens, all features are common knowledge. For parties, all features are common knowledge except for c_L, the voting cost for citizens in G_L. In particular, parties do not know c_L when choosing policies but share a common belief that is represented by a distribution function F that has support $[\underline{c}, \overline{c}]$, where $\underline{c} \geq 0$, and associated density f that is log-concave.[9] In contrast, both parties know $c_R \geq 0$ precisely.

We assume uncertainty about voting costs for only one side as a seamless and tractable way to capture the essence of our application. The criticism of targeted voting restrictions as partisan suggests that the resulting increase in voting costs falls largely on supporters of the opposing party. By assuming uncertainty for only one side, we starkly capture the disparate partisan impact of targeted voting restrictions in a streamlined and accessible way. Moreover, the information asymmetry between parties and targeted voters reflects that parties choose their platforms without knowing exactly how strongly restrictions will impact those voters. Regardless, our distributional assumption is quite general and retains the flexibility to consider

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[9]Log-concavity of f implies F is log-concave. Many common distributions including normal, exponential, and uniform are log-concave. A truncated log-concave distribution is also log-concave (Bagnoli and Bergstrom 2005).

small differences in uncertainty.

Strategies and Equilibrium Concept. For each party, a pure strategy specifies a policy platform in X. For each citizen, a strategy is a mapping from policy pairs (x_L, x_R) to their voting decision of whether to vote for L, vote for R, or abstain.

We analyze pure strategy Subgame Perfect Nash Equilibria (SPNE). Moreover, we focus on SPNE satisfying two additional properties. First, each citizen's voting strategy is *sincere*: they vote for the closer policy if their voting cost is less than the difference in their policy utility from the two policies; otherwise, they abstain. Second, no citizen will surely turn out to vote for the opposing side's candidate: (i) no citizen in G_R will vote for L's candidate and (ii) no citizen in G_L will always—i.e., for all realizations of c_L—vote for R's candidate. The first property is standard in related electoral models (e.g., Calvert 1985; Wittman 1983; Hortala-Vallve and Esteve-Volart 2011), while the second is not crucial but streamlines our main insights. Below, we discuss both in more detail.

Model Commentary. In our setup, each citizen votes *sincerely* as if they are pivotal. This approach has the spirit of eliminating undominated voting strategies—but since we have a continuum of citizens, no citizen is ever pivotal and thus no strategy is dominated. Furthermore, it is strategically equivalent to analyzing SPNE of an otherwise equivalent model in which citizens receive expressive utility from voting and paying their turnout cost to vote (Hortala-Vallve and Esteve-Volart 2011). More precisely, it implies abstention driven by indifference—i.e., each citizen votes only if they perceive a sufficiently large difference between the candidates. Although this formulation is standard and has empirical support (Jessee 2009, 2010; Shor and Rogowski 2018), some related models with platform competition feature *affinity voting* (Callander and Wilson 2007; Callander and Carbajal 2022; Adams and Merrill III 2003; Llavador 2006). There, abstention occurs due to *alienation*—i.e., both candidates are too far from the voter's ideal point. Our main points also arise in that setting, as we show in the Appendix.

Additionally, in our main analysis, equilibria can feature the *possibility* for *crossover*

voting by some citizens in G_L, but they cannot *always* do so. Specifically, if some centrist citizens in G_L are closer to R's candidate, they would vote for them if c_L is low enough but abstain otherwise. This property streamlines and sharpens our main analysis, since we are not primarily interested in the occurrence of crossover voting. Furthermore, it is also fairly innocuous and appears more substantively prevalent than the alternative. Regardless, it is not crucial for our main results and we relax it in the Appendix.
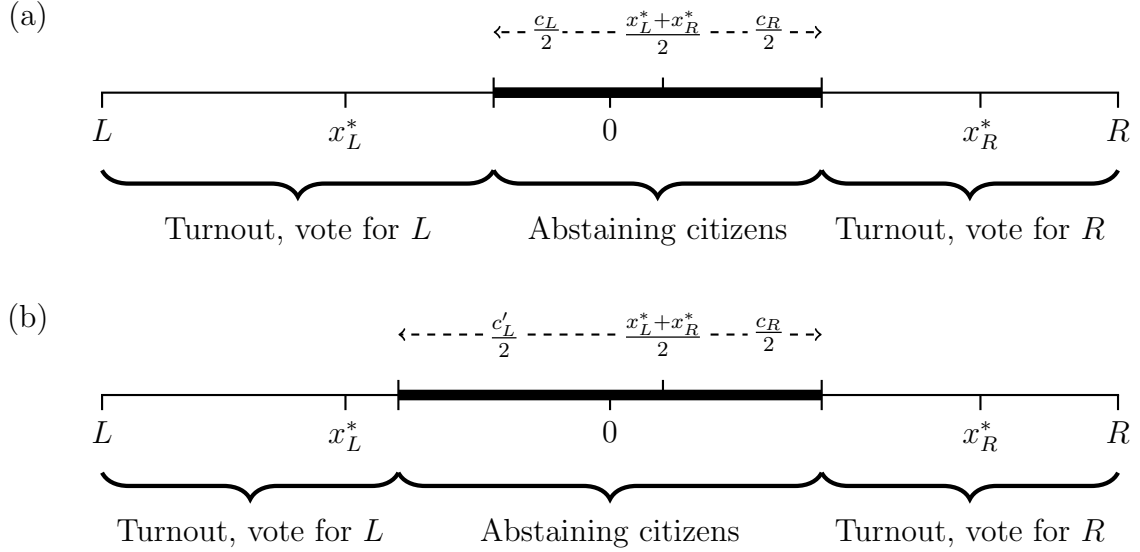
Analysis

In our analysis, we seek to sharpen theoretical expectations about how voting costs affect elections. We start with the supporting players in our model, the citizens, and characterize how party platforms and voting costs determine who turns out to vote and which parties they vote for. Next, we characterize the policy platforms that parties choose in anticipation of those electoral consequences. Using this foundation, we then analyze how voting costs affect various equilibrium features, such as policies, turnout, who wins the election, and party welfare. In particular, we distinguish between different types of changes to voting costs— *untargeted* versus *targeted*—as well as those that *shift* costs versus those that *spread* additional uncertainty around the potential costs. Throughout the analysis, we also track how the size of each group of citizens shapes behavior and mediates the effects of changes in voting costs.

Individual Turnout & Vote Choice

Each citizen has a simple voting calculus: they prefer the closer policy, but will not vote unless it is sufficiently closer than the other policy to outweigh their voting cost. Formally, citizen i abstains if $|u_i(x_L) - u_i(x_R)| \leq c_i$ and otherwise they vote for the closer policy. Remark 1 states this more explicitly and Figure 1 illustrates, focusing on cases with *partisan voting*—that is, voters in G_L support L and voters in G_R support R.

Remark 1. *In equilibrium, if $x_L < x_R$, then citizen i will: (i) vote for L's candidate if $\hat{x}_i \leq \frac{x_L + x_R - c_i}{2}$, (iii) vote for R's candidate if $\hat{x}_i \geq \frac{x_L + x_R + c_i}{2}$, and (iii) abstain otherwise.*

Figure 1: Equilibrium Voting & Abstention

(a)

$$\xleftarrow{} \frac{c_L}{2} \text{- - - -} \frac{x_L^* + x_R^*}{2} \text{- - -} \frac{c_R}{2} \dashrightarrow$$

L $\quad\quad$ x_L^* $\quad\quad\quad$ 0 $\quad\quad\quad\quad$ x_R^* $\quad$ R

Turnout, vote for L $\quad\quad$ Abstaining citizens $\quad\quad$ Turnout, vote for R

(b)

$$\xleftarrow{} \frac{c_L'}{2} \text{- - - - - -} \frac{x_L^* + x_R^*}{2} \text{- - -} \frac{c_R}{2} \dashrightarrow$$

L $\quad\quad$ x_L^* $\quad\quad\quad$ 0 $\quad\quad\quad\quad$ x_R^* $\quad$ R

Turnout, vote for L $\quad\quad$ Abstaining citizens $\quad\quad$ Turnout, vote for R

Note: Figure 1 illustrates who votes and, if so, who they vote for. It depicts that behavior for two different realizations of voting costs for citizens in G_L, where $c_L < c_L' < x_R - x_L$. In 1(a), abstention occurs in $(\frac{x_L^* + x_R^* - c_L}{2}, \frac{x_L^* + x_R^* + c_R}{2})$. In 1(b), where G_L's realized voting cost is $c_L' > c_L$, the abstention set expands leftward to $(\frac{x_L^* + x_R^* - c_L'}{2}, \frac{x_L^* + x_R^* + c_R}{2})$.

Voters, Turnout, & Election Outcomes

We can aggregate individual voting behavior to characterize turnout, vote shares, and electoral outcomes. To streamline presentation in the main text, we focus primarily on *partisan voting*— where the sets of voters in each group are intervals, as depicted in Figure 1. It drives the key equilibrium properties and, although low realizations of c_L may induce some *crossover voting* from G_L, solely partisan voting is always more likely.

