Electoral Strategies: Persuasion, Mobilization, Centrism *

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Abstract

What are successful electoral strategies? Should candidates try to persuade "swing" voters or mobilize their "base"? We present a model that can address these and related questions in a single unified framework. We relate electoral strategies to the characteristics of voting groups, with the answers to these questions sometimes being surprising. We show how a candidate may have different ways of winning for given characteristics of the electoral population, with possible "discontinuities" in electoral positions that win elections. We believe that the model helps clarify some key issues as well as presenting insights into some real-world experience.

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1 Introduction

What strategies should a candidate use in order to attract votes? There is a long-standing debate, for example, about whether elections are won by targeting "swing" voters or by "mobilizing one's base". The first are groups with a high concentration of voters who could swing to either candidate so that small changes in a candidate's position may yield a significant change in her vote share. The second (a candidate's "core voters") are groups who are likely to vote for a candidate if members of the group come out to vote, but need to be mobilized in order to turn out.

In this paper we investigate winning electoral strategies in terms of characteristics of voting groups and argue that answers to the question of whom to target are not so simple. One may get the impression from at least some of the literature that whether to target swing or core voters is an "either-or" question depending on the relative sizes of the groups and the cost of mobilizing the latter group. We will argue that the question of which groups to target in terms of their underlying characteristics in order to win an election is far more complex. In fact, for *given characteristics* of the electorate there may be multiple winning strategies – targeting swing voters, targeting core voters, and targeting a mixture of the two. Moreover, there will be "discontinuities" in electoral positions that win elections, for example where slightly away from center platforms on one side and extremist positions on the other side win elections, but centrist positions do not.

This model may be useful not only for illumination issues of specific electoral strategies – targeting swing versus core voters, centrism versus extremism,etc. – but also as a vehicle for analysis of other issues concerning electoral strategies. A key aspect of the model is the role of abstention, a factor that formal models of electoral strategies generally ignore.

We quickly note some questions we will not address in terms of electoral strategy. One is the issue of what Cox (2009) calls "coordination", meaning reducing the number of electoral competitors to increase one's vote share. Though this is important (consider multi-candidate primary elections) we consider the case where there are only two candidates. Second, we consider a single election, rather than a sequence of elections in which a candidate's strategy in one race may affect her electoral options in a subsequent race. This would be the case, for example, if the policy positions enunciated by a candidate in one race might limit what positions she could credibly take subsequently, as in Meirowitz (2005). It could also reflect

changes in voter preferences as a result of the positions candidates took the outcomes of previous races. We also don't consider possible electoral advantages (or disadvantages) of ambiguity in this paper (though we will briefly touch on why ambiguity may or may not be useful). Finally, we don't discuss explicit "vote buying", which is also important but not our focus. One could use the more general term of "clientelism" as an electoral strategy, but since in our view this term has many interpretations, we prefer not to enter into the question of whether our results bear on clientelism or not.

The paper is organized as follows. In section 2 we discuss related literature. Section 3 presents the basic model of attracting voters, which serves as a "workhorse" model for studying the issues raised here as well as others. Section 4 examines out some basic cases – centrism, mobilizing one's base, targeting swing voters. and presents baseline results. Section 5 considers the implications of voting groups differing over several dimensions, with a key result being that there may be more than one strategy that is consistent with winning the election for given characteristics of voting groups. In section 6 we consider the implications for of a candidate facing a very popular challenger. In this section we show conditions for the optimality of targeting a minority by choice of policy position. Section 7 adds extreme partisans to the model and studies the implications for voting strategies. In section 8 we further investigate how the interaction of different voting group characteristics can lead to multiple winning strategies for a candidate and how these may collapse depending on the type of opponent a candidate faces. Section 9 summarizes the main results and concludes.

2 Literature

The academic literature on successful electoral strategies is obviously very large. (And of course, the non-academic literature, if such a term is appropriate, is immense.) We limit ourselves to the literature most directly related to the questions given above, as well as to some papers related to our general methodology.

2.1 Who gets targeted?

As Cox (2009) asks, "How do political parties allocate targetable goods – such as private goods targeted to individuals, local public goods targeted to geographic areas, or tax breaks targeted to specific industries or firms – in order to optimize their electoral prospects?" The

most discussed issue is whether to target "Swing" or "Core" voters. Cox highlights this question and argues that there are two main 'camps' on this question – those who favor the "core voter model" of Cox and McCubbins (1986) and others versus those who favor the "swing voter model", for example in Lindbeck and Weibull (1987) "swing voter model." Swing voters are generally defined as those who are close to indifference between candidates so that small changes in candidate's positions or other factors may easily swing them from one candidate to the other. It is often added that they are likely to vote, so that the issue is persuading them how to vote rather than whether to vote. A swing group is one having a lot of voters in this situation, so that small changes in positions can induce large changes in vote shares from the group. Formally, there is a high density of such voters in the group. Cox reviews the literature and goes on to cite a significant number of papers that present evidence taken as supporting both views.

There are different definitions of core voters. One approach is that core voters are those who are "predisposed" to vote in favor of a party or candidate. This predisposition may be, for example, on programmatic grounds (Stokes (2005)) or on the basis of strongly held partisanship. A key issue is whether these voters are both strongly predisposed and very likely to vote (so that they can be safely ignored in choosing strategies to gain votes) or whether they must be mobilized to turn out for their favored candidate or party.

Dixit and Londregan (1996) present an alternative, though related, concept of a party's core voters, namely those voters with whom the party has an "advantage over its competition at swaying voters in a group with offers of particularistic benefits". Hence, it is not so much a 'predisposition' to vote for the party, but the party's ability to induce them to vote for it on grounds other than the party's policy. Under both definitions the party does not get their votes by changing its policy positions. Moreover, core voters are seen as those who will vote heavily for the party at presumably relatively low cost to the party per vote.

2.2 Modeling voter choices and voting equilibrium

Formal models of competition between two candidates are numerous. Even among those, there are several that focus on the issue of how group characteristics affect politician strategies, such as Lindbeck and Weibull (1987) or Dixit and Londregan (1996) already mentioned. One aspect is the importance for voting decisions of those characteristics that a candidate cannot change (or, as in the citizen-candidate model, policies he is believed certain to enact,

campaign promises notwithstanding) versus things like those issues where a candidate can make a credible commitment to a position (or range of positions) that she chooses. The first may be termed "immutable" characteristics (or positions), the second "mutable" characteristics (or positions). For example Krasa and Polborn (2012) consider how the connection between the two affect equilibrium positions in a two-candidate race. Mataskos and Xefteris (2014), considering policies towards income redistribution as in Roemer (1998), show how candidate equilibrium positions are affected by group characteristics such as size, marginal utility of income, and concentration of non-economic characteristics (which determines how 'swing' a group is).

A common result in these papers is that in the Nash equilibrium (if it exists) the two candidates converge to the same policy in equilibrium when for example, they are purely office motivated or if they are policy-motivated but have no uncertainty about the position of the median voter. Platform differences can emerge in equilibrium under uncertainty of this type, where they are driven by ideological differences of the candidates. These papers also assume no voting costs and hence *no* abstention – which would be generated by voters seeing no significant difference between candidate platforms – even though equilibrium in the models is often characterized by identical platforms of the two candidates.

The approach in this paper is quite different, in no small part because we feel that using the above type of model to study which groups are targeted by a candidate misses a number of issues that we think are central to this question. Are differences in candidates' platforms in equilibrium generated simply by their underlying ideology and uncertainty about voter preferences, or do they also reflect strategic choices? If a candidate has the ability to target groups more effectively than her opponent, how does she use that ability to gain votes? How does she successfully differentiate herself from her opponent to win an election? How important is mobilizing one's base to turn out to vote, a question that can't be answered in models that assume full participation?

3 A Simple Model of Attracting Voters

We now set out a simple model of how a candidate's observed platform, summarized by a variable $\omega \in (0,1)$, may attract voters. There are two candidates, denoted I and C, but we focus on candidate I who can better "signal" the policies she will adopt after the

election, and we consider how she can use that ability to attract voters. This could be the incumbent who has the ability to use government expenditures to target voters. In the literature (for example, Cox and McCubbins (1986), Lindbeck and Weibull (1987)) the question of which voters are targeted in order to win elections has been modeled in terms of distribution of a public good subject to a budget constraint, where candidates commit to a post-electoral distribution. Alternatively, the composition of government expenditures may be used to signal the incumbent's priorities even if commitment is not assumed, as in Drazen and Eslava (2013). (There is a good bit of evidence that the composition of spending changes before elections to attract votes both at the local and national levels. See Brender and Drazen (2013) for a summary and evidence on the national level across countries.)

Since we assume that the two main groups prefer either $\omega = 0$ and $\omega = 1$, and that platforms are binding commitments (though may only give a range of possible ω), any choice of ω by a candidate is equivalent to a decision on distribution of a government-provided good.[1] ω may also be thought of as the tax rate, consistent with the literature on electoral determination of tax policy, where the rich prefer a tax rate on income of 0 and the poor prefer (absent disincentive effects) a tax rate of 1.

We will sometimes refer to candidate I as the "incumbent" and candidate C as the "challenger", but of course it may be the challenger who can more precisely or credibly indicate her platform ω (though the interpretations of ω in the previous paragraph may be consistent it being the incumbent who can do this). The main point is that our analysis concentrates on the candidate who can make more precise policy statements and, given this ability, the strategies she may use to win elections, and we call this candidate I and her opponent C for ease of exposition.

3.1 Voter Utility

For the bulk of the paper we assume there are two types or groups of voters[2]: group A, who favor ω as high as possible, group B, who favor ω as low as possible. Voters also have candidate-specific or "partisan" preferences which are *independent* of ω or any actions the candidate may take. We denote voter i's "partisan" preference for candidate $P \in \{I.C\}$

[1] Cox (2009) labels such commitment "outcome-contingent transfers" that is "Promising to deliver benefits if and only if one wins"

[2] In some of our analysis, we will introduce a third group O whose most preferred position is in the center, namely $\omega = \frac{1}{2}$.

by π_P^i. The utility of individual i in group $h = A, B$ if the candidate P is elected and implements policy ω may be represented as

$$u_A^i(\omega; P) = \ln \omega + \pi_P^i \tag{1a}$$

$$u_B(\omega; P) = \ln(1-\omega) + \pi_P^i. \tag{1b}$$

Since it is only net partisan preference that matters, we denote by $\lambda^i \equiv \pi_C^i - \pi_I^i$ voter i's net partisan preference for candidate C, so that a voter with $\lambda^i < 0$ has a preference for I independent of ω, while one with $\lambda^i = 0$ has no partisan preferences. A voter with λ^i high enough in absolute value would never vote for one of the candidates no matter what the ω positions of the two candidates were.

We note that the formulation where candidates can change their positions on some issues ω but have immutable characteristics (represented by the π_P^i) is itself pretty standard. One may think of this partisan factor as representing a "citizen-candidate" (Osborne and Slivinski (1996), Besley and Coate (1997)) aspect of candidates' positions, that is those policy aspects that voters believe will be carried out by a candidate *independent* of any campaign promises he or she might make. Hence the model can capture fully credible platform commitments by a candidate, partially credible commitments (where the incumbent can commit only to a range of ω), and aspects where voters know (or at least believe they know) what a candidate will do if elected, so that campaign statements would have no effect.

A key group characteristic is the distribution of partisan preferences within a group as in Dixit and Londregan (1996). We consider two possible distributions of the λ^i in a group. One is that the distribution of candidate preference is normal with mean $\bar{\lambda}_h$ and standard deviation σ_h for $h = A, B$. Without loss of generality we will consider group A to be the incumbent's "natural" or core constituency and group B to be the challenger's core constituency. That is, we take $\bar{\lambda}_A < 0$ and $\bar{\lambda}_B > 0$ (though individual-specific λ_A^i and λ_B^i are normally distributed around these means). σ_h measures the concentration of partisan preferences in the group ("ideology" in Dixit and Londregan, "within-group homogeneity" in Mataskos and Xefteris (2014)).