Given policies (x_L, x_R), we denote the set of voters in G_L as $\mathcal{V}_L(x_L, x_R; c_L)$ and analogously denote voters in G_R as $\mathcal{V}_R(x_L, x_R; c_R)$. Thus, given policies (x_L, x_R) and voting costs (c_L, c_R) that induce partisan voting, the share of citizens who vote for L is $\alpha \cdot |\mathcal{V}_L(x_L, x_R; c_L)| \equiv \tau_L(x_L, x_R; c_L)$, where $|I|$ denotes the length of interval I. Similarly, the share of citizens who vote for R is $(1 - \alpha) \cdot |\mathcal{V}_R(x_L, x_R; c_R)| \equiv \tau_R(x_L, x_R; c_R)$.

Party L wins if and only if it receives more votes than R, i.e., $\tau_L \geq \tau_R$.[10] Equivalently, since $\tau_L(x_L, x_R; c_L)$ is decreasing in c_L, L wins if and only if c_L is sufficiently low. To illustrate, if (x_L, x_R) induces partisan voting, then L wins if and only if

$$\tau_L(x_L, x_R; c_L) = \alpha \left| \left(\frac{x_R + x_L}{2} - \frac{c_L}{2} \right) - (-1) \right| \geq (1 - \alpha) \left| 1 - \left(\frac{x_R + x_L}{2} + \frac{c_R}{2} \right) \right| = \tau_R(x_L, x_R; c_R).$$

(3)

Distilling 3 yields a simple characterization for a cutpoint on c_L that distinguishes whether L wins in equilibrium and, moreover, each party's win probability.[11]

Remark 2. *In equilibrium, party L wins if and only if*

$$c_L \leq \frac{1}{\alpha} \left[x_R + x_L + (1 - \alpha) c_R + 2(2\alpha - 1) \right] \equiv \hat{c}(x_L, x_R),$$

(4)

so the probability that L wins is $F(\hat{c}(x_L, x_R))$ and R wins with complementary probability.

Condition (4) highlights that—keeping in mind that we have not yet considered the parties' equilibrium policy choices—party L's electoral prospects can improve due to changes in the policies (x_L, x_R), voting costs for right-leaning citizens (c_R), or G_L's population share (α). First, if x_R shifts rightward, then marginal voters or "moderates" on both sides will behave less favorably toward R. Specifically, (i) marginal voters in G_L become more concerned about R winning, so they become more inclined to vote; and (ii) marginal voters in G_R become less excited about R winning, so they become less inclined to vote. Second, if x_L shifts rightward, then marginal voters on both sides grow more favorable towards L, so turnout increases on the left and decreases on the right. Third, if c_R increases, marginal voters in G_R will be less inclined to vote. This decreases turnout among right-leaning citizens. Fourth, if α increases, there are both direct and indirect effects on L's electoral prospects. Most straightforwardly, an increase in α implies a greater share of left-leaning citizens voting for L, which improves

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[10]Recall that L wins if there is a tie.
[11]See Lemmas 1–3 for straightforward details.

L's electoral prospects.

Furthermore, the magnitudes of those direct effects are shaped by interaction effects between policies, voting costs, and population shares. First, α affects the magnitude of the other three effects: (i) the mobilization of left-leaning citizens prompted by a rightward shift in x_R has a greater effect, but the corresponding demobilization of right-leaning has a weaker effect; (ii) the mobilization and demobilization prompted by a rightward shift in x_L is mediated similarly; and (iii) the demobilization of right-leaning citizens prompted by an increase in c_R has a more muted effect. Note that x_L, x_R, and c_R also affect the magnitude of the α direct effect. Specifically, (i) an increase in x_R both amplifies and dampens the direct effect of increased α by increasing the share of left-leaning citizens who turn out but increasing the share of right-leaning citizens who abstain; (ii) an increase in x_L has similar mediating effects on the α direct effect; and (iii) an increase in c_R reduces the magnitude of the α direct effect by reducing the share of right-leaning citizens who turn out.

Party Competition: Electoral Chances and Policy Platforms

We now turn to party platform choices. In general, each party j's expected payoff from a platform pair (x_L, x_R) is

$$\mathbb{E}_{c_L}[u_j(x_L; x_R)] = -|x_L - \hat{x}_j| \cdot Pr(L \mid x_L, x_R) - |x_R - \hat{x}_j| \cdot (1 - Pr(L \mid x_L, x_R)). \quad (5)$$

In equilibrium, Remark 2 ensures that $Pr(L \mid x_L, x_R) = F(\hat{c}(x_L, x_R))$, so expected payoffs for L and R reduce to

$$\mathbb{E}_{c_L}[u_L(x_L; x_R)] = u_L(x_R) + (u_L(x_L) - u_L(x_R)) \cdot F(\hat{c}(x_L, x_R)), \text{ and} \quad (6)$$

$$\mathbb{E}_{c_L}[u_R(x_R; x_L)] = u_R(x_R) + (u_R(x_L) - u_R(x_R)) \cdot F(\hat{c}(x_L, x_R)). \quad (7)$$

When choosing its platform, each party balances a two familiar competing incentives. On one hand, choosing a more moderate policy increases their probability of winning by

attracting more voters from the party's own side and turning off voters from the other side. On the other hand, it also decreases their benefit from winning, as their policy is farther from their own ideal point. The second term in (6) reflects L's expected gain from winning, whereas the second term in (7) reflects R's expected loss from losing. These terms are symmetric about zero and increase with the policy divergence.

Using (6) and (7), the parties' marginal utilities from moderating are

$$\frac{\partial \mathbb{E}[u_L(x_L; x_R)]}{\partial x_L} = -F(\hat{c}(x_L, x_R)) + \frac{x_R - x_L}{\alpha} f(\hat{c}(x_L, x_R)), \text{ and} \tag{8}$$

$$-\frac{\partial \mathbb{E}[u_R(x_L; x_R)]}{\partial x_R} = -(1 - F(\hat{c}(x_L, x_R))) + \frac{x_R - x_L}{\alpha} f(\hat{c}(x_L, x_R)). \tag{9}$$

In both (8) and (9), the first term reflects the party's downside of moderation—lower policy payoff conditional on winning—weighted by their probability of winning. Victory becomes less sweet, a sting that becomes especially poignant as the party's chances of winning rise. Meanwhile, the second term reflects the upside—greater likelihood of winning—weighted by the magnitude of the policy gain. Victory becomes more assured, which is especially tantalizing when the policy gap between the parties is large.

The marginal incentives can differ between the parties only through differences in their downsides of moderation. Specifically, the favored party has a larger downside because they are more likely to win and realize the cost of their moderation, while the unfavored party sees less of a downside because they will probably lose anyway. Consequently, the favored party will be more inclined to moderate than the unfavored party.

Since both parties face the same upside of converging, they will be equally likely to win in equilibrium. Formally, combining (8) and (9) yields $F(\hat{c}(x_L^*, x_R^*)) = \frac{1}{2}$, so the election is a *toss-up*. This toss-up property means that once they select their platforms, the parties have the same probability of winning the election. This result is not sensitive to voting costs or size. Of course, this *ex ante* feature of the election does not imply that elections will be close *ex post*, after voting costs are realized. If voting costs for the left-leaning group end up

being high, this will dissuade many of the more moderate left-leaning citizens from voting, which will give the right party an advantage. If voting costs for the left-leaning group end up being low, by contrast, more left-leaning citizens will head to the polls, giving the left party an advantage. But from the *ex ante* perspective, neither party has a greater chance of winning than the other. The ex ante probability of winning (e.g., $F(\hat{c}(x_L^*, x_R^*))$ for L) is also different from ex ante expected vote share (e.g., $\mathbb{E}\left[\frac{\tau_L^*}{\tau_R^* + \tau_L^*}\right]$ for L), which we analyze in the following section. Our toss-up property does not imply that expected vote shares are equal.

The starkness of this toss-up property highlights a key insight that we later explore in greater detail: any change in voting costs is likely to have small effects on electoral prospects, although there may be a large impact on policy. The key point here is *not* that the election is even ex ante. Straightforward alterations can tilt electoral prospects toward one side or the other without changing the main takeaways.[12] Instead, the key insight is that a targeted change to voting costs may not change the electoral balance very much—since meaningful policy effects can mute the electoral effects. Proposition 1 establishes precisely how our main setting starkly exhibits this broader property.

Proposition 1. *In equilibrium, neither party's probability of winning varies with F, the distribution of G_L's voting costs.*

The mechanism underlying this result is rooted in a familiar tradeoff underlying all models of electoral competition with policy-motivated agents: electoral success versus policy gains. Each party wants to win the election, which pushes platforms to converge, but they also want to maximize the policy benefits that come with victory, which pulls against convergence. In equilibrium, this tension from electoral competition can mute the electoral impact of targeted voting costs because of endogenous policy responses that rebalance each party's chance of winning. Unpacking these strategic forces has important substantive implications. For instance, although empirical work has understandably focused on electoral outcomes and

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[12]For instance, our affinity voting extension in the Appendix generates similarly electoral effects even though election is not always fifty-fifty. Another avenue is to allow the parties to have different risk aversion (Farber 1980).

vote shares because they are easier to measure, we highlight how these observables are not necessarily where clear effects will surface.

Crucially, this electoral balance *does not* imply that both parties are equally well off. Instead, one party is strictly better off as long as equilibrium platforms are asymmetric around 0. With any asymmetry, the electoral balance implies that one party's ideal point is closer to the expected policy—which is the midpoint—and thus they have a higher expected payoff.[13] Intuitively, differences in voting costs or group size can leave the parties on unequal competitive footing, leading the disadvantaged party to give up more in policy benefits to remain electorally competitive. Meanwhile, the advantaged party can remain electorally competitive without giving up too much on policy.