The other possibility is meant to represent two subgroups within each group that there, one centered around a $\bar{\lambda}_h$ that is low in absolute value ("moderate" partisans), the other around a $\bar{\lambda}_h$ that is high in absolute value ("extreme" partisans), where known proportions

of extremists and moderates in each group. This will be investigated starting in section 7.1.

3.2 Voter Information

We can generally represent the information that voters have by a probability distribution of possible ω for both candidates, denoted by density functions $\psi^I(\omega)$ on I and $\psi^C(\omega)$ on C. We assume, for simplicity, that all voters have the same information set, though we don't restrict the distributions ex ante. Our key assumption that I has an advantage in greater ability to signal her position ω can be represented by the distribution $\psi^I(\omega)$ being "tighter" than $\psi^C(\omega)$. We consider the polar case in which where I's ω is known while C's ω is uniform over one of three ranges $\mathbb{C}^L = \left[\omega^l, \frac{1}{2}\right]$, that is, a "leftist" challenger; $\mathbb{C}^R = \left[\frac{1}{2}, 1-\omega^l\right]$, that is, a "rightist" challenger; and $\mathbb{C}^M = \left[\omega^l, 1-\omega^l\right]$, that is a challenger on neither side of the spectrum, where the distribution of possible preferences is centered on $\frac{1}{2}$.[3] *Note crucially that "left" and "right" refer to positions on the ω-line.* This corresponds to real world notions of left and right if ω were a metric of a right-wing policy (such as fraction of the budget devoted to guns rather than butter). But we could have ω refer to a left-wing policy, so that a higher ω (that is, on the right part of the line) is a left-wing policy. This is useful for some of our examples, as we will see below.

3.3 Voting Costs

Modeling abstention based on voting costs faces the question of why individuals bother to vote in a large electorate, as their probability of being pivotal approaches zero. Addressing this question is difficult and beyond the scope of this paper. We take it for granted that some citizens never vote no matter what the positions of the candidates. We don't include them as part of the electorate (though conventional measurement counts them as voters who abstained) and consider only voters whose decisions are affected by candidates' positions and costs of voting. For these 'potential' voters, we simply assume that an individual abstains when his voting cost outweighs the difference in utility expected from the two candidates. That is, each voter views himself as pivotal in deciding whether or not to vote.[4] We assume that each voter has a cost of voting $\gamma^i \geq 0$. For much of the paper we assume that all

[3] To bound utility away from $-\infty$.we assume in the computations that ω^l is close to but strictly greater than 0.

[4] An alternative approach would be that the non-instrumental benefit of voting could be candidate specific, as in Yucel (2015).

individuals have the same voting cost $\gamma^i = \gamma > 0$, where the likelihood that a given voter will abstain can still vary over voters depending on their λ^i and of course the position ω of the candidates.

We will first solve for vote shares as a function of candidate policies, partisan voter preferences and costs of voting where we assume that there are no exogenous shocks that affect turnout. We will label this as intention to vote. We will then add a random turnout shock that will convert vote shares to winning probabilities but still allow use of the same formal model to analyze electoral strategies.

A voter i in group A intends to vote for I only if the difference in expected utility under I and C at least as large as the cost of voting:

$$E(\ln \omega | I) - E(\ln \omega | C) - \lambda_A^i \geq \gamma, \tag{2}$$

where $E(\ln \omega | I) \equiv \int_\omega \ln \omega \psi^I(\omega) \, d\omega$ and analogously for $E(\ln \omega | C)$ with $\psi^C(\omega)$ replacing $\psi^I(\omega)$. Similarly, he intends to vote for C if the expected utility gain from having the C rather than I elected is at least as great as the cost of voting:

$$E(\ln \omega | C) - E(\ln \omega | I) + \lambda_A^i \geq \gamma \tag{3}$$

Finally, a member of group A plans to abstain rather than turn out to vote for one of the candidates when the difference in his utility under the two candidates is less than the voting cost γ^i so that (reversing the two inequalities above)

$$-\gamma < E(\ln \omega | I) - E(\ln \omega | C) - \lambda_A^i < \gamma. \tag{4}$$

(Remember that some citizens never vote and are excluded from the analysis as discussed above, while some voters plan to vote but an exogenous shock, such as weather, may induce them to stay home. This will be discussed below.) Analogous equations hold for members of group B but with $\ln(1-\omega)$ replacing $\ln \omega$. (With individual-specific voting costs, the γ would be replaced by γ^i, but one can immediately see why individual-specific λ^i can have similar effects.

3.4 Vote Shares and Election Outcomes

We may then write the fractions of voters in group A intend to who vote for I as

$$\upsilon_A^I = F_A\left(\int_\omega \ln \omega\psi^I(\omega)\,d\omega - \int_\omega \ln \omega\psi^C(\omega)\,d\omega - \gamma\right) \tag{5}$$

where $F_A(\cdot)$ is the CDF of a standard normal with mean $\bar{\lambda}_A$ and standard deviation σ_A. In the case where I's position in known, the first term in parentheses would simply be $\int_\omega \ln \omega\psi^I(\omega)\,d\omega = \ln \omega$. Analogously, the fraction who intend to vote for C is

$$\upsilon_A^C = 1 - F_A\left(\int_\omega \ln \omega\psi^I(\omega)\,d\omega - \int_\omega \ln \omega\psi^C(\omega)\,d\omega + \gamma\right) \tag{6}$$

Finally the fraction of group A who plan to abstain given the candidate's positions is $\varnothing_A = 1 - \upsilon_A^I - \upsilon_A^C$, which could be written

$$\begin{aligned}\varnothing_A = {} & F_A\left(\int_\omega \ln \omega\psi^I(\omega)\,d\omega - \int_\omega \ln \omega\psi^C(\omega)\,d\omega + \gamma\right) \\ & - F_A\left(\int_\omega \ln \omega\psi^I(\omega)\,d\omega - \int_\omega \ln \omega\psi^C(\omega)\,d\omega - \gamma\right)\end{aligned} \tag{7}$$

The vote shares in group B would be analogous, but with $\ln(1-\omega)$ replacing $\ln \omega$ and with $F_B(\cdot)$ replacing $F_A(\cdot)$, where $F_B(\cdot)$ is the CDF of a standard normal with mean $\bar{\lambda}_B$ and standard deviation σ_B.

If all voters who intend to vote actually do vote candidate I's share of votes is

$$S \equiv \frac{\upsilon_A^I\varphi_A + \upsilon_B^I\varphi_B}{\upsilon_A^I\varphi_A + \upsilon_B^I\varphi_B + \upsilon_A^C\varphi_A + \upsilon_B^C\varphi_B} \tag{8}$$

$$\equiv \frac{V^I}{V^I + V^C} \tag{9}$$

where φ_A and φ_B are the fractions of the two groups in the population and where $V^I \equiv \left(\upsilon_A^I\varphi_A + \upsilon_B^I\varphi_B\right)$ and $V^C \equiv \left(\upsilon_A^C\varphi_A + \upsilon_B^C\varphi_B\right)$. For simplicity, call this share S if intentions are fulfilled simply the "vote share".

To convert vote shares into probabilities of winning, suppose that a shock on voting day ("bad weather") implies that only a fraction τ^I of candidate I's voters actually fulfill their intentions to turn out and vote for her. Similarly only a fraction τ^C of candidate C's voters fulfill their intentions to turn out and vote for her. Suppose these fractions τ^I and τ^C are independent of any voter or candidate characteristics, as well as unknown ex ante by candidates or voters. Hence the ratio τ^I/τ^C is a random variable. The threshold for winning (getting 50% of the actual vote) would not be $S = \frac{1}{2}$ but

$$\frac{\tau^I V^I}{\tau^I V^I + \tau^C V^C} = \frac{1}{2} \tag{10}$$

which could be written $\tau V^I = V^C$where $\tau \equiv \tau^I/\tau^C$. This implies that at the threshold we can write

$$S \equiv \frac{V^I}{V^I + \tau V^I} = \frac{1}{1+\tau} \tag{11}$$

where $\frac{1}{1+\tau}$ is a random variable, say with CDF $\Upsilon(\cdot)$ and mean of $\frac{1}{2}$. We may then write the probability of winning as a function of S, the "vote share", as

$$\Pr\left(S \geq \frac{1}{1+\tau}\right) = \Upsilon(S) \tag{12}$$

where the probability of winning is monotonically increasing in S. Hence, though vote share is stochastic we can analyze I's electoral strategies in terms of S as defined in (8), which I can take as non-stochastic if she knows demographic characteristics, relative to a stochastic winning threshold $\frac{1}{1+\tau}$, which is fully exogenous to the candidates. We shall argue that candidate I may have different ways of increasing S above a given level of to satisfy this condition for given characteristics of the electoral population: relative group size φ_A and φ_B; fraction of extremists in a group ϵ_A and ϵ_A; voter information on candidates' policies $\psi^I(\omega)$ and $\psi^C(\omega)$; average partisan preferences $\bar{\lambda}_A$ and $\bar{\lambda}_B$; dispersion of partisan preferences σ_A and σ_B; and voting costs γ.

3.5 Candidate Behavior

Our interest in the paper is to investigate winning strategies for a candidate I who can credibly commit to a policy position ω given the characteristics of the electorate and the type of challenger she faces. Because we want to focus on how voting group characteristics affect I's position relative to C, we assume that I has no ω preferences and cares only about being elected.

Hence, as already discussed section 2.2, we focus on the choice of ω by candidate I for different ranges of choices by candidate C. One may interpret this as a situation where I faces a challenger who can neither change what voters believe is his general policy orientation nor make it as precise as I can. We will however note what the Nash equilibrium is when both candidates choose strategies simultaneously.

3.6 Defining "Swing" and "Core" Groups

As discussed in section 2, swing voters are often defined as those who are close to indifference between candidates so that small changes in candidate's positions or other factors may easily swing them from one candidate to the other. Although this would seem to imply a λ^i close to 0, a voter with a non-zero but not too large λ^i will be swing for some value of ω. A swing group is one with a lot of swing voters. In our model, this corresponds to a group with a high σ_h, that is where voter's partisan positions are very concentrated, so that there are a large fraction of voters in the group who will change their votes in the same ω range. One should add that in the presence of positive voting costs ($\gamma > 0$), a voter never moves directly from voting from one candidate to the other as the incumbent's ω changes, but always moves from a candidate to abstention and then to the other candidate with changes in ω. Only when $\gamma = 0$ (so the voter is certain to vote) does a voter swing directly from one candidate to the other for a marginal change in ω.

Core voters are those who are "predisposed" to vote in favor of a party or candidate, which in our model corresponds to large absolute value of λ^i. A core group would then be one which satisfies either of two conditions. Either it is unimodal in partisan preferences and characterized by a large absolute value of $\bar{\lambda}_h$ – negative if the groups is candidate I's base, positive if it is candidate C's base – so that the average voter in the group has a strong predisposition towards one candidate or the other. This would be combined with a sufficiently small σ_h, so that many voters in the group are characterized by a λ^i close to $\bar{\lambda}_h$. Alternatively, it can be a group with bimodal (or multimodal) distribution of the λ^i with a large fraction of "extremists", that is, those with high λ^i (in absolute value), highly concentrated around their average λ.

Note that relating the notions of swing and core voters to parameter values makes clear that a group could be more or less swing and more or less core. This possibility will figure in to the existence of multiple winning regions.

4 Some Basic Cases

We begin by illustrating some basic cases: the value of centrism when voting groups have opposing policy preferences but are otherwise identical; targeting swing voters when the two groups differ in how concentrated their preferences are; mobilizing one's base when there are

voting costs and one's base is relatively unmotivated to vote.