To analyze party welfare, we can characterize the expected equilibrium policy, $\frac{x_L^* + x_R^*}{2}$, using (i) the definition of $\hat{c}(x_L, x_R)$ in (4) and (ii) the toss-up election property, $F(\hat{c}(x_L^*, x_R^*)) = \frac{1}{2}$. Specifically, (ii) implies that $\hat{c}(x_L^*, x_R^*)$ equals the median of F, denoted $\tilde{c}$, and thus substituting $\tilde{c}$, x_R^*, and x_L^* into (i) and rearranging yields

$$\frac{x_R^* + x_L^*}{2} = \frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R] + (1 - 2\alpha). \tag{10}$$

Unlike electoral prospects, the expected policy depends on both voting costs and group size. Thus, even though they do not affect the likelihood that one party of the other wins the election, these factors *do* affect welfare. Specifically, they do so through two distinct channels, as reflected in (10). First, group size has a direct effect of its own: $(1 - 2\alpha)$. That is, enlarging a voting group shifts platforms toward the group's aligned party. Second, voting costs have a direct effect that depends on group size: $\frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R]$. That is, higher voting costs for the left-leaning group—more precisely, a higher median—shift policy to the left, and higher voting costs for the right-leaning group shift policy to the right, with the magnitude of each effect increasing in the group's size. When platforms are chosen, there is a 50/50 chance that

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[13]Each party's expected payoff is equal to its utility from the expected policy since both parties are purely policy motivated with absolute loss and $\hat{x}_L < x_L^* < x_R^* < \hat{x}_R$.

the realized citizen-wide average voting cost is below this value.[14]

Additionally, (8) and (9) imply the divergence between equilibrium platforms must be

$$x_R^* - x_L^* = \frac{\alpha}{2\,f(\tilde{c})}. \tag{11}$$

Divergence is driven by uncertainty about the voting costs of citizens in G_L. The key component is $f(\tilde{c})$, which reflects party-level uncertainty about G_L's voting cost on the electoral margin (i.e., around $\tilde{c}$). Greater uncertainty about these costs imply less density around $\tilde{c}$ and thus a lower value of $f(\tilde{c})$, which increases equilibrium platform divergence. Lower uncertainty implies greater density around $\tilde{c}$ and thus a higher value of $f(\tilde{c})$, which reduces equilibrium platform divergence. Group size again plays a supporting role, as it affects the magnitude of this force and, in turn, scales platform divergence. The uncertainty over costs plays a similar role in inducing divergence as uncertainty over the median voter's ideal point does in models such as Wittman (1983), Calvert (1985), and Groseclose (2001).

Together, (10) and (11) pin down equilibrium platforms, expressed in Proposition 2.

Proposition 2. *In equilibrium, the party platforms are:*

$$x_L^* = (1 - 2\alpha) + \frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R] - \frac{\alpha}{4\,f(\tilde{c})} \quad and \tag{12}$$

$$x_R^* = (1 - 2\alpha) + \frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R] + \frac{\alpha}{4\,f(\tilde{c})}. \tag{13}$$

Equilibrium platforms are determined by the midpoint and divergence, which is symmetric about the midpoint. Thus, they depend on the same forces that affect those features. The midpoint depends on the levels of voting costs, c_L and $\tilde{c}$, as well as group size, α. Divergence also depends on α, but the key factor is uncertainty about voting costs in G_L. Our

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[14]More precisely, this term is the median of the distribution of average voting cost over all citizens, i.e., $G_L \cup G_R$. This follows from $\tilde{c}$ being the median of F, the distribution of G_L voting costs.

characterization highlights that we can distinguish how beliefs about partisan voting costs can affect both platforms in different ways.

Thus far, we have characterized equilibrium behavior by analyzing the unique solution of two necessary first order conditions. In the Appendix, we provide technical details establishing conditions on voting costs for that solution to be an equilibrium. Essentially, these conditions ensure that neither party has a profitable deviation in two ways. First, mild conditions on c_R and $\tilde{c}$ guarantee turnout behavior at (x_L^*, x_R^*) that permits Remark 2. Second, log-concavity ensures that R does not have a profitable deviation, and the addition of another mild condition on F also ensures that L does not have a profitable deviation.

Effects of Voting Costs

We now analyze how changes in voting costs impact equilibrium policies, turnout, vote shares, representativeness, and party welfare. We consider two types of changes in voting costs: (i) *targeted* changes, which affect only one group of citizens, and (ii) *untargeted* changes, which affect both groups. A targeted voting law—for example a voting restriction aimed specifically at urban voters—has a different impact from a universal law that hits the entire electorate. For targeted changes, we consider a change in group G_L's voting costs, c_L, to be a shift of the cost distribution (and thus the median $\tilde{c}$),[15] and we consider a change in G_R's voting costs to be a straightforward change in c_R. For an untargeted change, we parameterize it by adding ϵ to both costs. We also consider changes in G_L's voting costs that change the shape of the distribution, by shifting the median ($\tilde{c}$) by a different amount than the mean ($\mathbb{E}[c_L]$).

Policies

We start by analyzing how equilibrium platforms depend on voting costs, considering both targeted and untargeted cost changes. Proposition 3 follows from Proposition 2 and illustrates these effects. First, increasing the median cost for one group of citizens—a targeted change—

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[15]If the original density was $f(c)$ with support $[\underline{c}, \overline{c}]$, the support of shifted density $f'(c)$ would instead be $[\underline{c} + \epsilon, \overline{c} + \epsilon]$. This would then give the new median as $\tilde{c} + \epsilon \equiv \tilde{c}'$. Note that $f(\tilde{c}) = f'(\tilde{c}')$. We abuse notation and refer to this change as $\partial \tilde{c}$.

shifts policies away from that group. Second, an untargeted increase in voting costs shifts platforms away from the larger group and towards the smaller group.

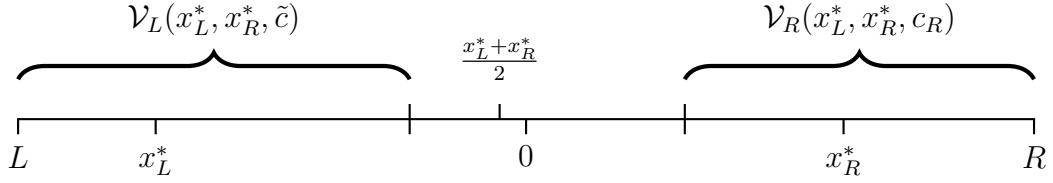**Proposition 3.** *In equilibrium, each party's platform:*

(i) *increases by $\frac{\alpha}{2}$ as $\tilde{c}$ increases,*

(ii) *decreases by $\frac{1-\alpha}{2}$ as c_R increases, and*

(iii) *changes by $\alpha - \frac{1}{2}$ if all voting costs increase equally.*

To understand why a cost increase for one group shifts platforms towards the opposing party, consider a pair of equilibrium platforms x_L^* and x_R^* with associated costs $\tilde{c}$ and c_R. To provide intuition, we will describe the logic in steps even though parties of course act simultaneously. To see the direct effect of voting costs, let the median left-group voting cost increase from $\tilde{c}$ to $\tilde{c}'$ while holding the platforms constant. Right-group turnout does not change, but the median of left-group turnout decreases, making R win more than half the time. This improvement in R's electoral prospects alters each party's electoral calculus: R finds the courage to pick a more extreme platform, whereas L chooses a more moderate platform to mobilize reluctant center-left citizens. Thus, the equilibrium effect on platforms is to shift both rightward, which in turn alters turnout. Figure 2 illustrates these effects.
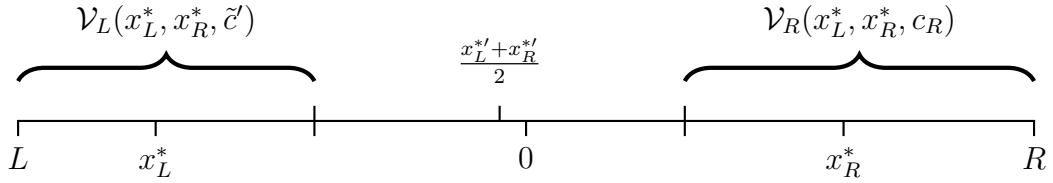
To illustrate how these results might matter in practice, consider a few examples from the empirical literature on the effects of restrictive voting laws. One focus of the literature has been voter identification laws. Using detailed microdata from Texas, Fraga and Miller (2022) find that these laws disproportionately affect Black and Latino voters, who lean Democratic. Our theoretical results thus imply that these laws should cause party platforms to shift toward the right. Alternatively, consider same-day registration and pre-registration. Prior research suggests that these policies reduce voting costs for young citizens, who lean Democratic (Grumbach and Hill 2022; Bertocchi et al. 2020). Thus, our model implies that these policies should cause party platforms to shift toward the left. Indeed, consistent with this prediction,