4.1 Centrism (and the Effect of Concavity)

Politicians who espouse centrist policies will win elections against those who favor non-centrist policies if voters are concentrated around the center. Our locational argument does not however require such an assumption. When voters are symmetrically located away from the center, the same locational argument will hold in the absence of partisanship.

To demonstrate the role of concavity in voter preferences in inducing centrism, we start with the most basic case of the model with equal-sized groups ($\varphi_A = \varphi_B$), no average partisanship for either group ($\bar{\lambda}_A = \bar{\lambda}_B = 0$), and no voting costs($\gamma = 0$). The dispersion of partisan preferences is assumed equal across groups, with $\sigma_A = \sigma_B = 0.2$. We further assume that I's ω is known while the C's ω is uniform over a range $\mathbb{C}^M = [.05, .95.]$.

Note first that if voters had linear preferences, they would compare the expected value of ω^C, which is 0.5, to I's ω in choosing how to vote according to (2) and (3). Given the symmetry of the the two groups, any ω chosen by I would give her exactly 50% of the vote, but no more.

Things look different when voters have concave preferences over policy ω as we assume. The top panels of Figure **1** plots I's vote share (panel a) and vote totals (panel b). We see that her vote share is maximized at the center, i.e. $\omega = 0.5$. This is due to concavity in voter preferences. As I moves away from the center to favor one of the groups, the utility gain of the favored group is less than the utility loss of the unfavored group so she loses the votes of the unfavored group faster than she gains votes from the favored group.

One may note that concavity of voter preferences implies that ambiguity on the part of I about her ω position cannot help the incumbent if voters have unbiased probabilities about I's actual position given her (ambiguous) policy announcement. If voters interpret ambiguous positions in a biased way, that is, by overweighting the possibility that the policies they will adopt if elected are those that they favor, we find in preliminary research that this may only help I if the ambiguity is fairly small.

One should note that what is important is centrism *relative to* the challenger. I's winning strategy would shift to the left if the challenger C were left wing, that is, where C's possible positions are in $\mathbb{C}^L = \left[\omega^l, \frac{1}{2}\right]$ (Figure 1, panel c), and to the right if C were right wing with policies in $\mathbb{C}^R$ (Figure 1, panel d). Note further that I's winning regions overlap when ω

is close to $\frac{1}{2}$ in the three cases of a left-wing, center, and right-wing challenger. Hence, if I didn't know the type of a challenger she would face when choosing her policy (that is, in a "simultaneous move game"), she could still guarantee victory by choosing a sufficiently centrist strategy.

Concavity of voter preferences also implies a "known-type" advantage for I, who gets 50 percent vote share or more for any ω, and she gets much more than 50 percent for ω close to 0.5. I can perfectly indicate her position, and thus can win easily over C if she chooses $\omega = 0.5$, the mean C's position, for whom only the distribution of possible ω is known. To the extent that it is incumbency in office that gives I the ability to more credibly or precisely communicate her post-electoral policy to the electorate, this is a type of incumbency advantage.

One should note however that incumbency may provide a *disadvantage* in terms of I choosing a position ω that maximizes her vote share or probability of winning. Holding office often requires making decisions that indicate specific position, and these decisions thus limit the positions that an incumbent subsequently running for re-election can be credibly take. This can be represented by the possibility that I may be able to take positions only in some subregion of the ω line. We discuss this in section 8.3.3 below.

4.2 Targeting Swing Voters (Effect of Differential Preference Dispersion)

A standard view is that when turnout is not an issue swing groups will be targeted because doing so will deliver a large number of votes. We can represent this idea by taking the above case of equal-sized groups with no average partisanship for either group and no voting costs ($\gamma = 0$), but suppose that the dispersion of partisan preferences is different across groups, taking $\sigma_A = 0.1$ and $\sigma_B = 0.6$. In other words suppose that groups are identical in their demographic characteristics and have no average bias towards one candidate or the other, but that group A (those favoring high ω) is much more concentrated in their λ^i around 0. Suppose as before that I is facing a challenger with ω uniform over the range $\mathbb{C}^M = [.05, .95.]$ with a mean of 0.5.

In Figure **2** (panel a) we see that I's vote share curve has shifted to the right, that is, towards higher ω. The peak, that is the point of highest probability has also shifted

(slightly) to the right. There is targeting of the more swing group. Panels b and c of Figure **2**, giving voting behavior of groups A and B respectively, make clear why this is so. In the absence of any partisan preferences ($\lambda^i = 0$ for *all* voters) concavity of preferences means that all group A voters would be indifferent between I's known policy and C's at the same point $\hat{\omega}^A = 0.416$ (defined by $\hat{\omega}^A = \int_\omega \ln \omega \psi^C(\omega)\, d\omega$), while all group B voters would be indifferent at $\hat{\omega}^B = 0.584$. Dispersion of the λ^i around $\bar{\lambda} = 0$ implies that there is some dispersion of indifference point around these respective values of $\hat{\omega}$, so that voters switch from one candidate to the other at different values of ω in the neighborhoods of the respective $\hat{\omega}$. The less dispersed (or more concentrated) are voter preferences, the steeper are the curves of vote switching as illustrated by these two panels. When, as in our example, group A voters are more concentrated I gains votes from them much faster than she loses votes from the less concentrated group B voters, so her vote-maximizing policy shifts in their direction.

4.3 Mobilizing One's Base (Effect of Preference Intensity and Voting Costs)

Conventional wisdom is that an alternative to winning elections via persuading swing voters is "mobilizing one's base" to come out and vote. Obviously this requires there to be positive voting costs ($\gamma > 0$) if some voters choose not to vote when comparing the expected utility difference under I versus C. As discussed above, we think of a candidate's base as those voters who, were they to come out and vote rather than abstain, are known to likely vote for that candidate. This could obviously be represented by an average λ in a group.

To illustrate the basic ideas, let's suppose the majority of the electorate has partisan preferences favoring I, but that the minority that favors C has more intense candidate preferences and thus are more motivated to vote. Hence, I needs to mobilize enough of her supporters to turn out to vote in order to offset a group of voters certain to prefer the opposing candidate. To represent this case, suppose that group A forms 55% of the electorate ($\varphi_A = .55$) but $\bar{\lambda}_A = -0.2$ while $\bar{\lambda}_B = 2$, meaning that group B voters have far stronger preferences towards C than group A has towards I. Suppose that both groups have the same level of concentration, say $\sigma_A = \sigma_B = 0.2$.

Figure **3** illustrates the phenomenon in terms of vote totals for voting costs $\gamma = 0$ (panel

a), $\gamma = 0.3$ (panel b),and $\gamma = 0.6$ (panel c) when C is neither right- nor-left wing, that is, her positions are distributed uniformly over the entire range $\mathbb{C}^M = [.05, .95.]$. One sees that as voting costs increase, I needs to move more towards the preferred policy of her base in order to increase her vote share above 50%. Panels b and c of Figure **3** make clear that I is increasing her vote totals not by persuading group B voters to swing towards voting for her (Group B is so heavily disposed towards the challenger C in terms of λ preferences that they fully vote for C for any ω) but by shifting A voters from abstention to turning out

The strategy of mobilizing one's base will not however work against a challenger who is on the *same* side of the ω spectrum as her (weakly-motivated) base. That is, consider the above case in terms of voting group characteristics, but suppose that I faces a right-wing challenger with $\omega \in \mathbb{C}^R = [.5, .95.]$ – that is, a challenger whose expected ω policy position coincides with the preferred policy of group A, I's base. As voting costs rise (hence making turnout of A voters more difficult) I must move farther and farther to the right. For high enough costs she will almost definitely lose, as illustrated in panel d of Figure **3** where the challenger is in $\mathbb{C}^R$ and $\gamma = 0.6$. That is, even with the highest possible ω, I's vote share doesn't exceed 25%. The combination of the intensity of the challenger's candidate-specific support (from group B voters) and her "right-wing" policy stance attracting group A voters dooms the incumbent. This represents the problem of running against a candidate on the same side of the ω policy spectrum who has intense candidate-specific support.

A policy of mobilizing one's base also appears when the two groups differ in terms of the level of voting costs γ rather than in their $\bar{\lambda}$. To see this, now suppose that average partisanship is the same in absolute value across groups, say $\bar{\lambda}_A = -1$ and $\bar{\lambda}_B = 1$. Suppose that group B has no voting costs ($\gamma = 0$) but consider different voting costs for group A. Figure **4** plots I's vote share for $\gamma_A = 0$ (panel a), $\gamma_A = 0.75$ (panel b), and $\gamma_A = 1.5$ (panel c). We observe that heterogeneity across groups in terms of voting costs is another reason that induces a candidate to 'mobilize her base'. When there is no voting costs, I can win by being a centrist or even by favoring group B. As voting costs for group A rise, however, I needs to favor her base more and more to convince them to turn out to vote, that is, to favor her base in order to win the election.

5 Voting Groups Differ Across Multiple Dimensions

The base cases discussed in section 4 suggest that there is an intuitive translation from characteristics of voting groups to electoral strategies. When voting groups are similar except for their preferred policies and are likely to turn out to vote, then centrism is a winning strategy. When however, turnout is a problem among a candidate's base, centrism against a centrist challenger may simply induce significant abstention, so that a candidate may lose to a challenger with more motivated supporters. In such a situation, a candidate may need to move away from the center towards the preferred position of her base in order to motivate them to turn out so she can win. The base cases also gave support to a strategy of targeting voting groups that are very "swing" in that small changes in position can induce large shifts in their voting. Given group size, concentration of preferences within the group would be a key determinant of the success of such an electoral strategy.

If voting groups differed from one another only in a single dimension – average policy preferences, within group concentration of policy preferences, motivation to vote – then it makes sense that there is a single way to win elections depending on which dimension is most pronounced. For example, suppose voter preferences are similarly dispersed among those who favor right-wing versus left-wing policies and those groups are similar in size, but motivation to vote is low. The candidate who wins would be the one better able to mobilize her base, where differential motivation across core voters may be central.

However, suppose more realistically that groups differ in several dimensions, some of which might suggest targeting swing voters, others perhaps targeting one's core voters. Electoral strategies will thus depend on the *interaction* of differences in partisan preferences – both average intensity and concentration or dispersion – and positive voting costs. We now consider this in greater detail to show that the interaction of factors can lead to several phenomena which may seem counterintuitive *ex ante* but can be explained by a formal model that separates these factors.

5.1 "Dual" Electoral Strategies

A key result when we look at groups differing in multiple dimensions is that different electoral strategies may be consistent with winning elections. However, as we argue below, they cannot be simply associated with targeting swing voters or mobilizing one's base.

Suppose groups differ in both their average intensity of partisan preferences and in the dispersion of these preferences. Suppose that one group has stronger average preferences

towards its preferred candidate, but that these preferences are more dispersed within the group. For example, suppose that $\bar{\lambda}_A = -0.1$ and $\bar{\lambda}_B = 0.3$ (group B has stronger average partisan preferences), but that $\sigma_A = 0.05$ and $\sigma_B = 0.3$ (partisan preferences are very concentrated in group A while they are significantly dispersed in group B, so that all members vote almost identically at any value of ω, i.e. as a bloc, while it is more likely to find voters with high degrees of partisanship – both towards I and C – in group B.) Suppose the groups are equal in size – so there is no reason to target a group because of its size – and that C's possible policies are uniformly distributed over the whole range of ω, i.e., in $\mathbb{C}^M$. Let $\gamma = 0.4$ for both groups. Figure **5** shows the vote share of I (panel a) and the proportion of the electorate that votes for I , C, or abstain (panel b) as functions of ω. There are *two* winning regions for I, with neither of the winning regions containing the center.