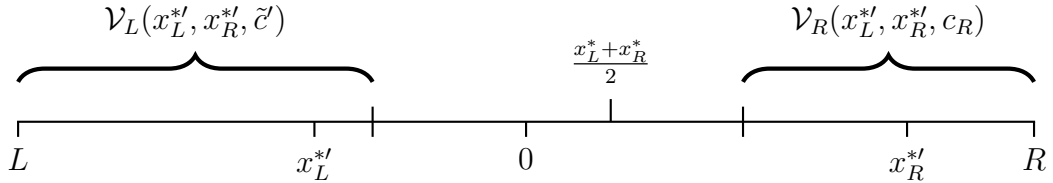Figure 2: Effects of changing $\tilde{c}$, the median voting cost for G_L

(a) Equilibrium behavior given $\tilde{c}$ & c_R:

$\mathcal{V}_L(x_L^*, x_R^*, \tilde{c})$ $\qquad\qquad\qquad$ $\frac{x_L^* + x_R^*}{2}$ $\qquad\qquad\qquad$ $\mathcal{V}_R(x_L^*, x_R^*, c_R)$

$L \qquad x_L^* \qquad\qquad\qquad\qquad 0 \qquad\qquad\qquad x_R^* \qquad R$

(b) Direct effect of $\uparrow \tilde{c}$ to $\tilde{c}'$ on voting behavior:

$\mathcal{V}_L(x_L^*, x_R^*, \tilde{c}')$ $\qquad\qquad\qquad$ $\frac{x_L^{*\prime} + x_R^{*\prime}}{2}$ $\qquad\qquad\qquad$ $\mathcal{V}_R(x_L^*, x_R^*, c_R)$

$L \qquad x_L^* \qquad\qquad\qquad\qquad 0 \qquad\qquad\qquad x_R^* \qquad R$

(c) Equilibrium effects of $\uparrow \tilde{c}$ to $\tilde{c}'$ on platforms and voting behavior:

$\mathcal{V}_L(x_L^{*\prime}, x_R^{*\prime}, \tilde{c}')$ $\qquad\qquad\qquad$ $\frac{x_L^* + x_R^*}{2}$ $\qquad\qquad\qquad$ $\mathcal{V}_R(x_L^{*\prime}, x_R^{*\prime}, c_R)$

$L \qquad\qquad x_L^{*\prime} \qquad\qquad\qquad 0 \qquad\qquad\qquad x_R^{*\prime} \qquad R$

Note: Figure 2 illustrates how increasing $\tilde{c}$ affects equilibrium platforms and voting behavior. Figure 2(a) depicts a baseline case with voting cost c_R for G_R and median cost $\tilde{c}$ for G_L. The effects of increasing $\tilde{c}$ to $\tilde{c}'$ are depicted in Figure 2(b) and 2(c). First, given the platforms in 2(a), Figue 2(b) illustrates the direct effect on voting behavior: less turnout in G_L. Second, (c) illustrates the overall effects as platforms and voting behavior adjust in equilibrium.

Bertocchi et al. (2020) find evidence that pre-registration policies cause increased spending in education. Lastly, consider changes to polling place locations and long lines at the polls (Cantoni 2020; Bagwe, Margitic and Stashko 2022; Pettigrew 2021; Cottrell, Herron and Smith 2021). To the extent that these policies can be targeted at specific groups of voters (e.g., urban voters, who lean Democratic), we should expect that party platforms should shift away from the targeted group's preferences.

Proposition 3 also reveals that group size mediates the effects of voting costs, whether targeted or untargeted. As one group grows, both parties react more to a cost change. For

example, if the left group is larger than the right group—that is, $\alpha > \frac{1}{2}$—then changing the left group's voting costs will shift each party's platform further than if the change targeted the right group. Similarly, if the left group is larger than the right group, an untargeted cost increase shifts both platforms rightward. Broadly, our results find that voting costs and group size are complementary in affecting platform location.

Effects of group size. We now consider how group size affects equilibrium platforms. Proposition 4 characterizes the impact as the left-leaning group grows.

Proposition 4. *In equilibrium, as α increases and G_L's population share grows,*

(i) *L shifts its platform by $\frac{\tilde{c}+c_R}{2} - 2 - \frac{1}{4\,f(\tilde{c})} < 0$, and*

(ii) *R shifts its platform by $\frac{\tilde{c}+c_R}{2} - 2 + \frac{1}{4\,f(\tilde{c})}$.*

Notice that the total effect of changing α on equilibrium platforms combines two effects. First, common to both platforms, there is a *direct effect* of group size, $\frac{\tilde{c}+c_R}{2} - 2$. Because $\frac{\tilde{c}+c_R}{2} < 2$, this effect shifts both equilibrium platforms leftward as α increases, and vice versa. When the left group (G_L) grows, a larger proportion of citizens is willing to vote for a relatively extreme left platform, and conversely, a smaller share of citizens is willing to vote for a relatively extreme right platform. Thus, both platforms shift left. Moreover, this effect is magnified by larger voting costs, which again highlights the complementarity between group size and group costs.

The second effect of α, felt by both groups but in opposite directions, is the *uncertainty effect* of group size. This effect shifts L's platform leftward by $\frac{1}{4\,f(\tilde{c})}$ and shifts R's platform rightward by that same distance. All of the uncertainty over voting costs is about G_L's costs. Therefore, as G_L becomes a larger share of the electorate, there is more uncertainty over costs and, in turn, electoral outcomes.[16]

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[16]Divergence increasing in α does not require G_R to have no uncertainty over costs, just lower uncertainty than G_L's costs. If there was more uncertainty over G_R's costs, then divergence would decrease in α, but the midpoint shift would remain exactly the same.

In addition to studying how group size affects the party platforms individually, we can also analyze how it affects equilibrium *divergence* $(x_R^* - x_L^*)$. By doing so, we highlight the difference between the direct and uncertainty effects of α. Furthermore, we isolate the uncertainty effect. Corollary 1 states the result.

Corollary 1. *In equilibrium,* $\frac{\partial(x_R^* - x_R^*)}{\partial \alpha} = \frac{1}{2 f(\hat{c})}$, *so platforms diverge more as the share of citizens in* G_L *grows.*

Divergence is the distance between party platforms, so the common direct effect of group size on platforms drops out. Thus, divergence arises solely due to electoral uncertainty. As is common in spatial electoral models, more electoral uncertainty increases policy divergence. Although group size (α) does not itself generate divergence, it does affect the *magnitude* of equilibrium divergence by amplifying the uncertainty effect. Increasing α widens the gap between equilibrium platforms even as the midpoint between the two platforms moves left.

Turnout

We now focus on equilibrium turnout. Turnout reflects the *ex post* side of the *ex ante* toss-up property that parties are equally likely to win in equilibrium. As previously noted, there may be *ex post* differences in turnout even if elections are *ex ante* toss-ups. Turnout is also more in line with what previous empirical work has typically measured. To streamline discussion of our main insights, we focus on the case in which there is always partisan voting.

Let τ_L^* be realized equilibrium turnout for G_L and define τ_R^* analogously. For a given realization of c_L, we have:

$$\tau_L^* = \alpha \left[2(1 - \alpha) + \frac{1}{2}(\alpha \, \tilde{c} - [1 - \alpha]c_R - c_L) \right]. \tag{14}$$

In equilibrium, L's expected turnout is

$$\mathbb{E}[\tau_L^*] = \alpha \left[2(1 - \alpha) + \frac{1}{2}(\alpha \, \tilde{c} - [1 - \alpha]c_R - \mathbb{E}[c_L]) \right] \tag{15}$$

and R's turnout is

$$\tau_R^* = \alpha \left(1 - \alpha\right) \left[2 - \frac{1}{2}(\tilde{c} + c_R)\right]. \tag{16}$$

Note that G_L's expected equilibrium turnout is equal to G_R's equilibrium turnout if G_L's expected voting cost equals G_L's median voting cost (i.e., $\mathbb{E}[c_L] = \tilde{c}$). One prominent class of distributions that always generate this equivalence are symmetric, single-peaked distributions (e.g., the normal distribution). Otherwise, the parties have different expected equilibrium turnout, even though they share the same probability of winning.

Proposition 5 characterizes how equilibrium turnout varies with different changes to voting costs. An increase in the right-leaning group's voting costs will reduce each group's expected turnout by the same amount. In contrast, an increase in the left-leaning group's voting costs will reduce their expected turnouts by different amounts. Moreover, which group is expected to respond more strongly depends on whether the mean increases more than the median.

Proposition 5. *In equilibrium,*

(i) *As $\tilde{c}$ or c_R grows, G_R's turnout changes by $-\frac{\alpha}{2}(1 - \alpha) < 0$,*

(ii) *As $\tilde{c}$ grows, G_L's expected turnout changes by $-\frac{\alpha}{2}\left[\frac{\partial \mathbb{E}[c_L]}{\partial \tilde{c}} - \alpha\right]$, and*

(iii) *As c_R grows, G_L's expected turnout changes by $-\frac{\alpha}{2}(1 - \alpha) < 0$.*

Consider G_R's turnout. It decreases in response to an increase in voting costs for *either group*. That is, right-leaning citizens will stay at home in greater numbers not only when their own voting costs increase, but also when the *other* group's median voting cost increases. This effect arises due to changes in equilibrium platforms. If platforms remained constant, changing $\tilde{c}$ would not affect G_R's turnout. But since a higher voting cost for G_L emboldens R to adopt a more extreme platform, turnout can decrease for both groups. Moreover, the magnitude

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of this effect is the same regardless of which group's costs increase. That is, G_R's turnout decreases by the same amount in response to an increase in its own voting costs as it does in response to an increase in the other group's voting costs. The effect is also largest when the groups are evenly split in the electorate.