The result that a very centrist policy leads to a low vote share for I is easy to explain. Group A, whose members vote fairly uniformly due to concentrated preferences, largely abstains when I is at the center due to positive voting costs. The pro-challenger group B also has a high abstention rate at the center due to positive voting costs, but since they have more dispersed preferences, the proportion of those who vote for C is higher than the proportion of group A that votes for I. Hence, I loses as a centrist due to differential abstention across groups reflecting the dispersion of partisanship within a group. Conceptually, with differential partisan dispersion across groups, if I adopts a position at or very close to $\omega = 0.5$ she does not differentiate herself sufficiently from the challenger, whose expected position is also centered at 0.5, to turn out voters to vote for her.

There are two winning strategies for I. She can favor group A (that is, adopt a platform with ω higher than 0.5) and get the concentrated group A to vote for her heavily while more dispersed group B does not fully vote for C in the same proportions. She can also somewhat favor group B with a position slightly to the left of center, thus getting some support by group B voters whereas voters in the concentrated group A heavily abstain. She needs to run either somewhat to the right or to the left of C.

Several things should be noted. First of all we can *no longer classify strategies as targeting swing versus core voters depending on underlying group characteristics.* Group A, I's base, has weaker average partisan preferences than group B ($\left|\bar{\lambda}_A\right| < \left|\bar{\lambda}_B\right|$) so that targeting them is consistent with a "mobilize your base" strategy when there are positive voting costs. However, it is also far more concentrated in it's preferences, that is, more "swing". As we

can see in panel b when comparing votes for I and C, the sharp increase in votes for I as she moves into the high ω winning region reflects the fact that group A voters swing more towards her (albeit from abstention) than group B voters move away as her ω increases.

In the left winning region we see the effect of group A concentration but now a key effect is the sharp shift of votes away from the challenger and towards abstention that allows I to get high vote totals by attracting group B voters. So in this region it is the swing of group A voters towards abstention for $\omega < 0.5$ combined with attracting some group B voters.

When C's ω is to the right of center (that is, $\omega \in \mathbb{C}^R$), the winning region to the right of center disappears, and the one to the left of center shifts right, as illustrated in the panel d of Figure **5**. This may be explained as follows. If C is right-wing, group A voters are more attracted to her and, for the parameter values given, I can't move far enough right to win them over. The region to the left of center shifts to the right. Some previously winning low ω positions no longer are winners because the group B voters who favor very low ω and were making up part of I's majority before are too dispersed in their partisan preferences to offset the loss of group A voters. On the other side, however, a policy of $\omega = 0.5$ is restored as a winner for I. When C's ω is to the left of center (that is, $\omega \in \mathbb{C}^L$), we see the same two phenomena, but in the opposite direction (panel d of Figure **5**), as group B voters who had voted for I now switch to C. Here too the policy of $\omega = 0.5$ is now a winning policy for I.

Consistent perhaps with conventional wisdom, once the challenger moves off-center, centrism for I gets her more votes since it allows her to be enough different from C to induce sufficient turnout to win. However, as we show in section 7 below, this apparently intuitive argument is not always correct. It is possible that when the challenger is on one side of the policy spectrum rather than more centrist, I may find it optimal to move in the *opposite* direction rather than the same direction as C. Furthermore, though it may seem clear that costly voting is necessary for centrism not to work for I, in section 6 we will show that when a challenger is popular, it is specifically the fact that voting is costly that may restore centrism as a winning strategy for the incumbent.

6 A Popular Challenger

We now consider the case where both groups of voters have a non-policy preference for candidate C. Conventional wisdom is that if a candidate is running against a popular challenger,

she is likely to lose the election no matter what electoral strategy she adopts. While this is certainly true if one candidate is popular enough, in this section, we argue that there are winning strategies against a somewhat popular challenger. These winning strategies for I are not necessarily what simple intuition might suggest, and they shed light on some general issues.

6.1 Running away from the center to win

We argued that the non-centrist results presented earlier stemmed from the effect of positive voting costs reversing the tendency to adopt centrist policies when voters have concave preferences. In this section we consider another reason why a candidate may choose non-centrism as a winning strategy even under zero voting costs and thus full turnout. To make clear that this is not because we "bias" preferences away from the center, we include a third group of voters with centrist preference, denoted group O. The utility function of the centrists over ω is given by $\frac{\ln\omega+\ln(1-\omega)}{2}$.

Suppose that C is popular, that is, on average he is preferred by voters in both groups A and B on non-policy attributes such as charisma etc. We represent this by $\bar{\lambda}_A = \bar{\lambda}_B = 0.3$. Suppose group A and B each make up 40% of the electorate ($\varphi_A = \varphi_B = .4$), with the remaining 20% being centrists as defined above. We assume that centrists have no average predisposition towards either candidate, that is, $\bar{\lambda}_O = 0$. Assume further that the distribution of candidate preferences in all three voting groups is quite concentrated and identical across the groups, say at $\sigma_A = \sigma_B = \sigma_O = 0.05$. Assume initially that there are no voting costs, i.e., $\gamma = 0$, so that there is full turnout.

Figure **6** plots I's vote share (panel a) and total votes (panel b) as functions of ω when C's policies are neither right- nor left-wing (that is the challenger's $\omega \in \mathbb{C}^M$). We see that even with no voting costs, centrism does not work because of C's popularity with both groups A and B (panel b around $\omega = 0.5$). I has to favor one group or the other to get their votes – and win with a coalition of that group and centrists – but not so much that she loses the support of the centrist voters.

6.2 Targeting a minority (voting costs restore "centrism")

When voting costs are positive, centrism may be restored as a vote-getting strategy for I. This is illustrated in Figure **7**, with identical parameters to the previous case but with

positive voting costs ($\gamma = 0.15$ instead of $\gamma = 0$). A very centrist policy ekes out a bare majority (absent weather shocks). This region is characterized by heavy abstention by group A and group B voters at the center due to sufficiently high voting costs, as can be seen in panel b of the figure, combined with a high turnout by centrists that vote for I. She gets more votes than her opponent at $\omega = 0.5$ with less than 20% of the electorate – almost all group O centrist voters – because almost 70% of the electorate that might vote abstain. So voting costs, rather than destroying the strategy of centrism against a centrist opponent, support it!.

This result is easy to explain conceptually. I can win because of two key factors. First, most voters abstain because of the similarity of I's policy to her opponent's expected policy. Second, I has the ability to "send a clear message" to those voters for whom $\omega = 0.5$ is the optimal policy inducing them to vote for her. That is, while her opponent also has a likely policy centered on $\omega = 0.5$, concavity of voter preferences means that making clear that policy will be that favored by a specific group beats a message that this is the expected policy. In short, the strategy to beat an ex-ante more popular candidate is to be similar in policy message but "more clear".

This is not a result about centrism per se, as it could hold at other values of ω when C is believed to have the same average ω and there is likely to be high abstention because voting is costly. A candidate who can send a clearer policy message can win against a popular opponent by targeting the same voting group in terms of promised policy but more "credibly" and count on high abstention from other voters who are not motivated to vote when the two candidates seem similar or the issue is not of sufficient importance to them.

7 Targeting Moderate Partisan Voters

7.1 Extreme versus moderate partisans

The previous section considered targeting minorities by catering exactly to their policy interests while other potential voters abstain. However, if some supporters of a candidate are passionate about her, they will turn out no matter what. Stokes (2005) argues they are so core that they can be taken for granted, as they will always vote for their favored candidate. To investigate the implications of "extreme partisans", we return to the case of two groups of voters, A and B, but suppose that within each group there are both *extremists* who tend to

always vote for one of the candidates independent of the candidate's ω policy and *moderates* who have less extreme partisan preferences on average and can be swayed by the candidate's policy position. If extremists do not dominate a group and voting costs are low, I will choose her electoral strategy to target a group's moderate partisans.

We now consider a further dimension of differences between groups, the proportion of extremists. Suppose the groups are of equal size but differ in the proportion of extremists. For both types, λ^i is normally distributed around a mean $\bar{\lambda}$, but the mean for extremists is much larger in absolute value than for moderates, so that all (but a tiny number) of them always turn out to vote for their preferred candidate independent of ω.[5]. How will differences in the proportion of these extremists with qualitatively different voting behavior affect the electoral strategies that I might adopt? In order to focus on how the existence of extremists might generate multiple vote-getting strategies, we "turn off" the other factors that led to this possibility in sections 5.1 and 6 by assuming that the groups are equally concentrated ($\sigma_A = \sigma_B$) and that there are not centrist voters.

To illustrate how the existence of extreme partisans affects electoral strategies when turnout is crucial, we consider group characteristics such that mobilizing one's base is central to electoral strategies. Remember that in section 4.3 (where there were only moderate partisans) the fact that group A was larger but was less likely to vote led I to mobilize group A voters by choice of high ω. This was the only strategy consistent with her winning the election. (Figure 3). To represent the problem of candidate I motivating a subset of her base with high voting costs, suppose that group A forms 60% of the electorate ($\varphi_A = .6$) and $\gamma_A = 1$ while $\gamma_B = 0.2$. Assume that extremists in the two groups have mean partisan preferences of $\bar{\lambda}_A = -10$ and $\bar{\lambda}_B = 10$, whereas moderates in the two groups have mean partisan preferences $\bar{\lambda}_A = -0.6$ and $\bar{\lambda}_B = 0.45$. Denote the fraction of extremists in group h by ϵ_h, where we assume that the fraction of extreme partisans is higher in group B, the challenger's base, for example $\epsilon_A = 0.2$ while $\epsilon_B = 0.375$.[6]

Figure **8** shows the vote share of I (panel a) and the vote totals for I and C and fraction who abstain (panel b) as a function of ω. As in the case with only moderate partisans, choosing high ω to mobilize (the moderate part of) her base is a strategy that gains the

[5]Since λ^i is normally distributed, a miniscule fraction of "extremists" will have λ^i so low that they will not vote when $\gamma > 0$.

[6]Formally, we simulate this by assuming that the probability that the mean $\bar{\lambda}_h$ of partisan preferences within group h is the extremist value with probability ϵ_h and the moderate value with probability $1 - \epsilon_h$.

majority of voters (absent the weather shock). There is however a second strategy consistent with her high vote totals, which is choosing a relatively low ω. Crucial to the existence of this strategy are the extreme partisans in group A who will heavily vote for I independent of her ω. She can combine these voters with group B moderates who have relatively low voting costs and "swing" to her (while group A voters with high voting costs abstain). Hence the existence of voters she can take for granted means that there exist both strategies of mobilizing voters in one's base who might not turn out and of building a "coalition" of extreme partisans and moderates from the other side.

7.2 Moving in the opposite direction from C

We found in our base cases in section 4 that as C's expected policy moves to the right or left, I's high-vote region moves in the same direction. That is, for example, if the challenger is left wing rather than centrist, i.e., C's ω is in $\mathbb{C}^L$ rather than in $\mathbb{C}^M$, I's high vote region will also shift to the left. This is intuitive – since her opponent has moved to the left I can as well without endangering her support for voters on the right, that is, group A voters who favor high ω.

We saw the same phenomenon when differences in average partisan preferences and the dispersion of these preferences lead to two winning regions for I when facing a centrist challenger. When C's policy is on one side of the policy spectrum I has only one winning region on the same side of the policy spectrum, and it "moves" in the direction that C has moved. (Compare panels c and d in Figure 5 to panel a as discussed in section 5.1.)