Changes in voting costs affect G_L's turnout in a similar but somewhat more complicated manner. Here we focus on expected turnout, since c_L is a random variable.[17] Assuming that the median ($\tilde{c}$) does not rise too much more than the mean ($\mathbb{E}[c_L]$),[18] an increase in G_L's voting costs will reduce expected turnout for G_L. But an increase in G_R's voting costs will also reduce expected turnout. That is, like the other group, G_L's turnout can drop in response to an increase in either group's voting costs, not just its own. Furthermore, the equilibrium effect of greater policy moderation by L partially offsets the direct effects of higher voting costs for G_L on G_L's turnout, thereby muting the net reduction in turnout.

Which group is likely to experience a larger drop in turnout? For increases in G_R's voting costs, the expected turnout effect is the same for both groups. For increases in G_L's voting costs, however, the effect depends on whether the median ($\tilde{c}$) increases by more or less than the mean ($\mathbb{E}[c_L]$).[19] If the mean increases by more than the median, then the effect is greater for G_L. But if the mean increases less, the effect is greater for G_R. Hence, the ultimate effects on relative turnout depend critically on the type of shift in voting costs.

These results have important implications for empirical research on the turnout effects of restrictive voting laws. For example, take voter identification laws. As previously noted, prior research has found that these laws disproportionately affect Black and Latino voters, who lean Democratic (Fraga and Miller 2022). Based on this disparate impact, many scholars have hypothesized that voter identification laws will reduce Democratic turnout more than Republican turnout. Our theoretical results imply that this hypothesis is not necessarily

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[17]This corresponds to the outcome variable studied in the empirical literature (e.g., linear regression models involve conditional expectations).

[18]Specifically, we need $\frac{\partial \mathbb{E}[c_L]}{\partial \tilde{c}} > \alpha$. If this condition does not hold, then an increase in G_L's voting costs would actually *increase* expected equilibrium turnout for G_L.

[19]Again, this assumes that $\frac{\partial \mathbb{E}[c_L]}{\partial \tilde{c}} > \alpha$.

warranted, as an increase in voting costs targeting one group can reduce turnout for both groups, even if the targeting is perfect. We should therefore expect voter identification laws to reduce in turnout among Democrats more than Republicans only under certain conditions about the shift in distribution, which could hold in some cases but not in others. This may partly explain the relatively small turnout effects found in the empirical literature (Grimmer and Hersh 2023). Critically, however, this does *not* mean that voter identification laws are unimportant for electoral competition—the effects may simply be surfacing in the policies chosen rather than in relative turnout.

Alternatively, consider same-day registration and pre-registration, which prior research suggests reduce voting costs for young and thus Democratic-leaning citizens (Grumbach and Hill 2022; Bertocchi et al. 2020). Here, the expectations from the voter identification example are flipped, and once again, we should not necessarily expect turnout to increase more for Democrats than Republicans. This may partly explain any small effects found in the empirical literature. Again, however, the existence of small turnout effects does not imply that the registration laws are unimportant for electoral competition, since important effects may manifest in platforms.

Lastly, consider changes to polling place locations and long lines at the polls. To the extent that these policies can be targeted at specific groups of voters, we should expect similar effects as the voter identification example. Once again, it is unclear whether we should expect turnout to drop for one group of voters more than the other. And furthermore, this again does not imply that the restrictions are inconsequential, since platforms may shift.

Finally, beyond targeted increases in voting costs, our model also provides insight into the likely turnout effects of *untargeted* cost increases. If G_L's expected voting cost equals its median voting cost, then an untargeted increase in voting costs that preserves the equality between the mean and median would decrease each group's turnout by the same amount, $\frac{1}{2}\alpha \cdot (1-\alpha)$, an effect that is especially large when the parties are evenly split in the electorate. This may explain why mail-in voting—which effectively decreases voting costs for all voters—

seems to increase turnout across the board (Bonica et al. 2021).[20] But if the mean and median differ, then untargeted changes in voting costs may yield different turnout effects for each party.

Vote Shares and *Representativeness*

Many scholars are also interested in understanding the relationship between voting costs and two measures that are each a straightforward function of turnout: (i) vote shares and (ii) the representativeness of voters. First, by *vote shares*, we mean the share of votes cast for one party out of votes cast for both parties (i.e., $\frac{\tau_R^*}{\tau_R^* + \tau_L^*}$). Scholars have often understood this measure as reflecting electoral competitiveness. Second, by *representativeness* of voters, we mean the similarity between the composition of voters who turn out versus the composition of eligible voters. In our context, we focus on whether the composition of voters who turn out is skewed more toward one group or the other, relative to each group's population proportion (i.e., $\mathcal{V}_L(x_L^*, x_R^*; c_L) \neq \mathcal{V}_R(x_L^*, x_R^*; c_R)$).[21] Scholars have viewed this measure as an indicator of how well policy will align with public interests.

To illustrate how our analysis thus far can shed light can shed light on these relationships, we fix ideas by focusing on average vote shares and average representativeness. Two widespread intuitions are that increasing voting costs will (i) lead to more imbalanced vote shares, thereby decreasing competitiveness, and (ii) reduce representativeness, thereby decreasing policy alignment. Our analysis reveals two insights that shed new light on these intuitions.

First, shifting the voting cost distribution does not necessarily change either measure—due to equilibrium responses in party platforms. To illustrate, suppose $\mathbb{E}[c_L] = \tilde{c}$ and let F denote the initial distribution of c_L. Then, expected vote share is $\frac{1}{2}$ for both parties and,

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[20]Bonica et al. (2021) find an eight-percentage-point effect for all-mail voting in Colorado and that this effect does not meaningfully differ by party. This is a fairly large effect, which is consistent with our model's predictions given that Colorado is roughly evenly split between between the two parties (Colorado Secretary of State 2022).

[21]Note that the voters who turn out will always be missing some moderates and have extremists. But it may be the case that one group has a greater proportion of its population turn out than the other. It is this latter aspect of representativeness that we focus on.

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moreover, uniformly shifting the cost distribution F rightward has no effect on average vote share or average representativeness. Instead, to see changes in those quantities, any shift in F must change $|\mathbb{E}[c_L] - \tilde{c}|$. This observation is a stark illustration of a more general point: shifting the cost distribution is not sufficient to observe changes in these measures, as it is important to understand *how* that distribution changes.

Second, changes in average vote share or representativeness can occur without any change in expected policy payoffs. To illustrate, consider an initial cost distribution F that has $\mathbb{E}_F[c_L] = \tilde{c}$, and two different shifts in the cost distribution, F' and F'', that each increase the median cost to $\tilde{c}'$ but differ in that only F' preserves the equality of expected cost and median cost. Formally, $\text{median}(F') = \text{median}(F'') = \tilde{c}' > \tilde{c}$, $\mathbb{E}_{F'}[c_L] = \tilde{c}'$, and $\mathbb{E}_{F''}[c_L] \neq \tilde{c}'$. Then, expected policy payoff changes in the same way after either shift. In contrast, average vote share and average representativeness change only after the shift to F''. Thus, changes in either of those measures, or the lack thereof, are not necessarily informative about welfare effects (as measured in our model by policy payoffs).

Party Welfare

We now study how each party's *ex ante* equilibrium payoff changes with voting costs and group size. By doing so, we shed light on how strongly each party would want to change voting costs under different conditions.

Because the game is zero-sum for the parties, we streamline the analysis by analyzing just one party. From the *ex ante* perspective, L's equilibrium welfare is

$$U_L^* = -1 - \frac{x_L^* + x_R^*}{2} \tag{17}$$

$$= \frac{1}{2}[(1 - \alpha) c_R - \alpha \tilde{c}] - 2(1 - \alpha). \tag{18}$$

Proposition 6 shows how party welfare varies with voting costs and group size.

Proposition 6. *In equilibrium, party L's welfare:*

(i) decreases by $\frac{\alpha}{2}$ as $\tilde{c}$ increases,

(ii) increases by $\frac{1-\alpha}{2}$ as c_R increases,

(iii) changes by $\frac{1}{2} - \alpha$ as all voting costs increase equally, and

(iv) increases by $2 - \frac{1}{2}(c_R + \tilde{c})$ as α increases.

Party R's welfare changes by the same amount in the opposite direction.

Unsurprisingly, each party benefits when their side's voting cost decreases or the other side's voting cost increases. But the proposition also shows that the *magnitude* of these gains or losses will depend on the size of the affected group. For example, the effect of an increase in G_L's median voting cost is stronger as G_L grows in size (i.e., α grows), yielding greater equilibrium welfare for R. This implies that R should have a stronger incentive to increase voting costs for G_L when G_L is larger. Thus, group size influences the salience of voting costs for party welfare, as it did for equilibrium platforms.

An increase in group size also influences party welfare by inducing the opposite party to shift its platform toward the now-larger group to capture enough of the vote to remain electorally competitive, while the aligned party shifts its platform toward its ideal point to convert some of these electoral gains into policy gains. But voting costs moderate this effect: with higher voting costs, a greater proportion of citizens stay home, muting the effects of group size.

Lastly, an *untargeted* increase in voting costs, reflected in the final comparative static, hurts the party aligned with the larger proportion of the electorate and helps the party aligned with the smaller proportion of the electorate. For example, if G_L were larger than G_R, then an untargeted increase in voting costs would help R and hurt L. This is because an untargeted increase in voting costs falls more on the larger group, which in turn leads the party aligned with that group to moderate its platform to remain electorally competitive and the other party to choose a more extreme platform to convert some of its electoral gains into policy gains.

Ultimately, this creates an incentive for the party with a weaker position in the electorate to increase voting costs across the board, whereas a party with a stronger position in the electorate has an incentive to use only targeted voting restrictions.

Concluding Discussion

In this paper, we use a formal model to show that the equilibrium effects of increasing voting costs are not limited to voter behavior. Rather, these costs can influence both voters *and* politicians, with turnout and platforms affecting each other. Our analysis sheds light on why focusing solely on turnout may miss crucial policy effects of new restrictive voting laws.

Building on recent research that integrates formal and normative theory (Oprea, Martin and Brennan 2024), our analysis shows how formal models can be usefully deployed to sharpen normative discussions about participation and representation. Our results illustrate how these two values are fundamentally linked and must be considered together to develop a complete understanding of electoral politics. These insights should be relevant to both democratic theorists considering participation and representation in the abstract and empirical scholars focusing more concretely on specific laws and policies.

We particularly urge empiricists to look at whether platforms and policies change in response to new restrictive voting laws. If restrictive voting laws reduce turnout and turnout affects policy, then restrictive voting laws should affect policy as well. Are more conservative policies implemented after restrictive voting laws targeting urban voters are enacted? Do candidates change their rhetoric to appeal to broader or narrower sets of voters following changes in election laws? Understanding the full impacts of voting laws requires a wider lens than scholars have used to date. Text-as-data methods may be particularly useful in producing measures of the ideological content of party and candidate platforms for use as an outcome variable (Laver, Benoit and Garry 2003; Grimmer, Roberts and Stewart 2022; Rheault and Cochrane 2020; Hopkins, Schickler and Azizi 2022).

For reasons outside our model, the policy effects of restrictive laws may be even more

severe in practice. Our results rely on the assumption that parties can choose any available platform location. In practice, however, parties may sometimes nominate extreme candidates who are unwilling to choose moderate policies (Hall 2019; Nielson and Visalvanich 2017). In such cases, the candidate's inability to moderate could cause the other party to move its platform in an even more extreme direction.[22]

Our analysis also yields insight into the circumstances under which the parties have the sharpest incentives to enact restrictive voting laws. Although our model does not make direct predictions on this issue, the logic of the model provides some clues. One important takeaway is that the benefits accruing to parties for changes in voting costs depend in part on the size of each voting bloc in the electorate. For example, increasing voting costs for a group of citizens leaning in one direction will benefit the opposing party most when the targeted group is large. It is thus no surprise that as Texas becomes more purple, the Republican government has instituted a sweeping restrictive voting law that appears to target Democratic-leaning citizens (Tulin and Sanchez 2023). Similarly, reducing the voting costs for one party's supporters by increasing voting access will benefit that party most when the opposing group is relatively small. This result holds even when the reduction is voting costs is untargeted and impacts all citizens. From this perspective, expansions of voting access in states with large proportions of Democratic voters would benefit the Democratic Party even when the expansion of voting access does not appear partisan.

Lastly, we note that while we focus on voting costs, these capture only one class of election laws that scholars and advocates have identified as potentially problematic. Although the models would be different, a similarly broad focus on different outcomes—assessing the policy impact and not just turnout—may shed light on the effects of gerrymandering, voter purges, and other types of election laws. Going forward, empirical researchers should consider a wider set of potential outcomes in studying the impacts of these laws.

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[22]Consider a situation where L could only choose a platform more extreme than some cutoff platform κ_L. Further, assume that κ_L is more extreme than the optimal platform L would choose without such a constraint (that is, $\kappa_L \leq x_L^*$). In the absence of possible moderation from L, an increase in c_L would push R to move her platform to an even more extreme location than she would otherwise.

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Appendix

Omitted Proofs

Lemma 1. *In equilibrium, $x_L^* \leq x_R^* - c_R$.*

Proof. First, we show $x_L^* < x_R^*$. Suppose not. If $x_L^* < 1 - c_R$, then R can profitably deviate to $x_R = x_L^* + c_R + \varepsilon$ for sufficiently small $\varepsilon > 0$. Otherwise, L can profitably deviate to $x_R^* - c_R$ since it will win for sure and get more favorable policy. Thus, we have a contradiction in both cases.

To complete the proof, suppose $x_L^* \in (x_R^* - c_R, x_R^*)$. Then, R will lose the election with probability one and contradiction follows from the same argument as above. ∎

Remark 3. *Given x_R, Party L's best response is weakly less than $x_R - c_R$. Given x_L, Party R's best response is weakly greater than $x_L + c_R$.*

Let $c^\dagger(x_L, x_R) \equiv -(x_L + x_R)$ denote the highest c_L at which there are citizens in G_L who vote for R's candidate. Additionally, recall $\hat{c}(x_L, x_R) \equiv \frac{1}{\alpha}\left(x_R + x_L + (1 - \alpha)c_R + 2(2\alpha - 1) \right)$.

Lemma 2. *In equilibrium, $c^\dagger(x_L^*, x_R^*) < \hat{c}(x_L^*, x_R^*)$.*

Proof. Suppose (x_L^*, x_R^*) is an equilibrium. Furthermore, suppose $c^\dagger(x_L^*, x_R^*) > \underline{c}$ since otherwise the result is trivial. Then, it straightforward to check that $|\tau_L(x_L^*, x_R^*; c_L) - \tau_R(x_L^*, x_R^*; c_R)|$ is constant over $c_L < c^\dagger(x_L^*, x_R^*)$, which follows because additional votes for L are canceled out by additional crossover votes (from citizens in G_L) for R. Therefore if $c^\dagger(x_L^*, x_R^*) \geq \hat{c}(x_L^*, x_R^*)$, then $Pr(L \text{ wins} \mid x_L^*, x_R^*) = 0$. But then L would have a profitable deviation, a contradiction. Thus, we must have $c^\dagger(x_L^*, x_R^*) < \hat{c}(x_L^*, x_R^*)$. ∎

Lemma 3. *In equilibrium, Party L wins if and only if $c_L \leq \hat{c}(x_L, x_R)$.*

Proof. Suppose (x_L^*, x_R^*) is an equilibrium. Lemma 1 implies that $\tau_R(x_L^*, x_R^*; c_R) > 0$ and Lemma 2 implies that $\tau_L(x_L^*, x_R^*; c_L) > \tau_R(x_L^*, x_R^*; c_R)$ for all $c_L < \hat{c}(x_L^*, x_R^*)$. Thus, L wins if

and only if:

$$(1 - \alpha) \left| 1 - \left(\frac{x_R + x_L}{2} + \frac{c_R}{2} \right) \right| > \alpha \left| -1 - \left(\frac{x_R + x_L}{2} - \frac{c_L}{2} \right) \right|, \tag{19}$$

which reduces to $c_L \leq \frac{1}{\alpha} \left(x_R + x_L + (1 - \alpha) c_R + 2(2\alpha - 1) \right) = \hat{c}(x_L^*, x_R^*)$, as desired. ∎

Proof of Propositions 1 & 2. Suppose (x_L^*, x_R^*) is an equilibrium. By Lemma 3, party L wins if and only if $c_L \leq \hat{c}(x_L^*, x_R^*)$. To streamline notation, let $\hat{c}^* = \hat{c}(x_L^*, x_R^*)$. Then, $Pr(L \text{ wins} \mid x_L^*, x_R^*) = F(\hat{c}^*)$, so L's expected payoff is

$$\mathbb{E}[u_L(x_L^*; x_R^*)] = -|x_L^* - \hat{x}_L| \cdot Pr(L \mid x_L^*, x_R^*) - |x_R^* - \hat{x}_L| \cdot (1 - Pr(L \mid x_L^*, x_R^*)) \tag{20}$$

$$= -(1 + x_R^*) + (x_R^* - x_L^*) \cdot F(\hat{c}^*), \tag{21}$$

and R's expected payoff is

$$\mathbb{E}[u_R(x_R^*; x_L^*)] = -(1 - x_R^*) + (x_L^* - x_R^*) \cdot F(\hat{c}^*). \tag{22}$$

Therefore $\frac{\partial \mathbb{E}[u_L(x_L^*; x_R^*)]}{\partial x_L} = -F(\hat{c}^*) + \frac{x_R^* - x_L^*}{\alpha} f(\hat{c}^*)$ and $\frac{\partial \mathbb{E}[u_R(x_R^*; x_L^*)]}{\partial x_R} = (1 - F(\hat{c}^*)) - \frac{x_R^* - x_L^*}{\alpha} f(\hat{c}^*)$.