This result, as discussed above may seem intuitive – if one's opponent moves to one side of the policy spectrum, a candidate may find it optimal to move more to the center to gain votes. However, the *opposite may be true* – when C moves away from the center in one direction, I moves away in the opposite direction. To see this, consider the case in which C's ω is in $\mathbb{C}^L$ rather than in $\mathbb{C}^M$. Panel c of Figure **8** shows vote totals of I against a leftist challenger, which can be compared to vote totals against a centrist challenger in panel b of Figure **8**. One sees that the winning region of I to the left of center disappears, so that to attract votes I must move to the right. I's winning strategy is now to combine group A moderates with group A extremists. She can no longer win by combining group B moderates with group A extremists (as she could do at the left winning region when the challenger was centrist). That is, whereas she could win against a centrist challenger by swinging moderates

not in her base to vote for her she can no longer do so and must go back to relying on her base by moving in their direction.

Conversely, if the challenger is right-wing rather than centrist, the right-hand winning region for I disappears. (Compare panel d of Figure **8** where C's $\omega \in \mathbb{C}^M$ to panel b where C's $\omega \in \mathbb{C}^M$.) The strategy of relying on her base of group A voters (moderates and extremists) with a high ω is no longer viable and she must instead move left and combine group B moderates with group A extremists if she is to win. In both cases, the intuition is that if a shift in C's position "soaks up" voters in one of I's winning regions, I is then induced to move to the other region in order to win the election. Perhaps this is intuitive, but it does contrast with the intuitive result when there was only one winning region that I's strategy when the challenger moved to one side is to move towards the center, that is, in the same direction. Note further that latter case is often explained by the presence of extreme partisans supporting a candidate allowing her to move more to the center as she can take them for granted. What we see here is that it is their presence that induces the opposite result.

7.3 Which way does I move in response to changes in C's position?

As the previous subsection indicates, in theory an exogenous movement by an opponent C could induce I to move in either the same or in the opposite direction. We see cases of both. The rightward movement of the Republicans in 1964 allowed Johnson to position himself more to the center (he probably would have won no matter where he positioned himself) while the leftward movement of the Democrats in the late 1960s allowed Nixon to move more to the center. Conversely, in Britain from the mid 1970s to the late 1980's, as Labor went to the left, the conservatives went to the right.

The latter possibility is not simply a case of a party embracing its traditional base. In the 1950s and early 1960s it is not fully clear whether it was the Democrats or the Republicans who were the party of Civil Rights.[7] The 1964 Civil Rights Act was passed by a coalition of Republicans and Northern Democrats, with geography rather than party affiliation explaining voting behavior. (See Enten (2013) for a short summary.) The white South was solidly Democratic and solidly against the legislation, while the blacks had traditionally voted Re-

[7] I am indebted to Frances Lee fior suggesting this example.

publican. In theory, either party could have moved to the left or right on the issue. By moving right the Republicans took away the Southern base of the Democrats, who in turn gained the allegiance of black voters.

8 Multiple High Vote Regions For I

We now add differential concentration or groups or differential voting costs and find that there can be a greater multiplicity of high vote regions for I.

8.1 Differential concentration of preferences

Suppose we add differential group concentration to the above case. Consider the parameter configuration in section 7 above, but suppose in addition that the groups differ in the concentration of partisan preferences, where group A is far less concentrated in this respect than group B, with $\sigma_A = 0.6$ and $\sigma_B = 0.01$. Group B is extremely concentrated in partisan preferences (and hence votes as a bloc) while group A voters have candidate-specific preferences that are quite dispersed. Figure **9** plots the incumbent's vote share (panel a) and total votes (panel b) as well as the voting behavior of groups A (panel c) and B (panel d) as functions of her policy choice ω for the case where the incumbent faces a challenger whose possible position is uniformly distributed over the whole range $\mathbb{C}^M = [.05, .95.]$. There are now three regions in which I's vote total tops 50%.

The emergence of a third high vote region in the center, as well as the change in the shape of the two regions from above reflect the interaction of differential concentration and the other factors in the previous section. As in the case of equal concentration of the two groups in section 7, in the left-most region is a combination of group B moderates and group A extreme partisans who supply votes to I, with group A moderates largely abstaining. However, this region becomes a sharp peak (compare panel a in Figures 8 and 9) because of the bloc voting of group B, whose voters respond sharply to marginal changes in I's ω (panel d of figure 9).

The winning region of high ω found previously also still exists, but it shifts farther to the right and becomes less high. This is also due to the high concentration of partisan preferences in group B and their resultant bloc voting. Interestingly, there is now a third high-vote region in the center between the two regions we observed previously. All moderate B voters abstain and only extremists in that group vote for C while enough group A voters (both moderates

and extremists) vote for I so she outpolls her opponent. It is also characterized by sharp changes in vote shares reflecting the high concentration of group B voters.

When the challenger is leftist (Figure **10** panel a) or rightist (Figure **10** panel b) we see the same phenomenon we saw in the case of two winning regions in section 7.2 illustrated in Figure 8. Against a leftist challenger I's high vote regions on the left disappear, so she must move right to get above 50% of the vote (by mobilizing her base who prefer high ω). Against a rightist challenger, this "right-wing" strategy is no longer available, so she must adopt a more centrist position.

8.2 Heterogeneous voting costs

One can get multiple winning regions that look quite similar to those in section 8.1 as shown in Figure 9 when heterogeneity within a group comes from voting costs rather than candidate preferences. Suppose that we keep all the parameters the same as the above case with three winning regions, except that σ_A and σ_B are the dispersion of voting costs γ rather than of λ within a group. In other words, members within a group differ from each other not in terms of their partisan preferences λ, but instead in the level of their voting costs. Figure **11** plots I's vote share and vote totals for this heterogeneous voting cost case.

We see that these graphs are nearly the same as in the previous case with heterogeneous λ but for one difference: around the points of indifference, I's vote share exhibit jumps in the heterogeneous voting cost case (as observed at $\omega = 0.22$) whereas these indifference points result in 50-50 splits of votes between I and C in the heterogeneous λ model, with smooth vote shares for I around them. This arises due to the existence of voters with negative voting costs in the heterogeneous voting cost case. These voters always vote and minor policy changes around indifference points induces them to switch from voting for I to voting for C (thus skipping abstention), which creates jumps in I's vote share around those points. The magnitudes of these jumps are thus determined by the proportion of voters with negative costs.

8.3 Implications of multiple winning regions

The existence of multiple high vote regions are analogous to multiple equilibria for I – in theory she could pick one of several strategies to win an election. What are the implications in practice? Put another way, multiple equilibria imply that the same underlying parameters

could be consistent with very different equilibrium choices, but it's not clear that this is what we see in practice. We suggest some reasons for this.

8.3.1 Maximizing the probability of winning

If there were no exogenous shocks to turnout, so that I knew for sure that all voters who intended to vote actually did (that is the threshold S in (11) were known to be 50% with certainty) then she would be indifferent between any ω that gave her more than 50% of the vote. However, with turnout shocks as in (12) she would choose platform ω that maximized her probability of winning, which is simply the value of ω that yields the highest vote share.

8.3.2 Most preferred ideological position

Of course, if I preferred some ω over others because of her own ideology, she would choose the winning position most consistent with her ideology. We abstracted from candidate ideology in order to focus on other reasons why candidates take different positions. A ranking of different winning ω with no turnout shocks would yield a unique ω among the winning set analogous to the above argument on maximizing winning probability as the selection mechanism. Introducing both would imply I would choose a position, given the $\mathbb{C}$ of her opponent C that maximized her expected utility.

8.3.3 An incumbency disadvantage

A candidate who had to make choices about ω in the past may be tied down by past actions and promises, and hence able to credibly choose only in a limited part of the ω policy space. Hence, even if multiple winning regions for ω exist in theory, in practice I may be restricted to only one of them. Under this view, it makes sense to think of I as the incumbent, that is, the candidate who is constrained by the fact of previously holding office and having had to make tough choices. We think that in practice it is in fact past history that may select among winning regions.

We further note that the citizen candidate model could be represented as I being restricted to a single ω by voter beliefs. If this value of ω were not in a winning region given what the other candidate (or potential candidates) would do, then I would not run for office.

9 Summary and Conclusions

[incomplete] We see the paper as having two main contributions. The first is a model of candidate choice of positions given group characteristics that we think is more realistic than existing models in certain respects, but at the same time highly tractable (and therefore user friendly). The model considers how the ability of a candidate to more precisely indicate her policy positions than her opponent can be used to gain votes. The relative importance of "immutable" candidate characteristics versus "mutable" positions allows the representation of different models of candidate commitment. Unlike most existing models, it allows a central role for abstention in shaping what positions a candidate may adopt. It also presents a simple way to translate choice of positions into probabilities of winning.

We see the second contribution as the results on strategies a candidate will use to win elections given characteristics of voting groups. The possibility that a candidate can better indicate her position implies that she will often choose a position different than the expected position of her opponent even if the candidate is purely office-motivated and the characteristics of voting groups are known. When voting groups differ primarily in one dimension – for example, concentration of partisan preferences (i.e. "swingness"), intensity of average partisan preferences in the presence of voting costs (likelihood to turn out to vote), we find that standard results on targeting swing versus core groups hold. When they differ in multiple dimensions, the set of electoral strategies becomes richer, sometimes in surprising ways. There may be multiple strategies for attracting a large share of votes where in some cases they cannot be classified either as simply attracting core versus swing voters. When there is only a single strategy, a shift by the opponent to one side of the policy spectrum induces a candidate to become more centrist (to move in the same direction as the opponent has moved), while dual strategies may lead a candidate to adopt the opposite strategy than the opponent when the latter moves to one side of the spectrum (to move in the opposite direction). Though moving to the center is often associated with taking extreme partisans for granted, the presence of such voters – who are sure to vote for one candidate no matter what her position – may strengthen this latter effect. Finally, in the presence of multiple strategies, an increase in voting costs need not imply targeting one's base by adopting policies they find more favorable than those of the opponent, but adopting the same position as that the opponent is expected to take in order to induce large abstention.

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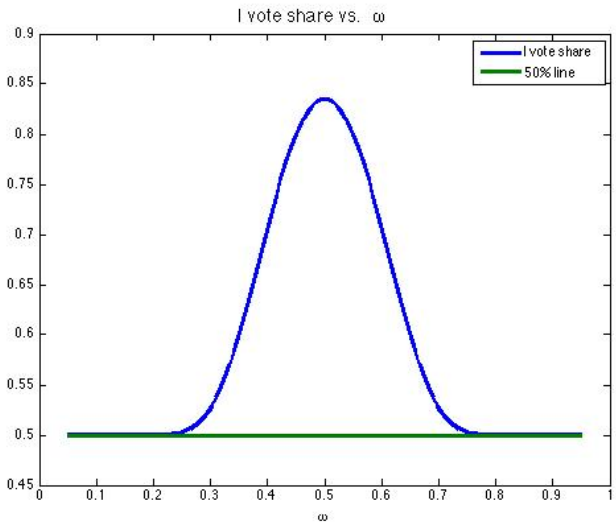
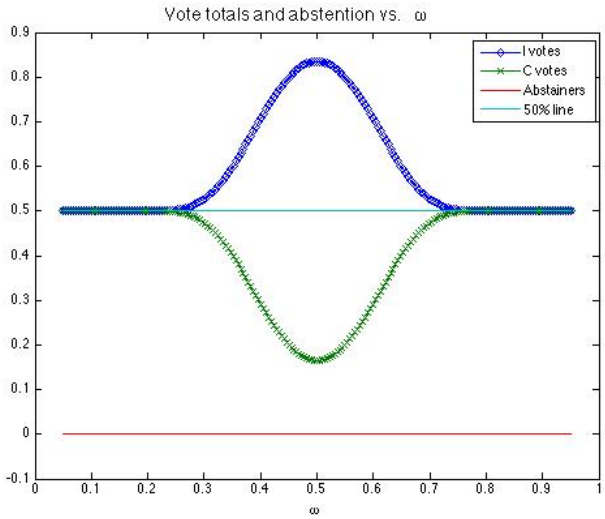
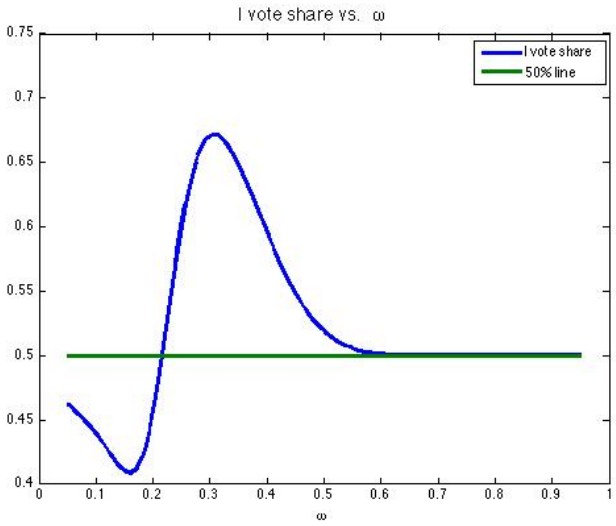