Thus, the FOCs require

$$\frac{x_R^* - x_L^*}{\alpha} \frac{f(\hat{c}^*)}{F(\hat{c}^*)} = 1, \text{ and} \tag{23}$$

$$\frac{x_R^* - x_L^*}{\alpha} \frac{f(\hat{c}^*)}{1 - F(\hat{c}^*)} = 1. \tag{24}$$

Log concavity of f implies that (i) the LHS of (23) is strictly decreasing in x_L and (ii) the LHS of (24) is strictly increasing in x_R. Thus, L and R always have unique best responses, and their respective best response functions are characterized by (23) and (24). Combining

(23) and (24), we must have:

$$F(\hat{c}^*) = \frac{1}{2}. \tag{25}$$

Next, since $\hat{c}^* = \tilde{c} = \mathrm{median}(F)$, we know that (i) the midpoint of the equilibrium platforms satisfies

$$\frac{x_R^* + x_L^*}{2} = \frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R] + (1-2\alpha). \tag{26}$$

and (ii) the divergence between equilibrium platforms must be

$$x_R^* - x_L^* = \frac{\alpha}{2\,f(\tilde{c})}. \tag{27}$$

Finally, combining (26) and (27) yields the equilibrium platforms:

$$x_L^* = \frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R] + (1-2\alpha) - \frac{\alpha}{4\,f(\tilde{c})} \tag{28}$$

$$x_R^* = \frac{1}{2}[\alpha\tilde{c} - (1-\alpha)c_R] + (1-2\alpha) + \frac{\alpha}{4\,f(\tilde{c})}. \tag{29}$$

∎

Proof of Proposition 3. Using (28) and (29), we have: (i) $\frac{\partial x_L^*}{\partial c_R} = \frac{\partial x_R^*}{\partial c_R} = -\frac{1-\alpha}{2} < 0$, (ii) $\frac{\partial x_L^*}{\partial \tilde{c}} = \frac{\partial x_R^*}{\partial \tilde{c}} = \frac{\alpha}{2} > 0$, and $\frac{\partial x_L^*}{\partial \epsilon} = \frac{\partial x_R^*}{\partial \epsilon} = \alpha - \frac{1}{2}$. ∎

Proof of Proposition 4. Using (28) and (29), we have: (i) $\frac{\partial x_L^*}{\partial \alpha} = \frac{\tilde{c}+c_R}{2} - 2 - \frac{1}{4\,f(\tilde{c})} < 0$ and (ii) $\frac{\partial x_R^*}{\partial \alpha} = \frac{\tilde{c}+c_R}{2} - 2 + \frac{1}{4\,f(\tilde{c})}$. Additionally, note that $\frac{\partial x_L^*}{\partial \alpha} < \frac{\partial x_R^*}{\partial \alpha}$ and $|\frac{\partial x_R^*}{\partial \alpha}| < |\frac{\partial x_L^*}{\partial \alpha}|$. ∎

Proof of Corollary 1. Let $\Delta_x^* = x_R^* - x_L^* = \frac{\alpha}{2f(\tilde{c})}$. Then, using (28) and (29), we have: $\frac{\partial \Delta_x^*}{\partial \alpha} = \frac{1}{2f(\tilde{c})} > 0$, and $\frac{\partial \Delta_x^*}{\partial \tilde{c}} = -\frac{\alpha}{2} \cdot \frac{f'(\tilde{c})}{2\,f(\tilde{c})}$. ∎

Proof of Proposition 5. Using (28) and (29), group G_L's equilibrium turnout given a realiza-

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tion of c_L, we have:

$$\tau_L^* = \alpha\left[2(1-\alpha) + \frac{1}{2}(\alpha\,\tilde{c} - (1-\alpha)c_R - c_L)\right], \tag{30}$$

and thus G_L's expected turnout in equilibrium is

$$\mathbb{E}[\tau_L^*] = \alpha\left[2(1-\alpha) + \frac{1}{2}(\alpha\,\tilde{c} - (1-\alpha)c_R - \mathbb{E}(c_L))\right]. \tag{31}$$

Similarly, G_R's equilibrium turnout is

$$\tau_R^* = \alpha\,(1-\alpha)\left[2 - \frac{1}{2}(\tilde{c} + c_R)\right]. \tag{32}$$

∎

Proof of Proposition 6. Using (28) and (29), we obtain party L's equilibrium value:

$$U_L^* = -(1 + x_R^*) + \frac{1}{2}[x_R^* - x_L^*] \tag{33}$$

$$= \frac{1}{2}[(1-\alpha)\,c_R - \alpha\tilde{c}] - 2(1-\alpha). \tag{34}$$

and R's equilibrium value is $U_R^* = 2 - U_L^*$. Therefore, we have: $\frac{\partial U_L^*}{\partial \tilde{c}} = -\frac{\partial U_R^*}{\partial \tilde{c}} = -\frac{\alpha}{2}$, $\frac{\partial U_L^*}{\partial c_R} = -\frac{\partial U_R^*}{\partial c_R} = \frac{1-\alpha}{2}$, and $\frac{\partial U_L^*}{\partial \alpha} = -\frac{\partial U_R^*}{\partial \alpha} = 2 - \frac{1}{2}(c_R + \tilde{c})$. ∎

Conditions for Existence

Let (x_L^*, x_R^*) denote a platform pair that solves (23) and (24). We have already shown (x_L^*, x_R^*) is necessary for an equilibrium in the baseline setting. We now discuss conditions ensuring that (x_L^*, x_R^*) is an equilibrium and, furthermore, unique.

We begin by providing conditions on primitives to ensure the required conditions on turnout and crossover voting. First, $\tilde{c} \in \left(\frac{(1-\alpha)\,c_R + 2\,(2\alpha-1)}{1+\alpha}, \frac{(2-\alpha)\,c_R + 2\,(2\alpha-1)}{\alpha}\right)$ implies that: (i) $x_L^* + x_R^* - c_R < 0$, so no citizens in G_R will vote for L's candidate; and (ii) $x_L^* + x_R^* + \tilde{c} > 0$, so

no citizens in L will vote for R's candidate if $c_L \geq \tilde{c}$. Second, $\max\{c_R, \tilde{c}\} < \frac{\alpha}{2f(\tilde{c})} = x_R^* - x_L^*$ ensures that $\min\{\tau_R(x_L^*, x_R^*; c_R), \tau_L(x_L^*, x_R^*; c_L) \min\} > 0$ for all $c_L \geq \tilde{c}$.

Next, we verify that no player has a profitable deviation. Since voters are infinitesimal, we only need to check for each party, .

We start with party R. First, any x_R such that $\tau_R(x_L^*, x_R; c_R) = 0$ cannot be profitable since R will lose for sure. Second, any x_R such that $x_L^* + x_R - c_R < 0 < x_L^* + x_R + \tilde{c}$ is not profitable since x_R^* is uniquely optimal in this case. Third, any x_R such that $x_L^* + x_R - c_R > 0$ is not profitable since:

$$\mathbb{E}[u_R(x_R; x_L^*)] \leq \mathbb{E}[u_R(x_R; x_L^*) \mid G_R \text{ partisan voting}] \tag{35}$$

$$< \mathbb{E}[u_R(x_R^*; x_L^*) \mid G_R \text{ partisan voting}] = \mathbb{E}[u_R(x_R^*; x_L^*)], \tag{36}$$

where (35) follows because R is weakly more likely to win if G_R-crossover voters are ignored, (36) because x_R^* solves R's maximization problem given x_L^* and partisan voting from G_R, and the equality holds because (x_L^*, x_R^*) does not induce any crossover voting by citizens in G_R. Finally, any x_R such that $x_L^* + x_R + \tilde{c} < 0$ is not profitable since R would win for sure and therefore continuity implies $\mathbb{E}[u_R(x_R; x_L^*)] < \mathbb{E}[u_R(x_R^*; x_L^*)]$ for all these x_R.

Next, we provide conditions ensuring that x_L^* is optimal for Party L. First, by arguments analogous to those above, L does not have a profitable deviation to any x_L such that $x_L + x_R^* - c_R \leq 0$. Thus, the only potential profitable deviations are x_L that would induce some citizens in G_R to vote for L. This set of x_L is an interval, with lower bound $c_R - x_R^* \equiv x^\dagger$. It is straightforward to show that $\mathbb{E}[u_L(x_L; x_R^*)]$ is strictly quasi-concave over this interval. Accordingly, it suffices to provide conditions on F that imply $\mathbb{E}[u_L(x_L; x_R^*)]$ is decreasing at $x^\dagger$, which then implies that it strictly decreases over this interval. Note that

$\hat{c}(x^\dagger, x_R^*) = \frac{2}{\alpha} \cdot \left((2\alpha - 1) + (2 - \alpha) \cdot \frac{c_R}{2} \right) \equiv c^\dagger$, so we have:

$$\frac{\partial \mathbb{E}u_L(x, x_R)}{\partial x} \Big|_{x=x^\dagger} = -F(c^\dagger) + (x_R^* - x^\dagger) \cdot \frac{2-\alpha}{\alpha} \cdot f(c^\dagger)$$

$$< -F(c^\dagger) + \frac{\alpha}{2f(\tilde{c})} \cdot \frac{2-\alpha}{\alpha} \cdot f(c^\dagger)$$

$$= -F(c^\dagger) + \frac{2-\alpha}{2} \cdot \frac{f(c^\dagger)}{f(\tilde{c})}.$$

Therefore $F(c^\dagger) > \frac{2-\alpha}{2} \cdot \frac{f(c^\dagger)}{\tilde{c}}$ implies that L's expected payoff is strictly decreasing in x_L at $x^\dagger$. Thus, with this condition on F, L does not have a profitable deviation.

Furthermore, note that if $f'(c^\dagger) \leq 0$,[23] then this condition holds for all $\alpha' > \alpha$. For example, if F is $U[0,1]$ then the condition simplifies to $c_R > \frac{\alpha}{2} + \frac{2(1-2\alpha)}{2-\alpha}$, where the RHS is strictly decreasing in α and equal to $\frac{1}{4}$ at $\alpha = \frac{1}{2}$.

Characterization of Equilibria with Crossover Voting from G_R

We characterize platforms for any equilibrium in which there are citizens in G_R who vote for L. We show that the key insights from our baseline analysis carry over.

For any (x_L, x_R) in which $x_L + x_R - c_R > 0$—i.e., some citizens in G_R vote for L—party L wins if and only if

$$(1-\alpha) \left| 1 - \left(\frac{x_R + x_L}{2} + \frac{c_R}{2} \right) \right| \leq \alpha \left| -1 - \left(\frac{x_R + x_L}{2} - \frac{c_L}{2} \right) \right| + \alpha \left(\frac{x_L + x_R - c_R}{2} \right)$$

$$c_L \leq \frac{1}{\alpha} \left((2-\alpha) \cdot \frac{x_R + x_L}{2} + 2 \cdot (2\alpha - 1) \right) \equiv \hat{c}^\dagger(x_L, x_R).$$

Therefore $\frac{\partial \mathbb{E}[u_L(x_L; x_R)]}{\partial x_L} = -F(\hat{c}^\dagger(x_L, x_R)) + (x_R - x_L) \cdot \frac{2-\alpha}{\alpha} f(\hat{c}^\dagger(x_L, x_R))$ and $\frac{\partial \mathbb{E}[u_R(x_R; x_L)]}{\partial x_R} = [1 - F(\hat{c}^\dagger(x_L, x_R))] - (x_R - x_L) \cdot \frac{2-\alpha}{\alpha} f(\hat{c}^\dagger(x_L, x_R))$. Thus, the FOCs require any solution

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[23]Since $\tilde{c} < c^\dagger$, it follows that $f'(c^\dagger) \leq 0$ if F is normal, log-normal, uniform, or one of many other common log-concave distributions in which $f'(\tilde{c}) \leq 0$.

(x_L^*, x_R^*) to satisfy

$$(x_R^* - x_L^*) \cdot \frac{f(\hat{c}_*^\dagger)}{F(\hat{c}_*^\dagger)} = \frac{\alpha}{2-\alpha}, \text{ and} \tag{37}$$

$$(x_R^* - x_L^*) \cdot \frac{f(\hat{c}_*^\dagger)}{1 - F(\hat{c}_*^\dagger)} = \frac{\alpha}{2-\alpha}, \tag{38}$$

where we set $\hat{c}_*^\dagger = \hat{c}^\dagger(x_L^*, x_R^*)$ in order to streamline notation. Together, (37) and (38) imply $F(\hat{c}_*^\dagger) = \frac{1}{2}$. Therefore $\hat{c}_*^\dagger = \tilde{c}$, which implies $\frac{x_L^* + x_R^*}{2} = \left(\frac{1}{2-\alpha}\right) \cdot \left(\frac{\alpha}{2}\tilde{c} + 1 - 2\alpha\right)$ and $x_R^* - x_L^* = \frac{1}{2f(\tilde{c})} \cdot \frac{\alpha}{2-\alpha}$. Finally, we can combine the previous observations to obtain party platforms:

$$x_L^* = \frac{1}{2(2-\alpha)} \cdot \left(\alpha\tilde{c} + 2(1 - 2\alpha) - \frac{\alpha}{2f(\tilde{c})}\right), \text{ and}$$

$$x_R^* = \frac{1}{2(2-\alpha)} \cdot \left(\alpha\tilde{c} + 2(1 - 2\alpha) + \frac{\alpha}{2f(\tilde{c})}\right).$$

Affinity Voting

Suppose there are two groups of voters, G_L and G_R, each with associated voting costs λ_L and λ_R. Let $\lambda_R \geq 0$ be fixed and common knowledge, whereas λ_L is a random variable drawn from a log-concave probability distribution F that has support on the interval $[\underline{\lambda}, \overline{\lambda}]$, where $\underline{\lambda} \geq 0$, and associated density function f.

The timing is analogous to the baseline model: (i) parties make binding campaign commitments, (ii) then uncertainty over λ_L is realized, and (iii) then voters vote.

For each citizen in G_R, suppose they turn out and vote for candidate R if

$$|\hat{x}_i - x_R| \leq \lambda_R$$

and otherwise they abstain. Suppose citizens in G_L behave analogously. Thus, we focus on a setting in which voters support a candidate only if she is from their affiliated party.

Analysis

The condition for L to win election with platforms (x_L, x_R) is

$$(1 - \alpha)(1 - x_R + \lambda_R) \leq \alpha(1 + x_L + \lambda_L). \tag{39}$$

Thus, L wins the election if and only if

$$\lambda_L \geq \frac{1 - \alpha}{\alpha}(1 + \lambda_R) - 1 - \left(\frac{1 - \alpha}{\alpha} x_R + x_L \right) \equiv \hat{\lambda}. \tag{40}$$

It follows that $Pr(L \text{ wins} \mid x_L, x_R) = 1 - F(\hat{\lambda})$.

Then, given a platform pair (x_L, x_R), we can express L expected payoff as

$$U_L(x_L, x_R) = -(1 - F(\hat{\lambda}))(1 + x_L) - F(\hat{\lambda})(1 + x_R) \tag{41}$$

$$= -(1 + x_L) - F(\hat{\lambda})(x_R - x_L), \tag{42}$$

and R's expected payoff as

$$U_R(x_L, x_R) = -(1 - F(\hat{\lambda}))(1 - x_L) - F(\hat{\lambda})(1 - x_R) \tag{43}$$

$$= -(1 - x_L) + F(\hat{\lambda})(x_R - x_L). \tag{44}$$

The FOCs are:

$$0 = \frac{\partial U_L(x_L, x_R)}{\partial x_L} = -(1 - F(\hat{\lambda})) + f(\hat{\lambda})(x_R - x_L) \tag{45}$$

$$0 = \frac{\partial U_R(x_L, x_R)}{\partial x_R} = F(\hat{\lambda}) - \frac{1 - \alpha}{\alpha} f(\hat{\lambda})(x_R - x_L). \tag{46}$$

Log-concavity of F implies that each FOC has a unique solution.

Next, we solve for equilibrium platforms x_L^* and x_R^*. Let $\hat{\lambda}_\alpha$ denote the unique solution to $\hat{\lambda} = H(1 - \alpha)$, where $H = F^{-1}$ denotes the inverse cdf. The FOCs together imply

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$F(\hat{\lambda}_\alpha) = 1 - \alpha$ and, using that observation, they also imply $x_L^* - x_R^* = \frac{f(\hat{\lambda}_\alpha)}{\alpha}$. From there, a straightforward derivation yields:

$$x_L^* = (1 - \alpha)\lambda_R - \alpha\hat{\lambda}_\alpha + (1 - 2\alpha) - \frac{1 - \alpha}{\alpha}f(\hat{\lambda}_\alpha) \tag{47}$$

$$x_R^* = (1 - \alpha)\lambda_R - \alpha\hat{\lambda}_\alpha + (1 - 2\alpha) + f(\hat{\lambda}_\alpha). \tag{48}$$

Next, we characterize each party's equilibrium value, which simplify to the following:

$$U_R^* = (1 - \alpha)\lambda_R - \alpha(2 + \hat{\lambda}_\alpha) \tag{49}$$

$$U_L^* = \alpha\hat{\lambda}_\alpha - (1 - \alpha)(2 + \lambda_R). \tag{50}$$

Then, we have the following comparative statics:

$$\frac{\partial U_R^*}{\partial \lambda_R} = -\frac{\partial U_L^*}{\partial \lambda_R} = (1 - \alpha) > 0 \tag{51}$$

$$\frac{\partial U_R^*}{\partial \hat{\lambda}_\alpha} = -\frac{\partial U_L^*}{\partial \hat{\lambda}_\alpha} = -\alpha < 0 \tag{52}$$

$$\frac{\partial U_R^*}{\partial \alpha} = -\frac{\partial U_L^*}{\partial \alpha} = (2 + \lambda_R + \hat{\lambda}_\alpha) - \alpha\, h(1 - \alpha), \tag{53}$$

where $H' = h$. Furthermore, we have:

$$\Delta^* = U_R^* - U_L^* = 2\left((1 - 2\alpha) + (1 - \alpha)\lambda_R - \alpha\hat{\lambda}_\alpha\right)$$

and comparative statics are immediate.

And for equilibrium turnout, we have:

$$\tau_R^* = (1 - \alpha)\left(\alpha(2 + \lambda_R + \hat{\lambda}_\alpha) - f(\hat{\lambda}_\alpha)\right) \tag{54}$$

$$\tau_L^* = \alpha\left(2(1 - \alpha) + (1 - \alpha)\lambda_R + \lambda_L - \alpha\,\hat{\lambda}_\alpha - \frac{1 - \alpha}{\alpha}f(\hat{\lambda}_\alpha)\right). \tag{55}$$

From there, we have the expected turnout differential in equilibrium:

$$\tau_R^* - \mathbb{E}[\tau_R^*] = \alpha \, (\hat{\lambda}_\alpha - \mathbb{E}[\lambda_L]). \tag{56}$$