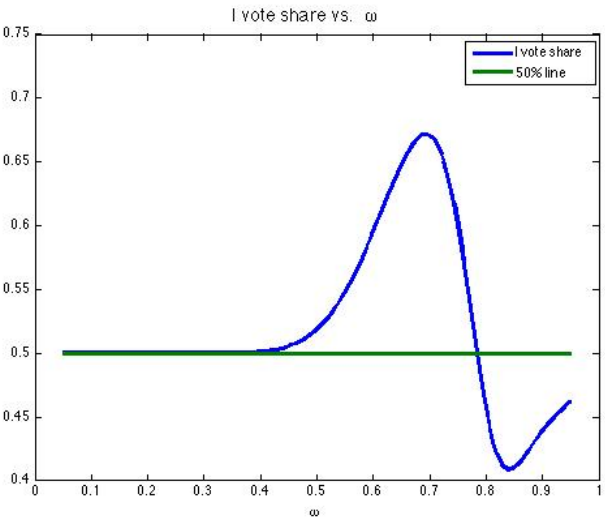
(a) Vote shares - centrist challenger



(b) Vote totals - centrist challenger

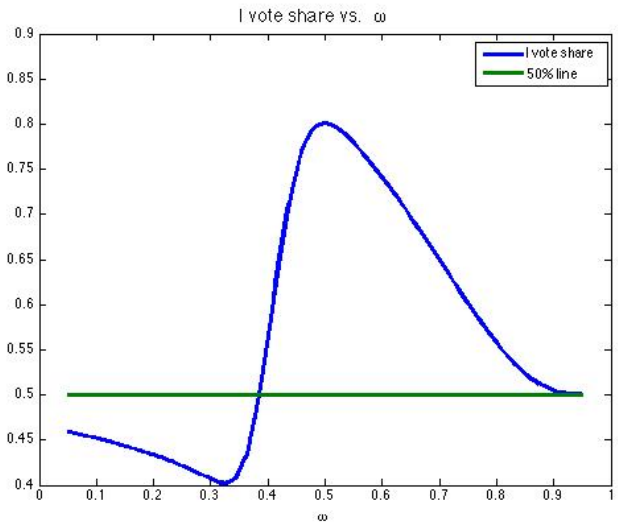


(c) Vote shares - leftist challenger

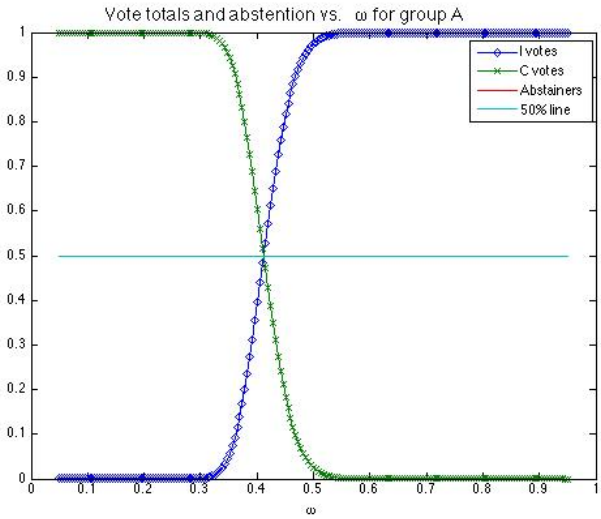


(d) Vote shares - rightist challenger

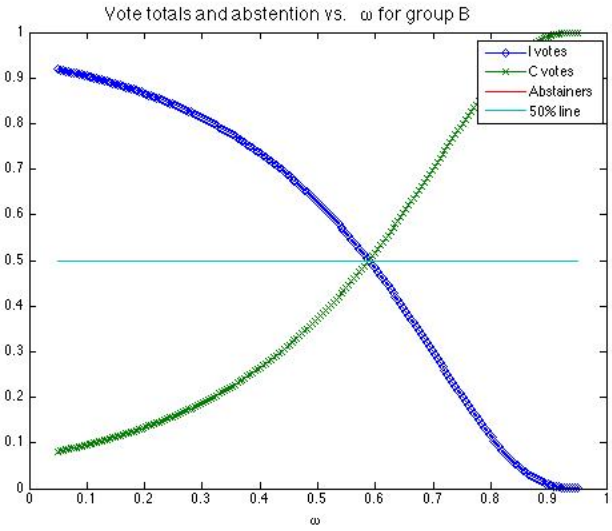
Figure 1: Centrism



(a) Vote shares - centrist challenger

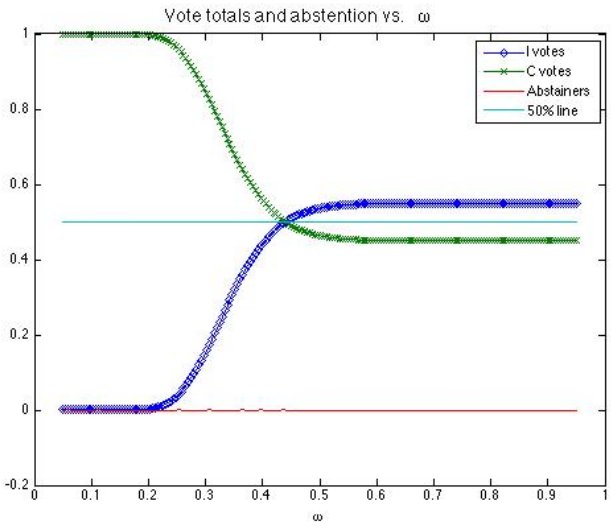


(b) Vote totals versus omega for group *A*

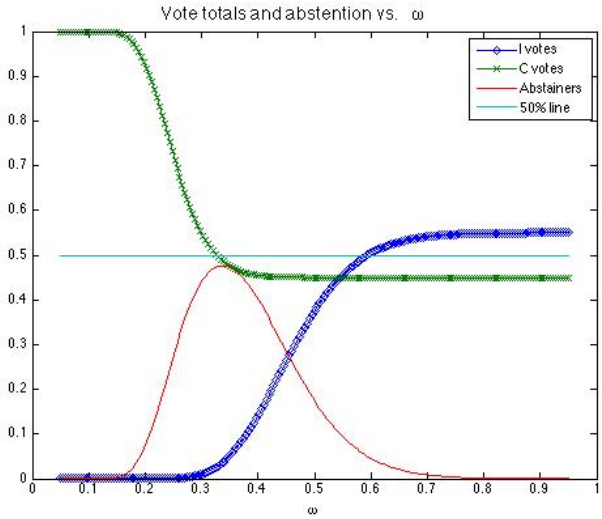


(c) Vote totals versus omega for group *B*

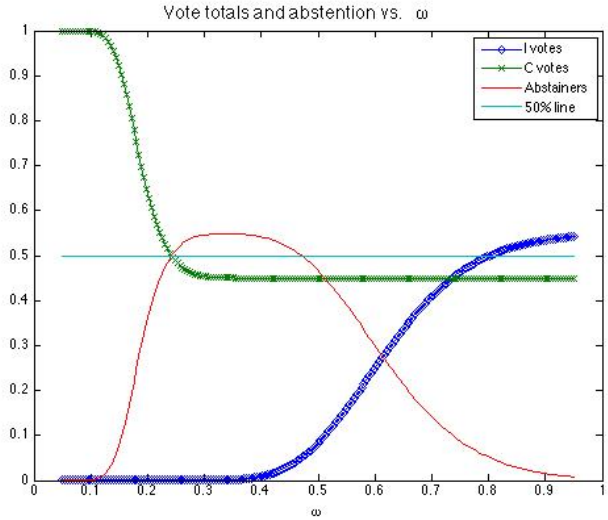
Figure 2: Targeting Swing Voters



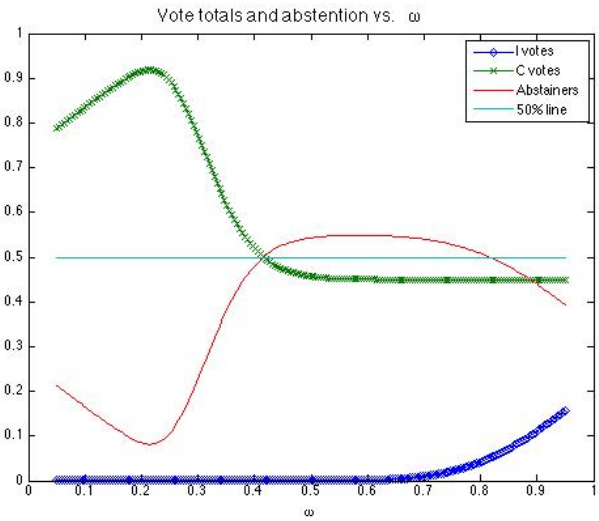
(a) Vote totals - centrist challenger, $\gamma = 0$



(b) Vote totals - centrist challenger, $\gamma = 0.3$

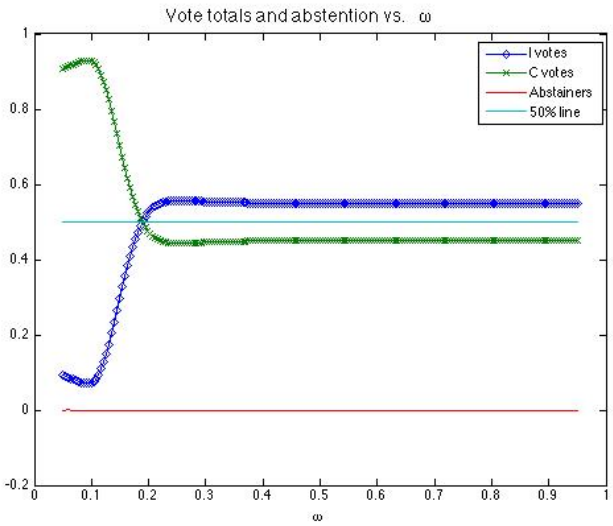


(c) Vote totals - centrist challenger, $\gamma = 0.6$

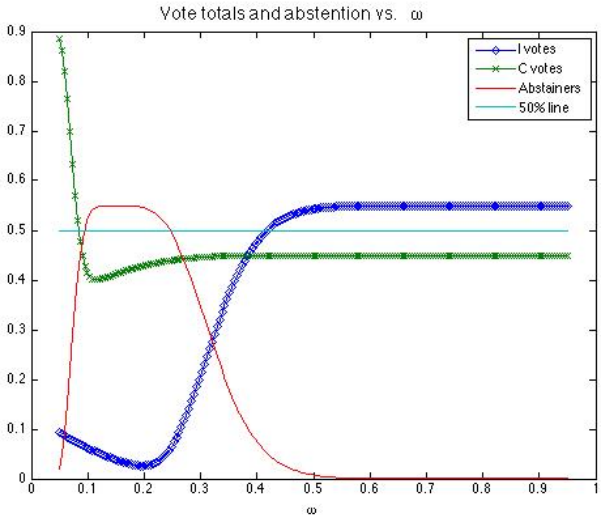


(d) Vote totals - rightist challenger, $\gamma = 0.6$

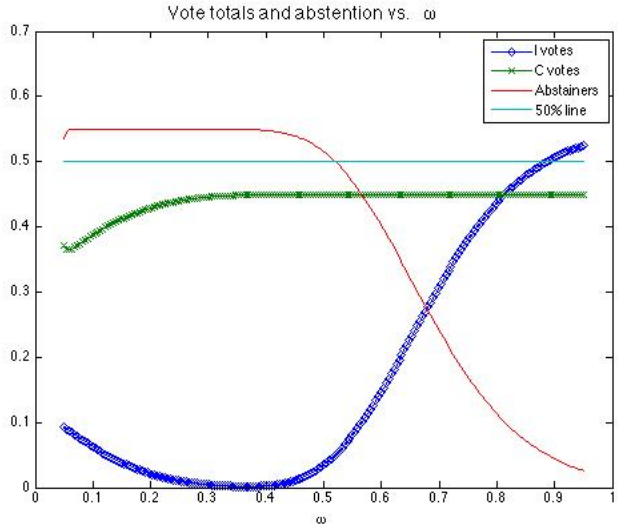
Figure 3: Mobilizing One's Base: Partisanship



(a) Vote totals - centrist challenger, $\gamma_A = 0$

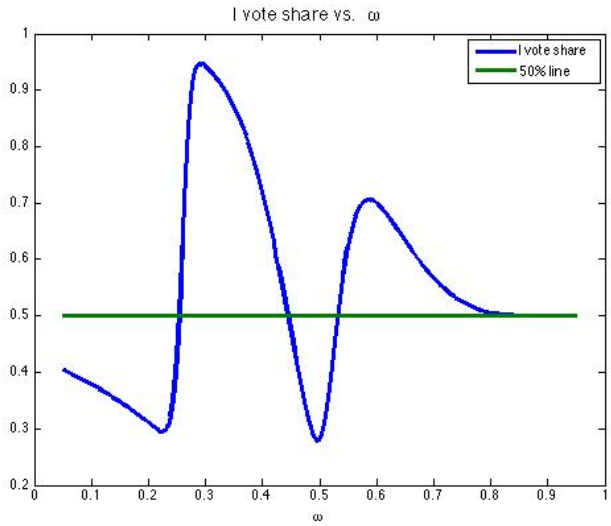


(b) Vote totals - centrist challenger, $\gamma_A = 0.75$

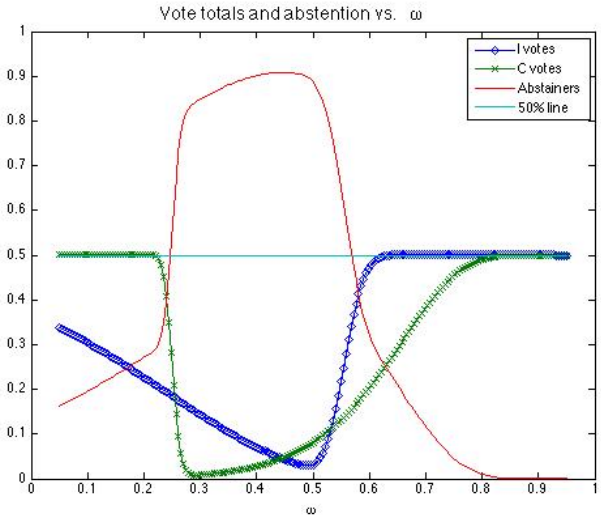


(c) Vote totals - centrist challenger, $\gamma_A = 1.5$

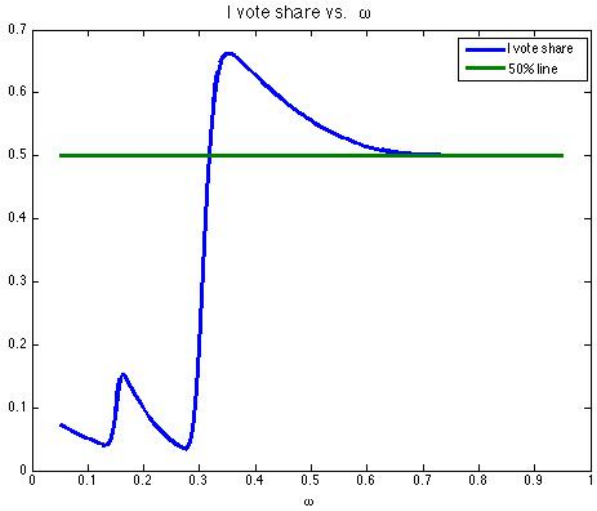
Figure 4: Mobilizing One's Base - Differential Voting Costs



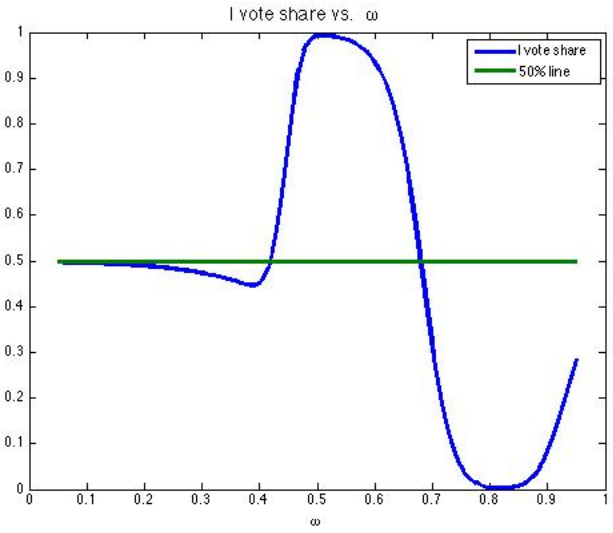
(a) Vote shares - centrist challenger



(b) Vote totals - centrist challenger

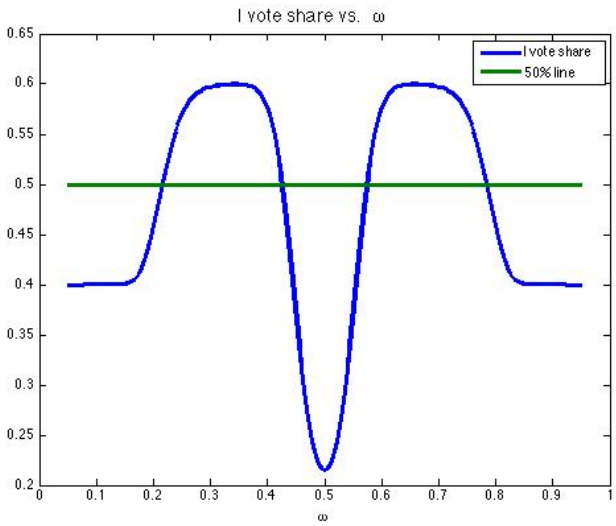


(c) Vote shares - leftist challenger

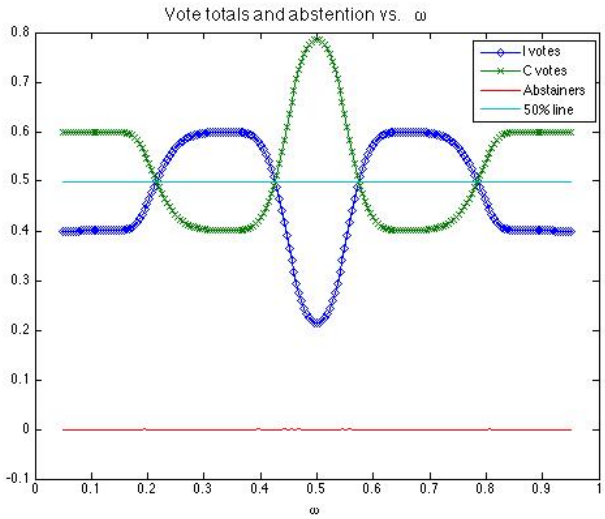


(d) Vote shares - rightist challenger

Figure 5: Dual Electoral Strategies

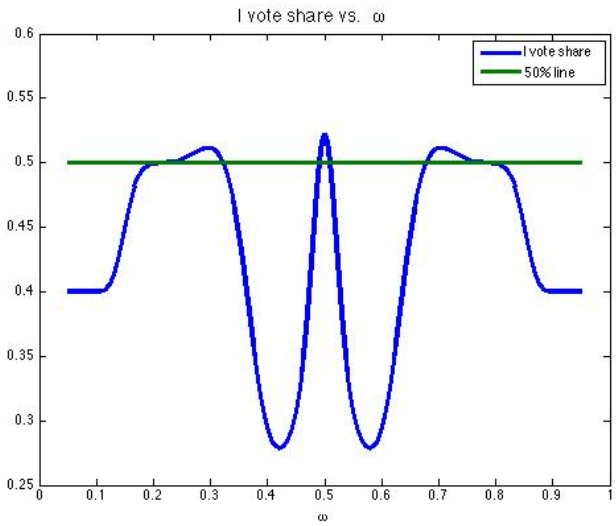


(a) Vote shares

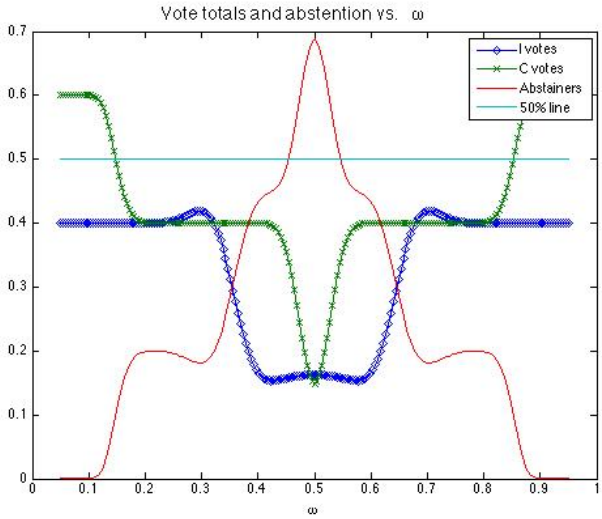


(b) Vote totals

Figure 6: Running Away from the Center

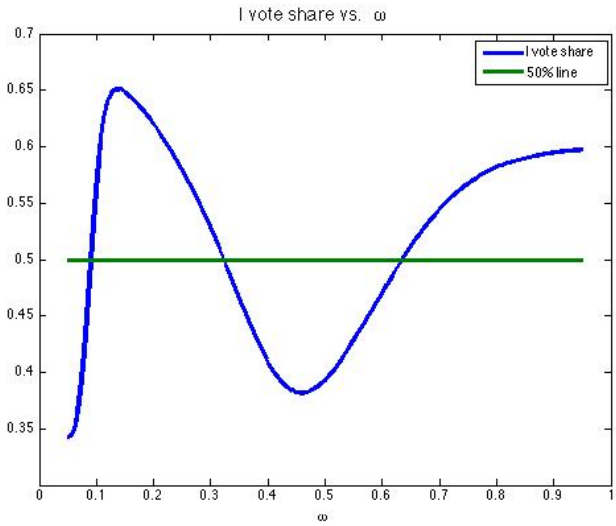


(a) Vote shares

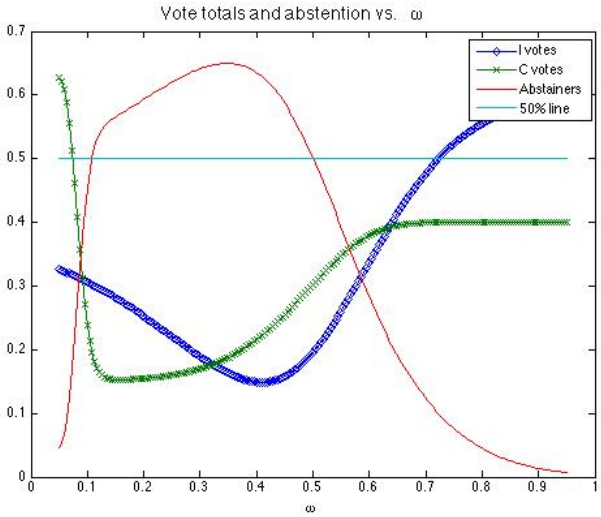


(b) Vote totals

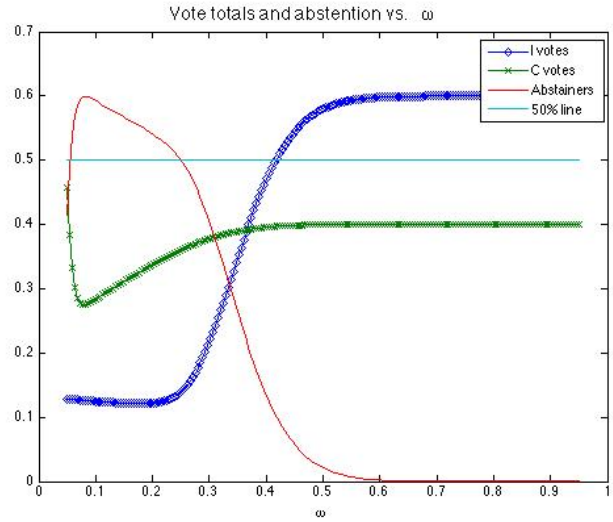
Figure 7: Targeting a Minority



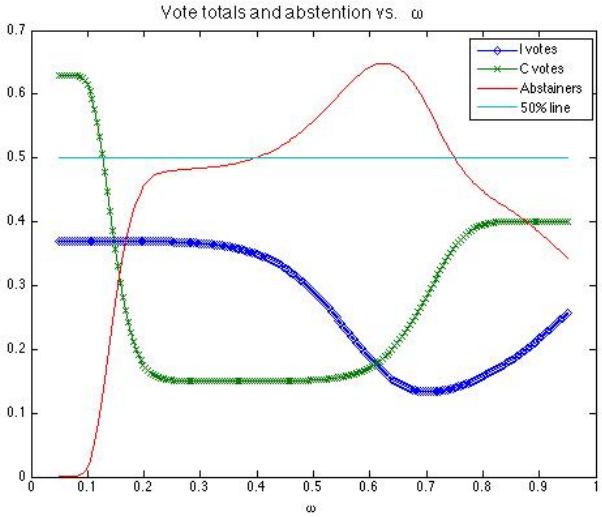
(a) Vote shares - centrist challenger



(b) Vote totals - centrist challenger

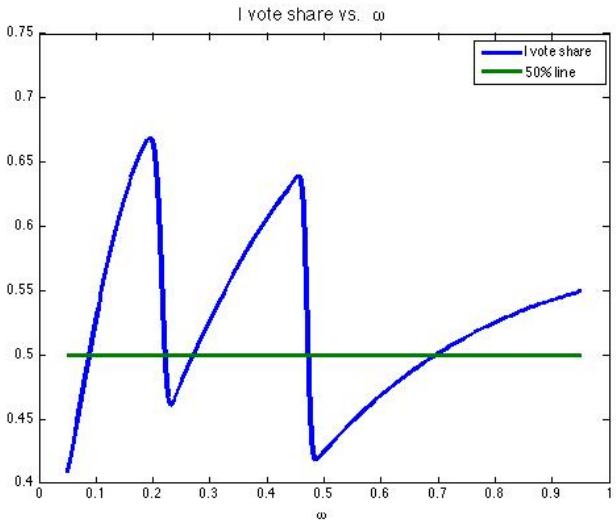


(c) Vote shares - leftist challenger

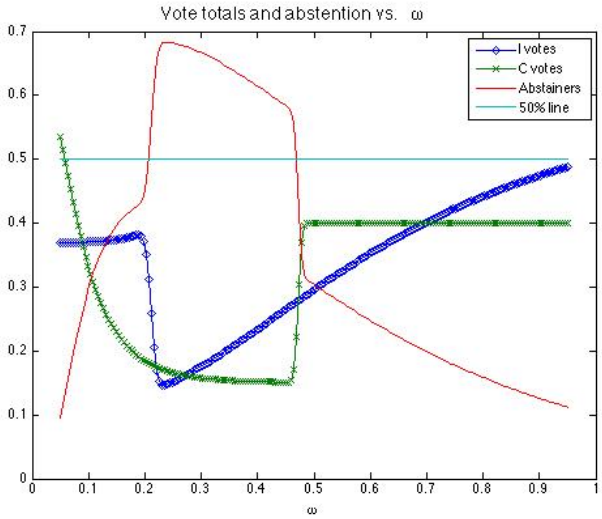


(d) Vote shares - rightist challenger

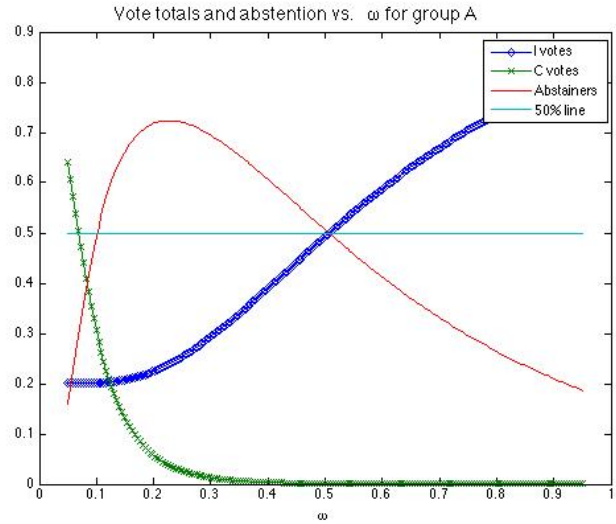
Figure 8: Mobilizing Moderates (Taking Extremists for Granted)



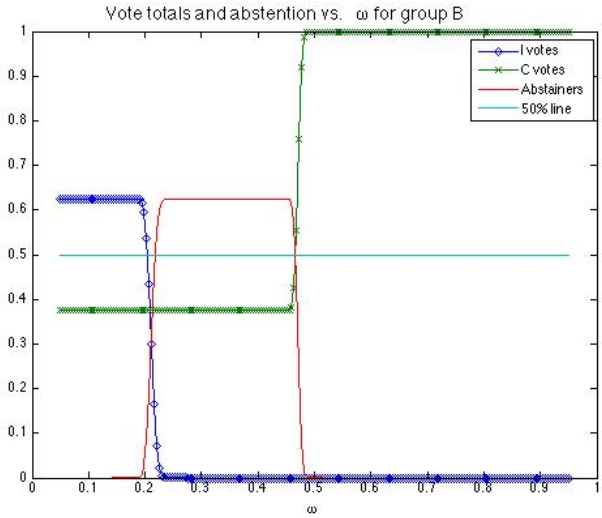
(a) Vote shares



(b) Vote totals

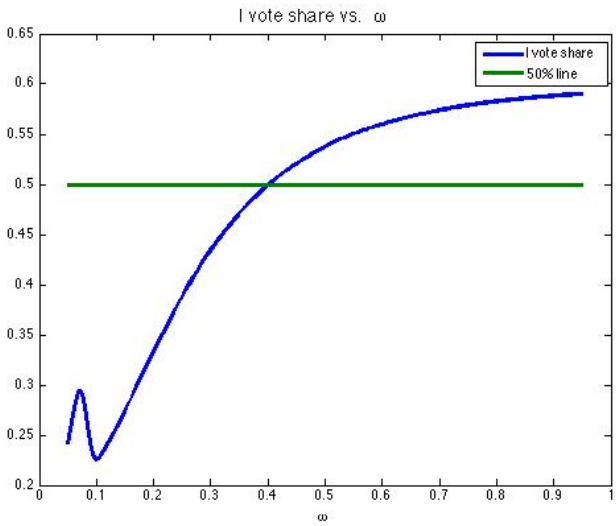


(c) Vote totals for group A

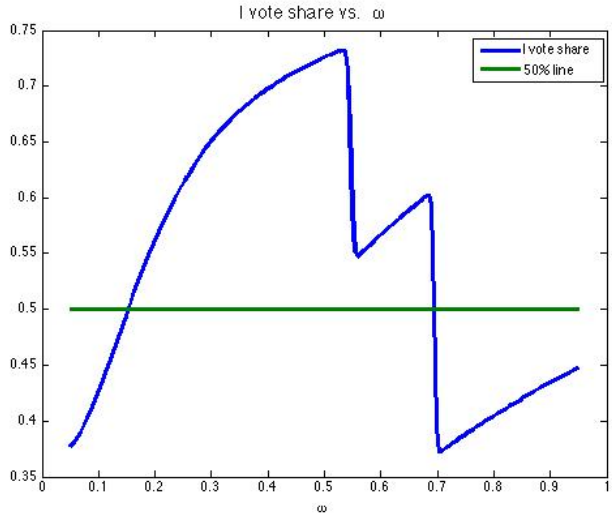


(d) Vote totals for group B

Figure 9: Differential Concentration - Centrist Challenger

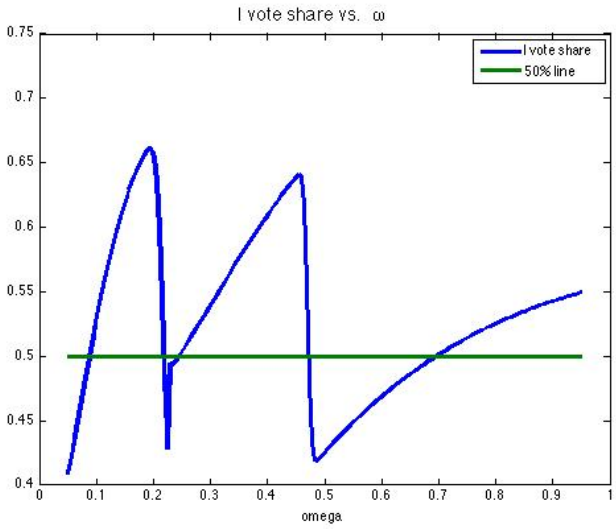


(a) Vote shares - leftist challenger

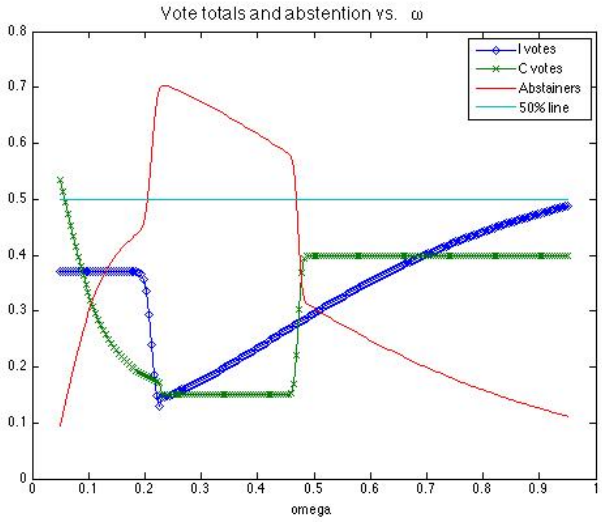


(b) Vote shares - rightist challenger

Figure 10: Differential Concentration - Non-Centrist Challenger



(a) Vote shares - centrist challenger



(b) Vote totals - centrist challenger

Figure 11: Heterogeneous Voting Costs