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Competitive Campaigns and the Responsiveness of Collective Choice

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Abstract

We analyze a model of direct legislation to identify conditions under which competition in the provision of campaign information can affect the responsiveness of electoral outcomes to the preferences that a voter (or set of voters) would express if she (they) knew everything there was to know about the consequences associated with her electoral alternatives. The basic intuition underlying the model is that a voter's ability use campaign information to form accurate inferences about the consequences of competing electoral alternatives can be affected by information provider attributes. We show that competition in the provision of campaign information increases the responsiveness of electoral outcomes only if competition produces these attributes.

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Introduction

Voters in modern democracies are called upon to make very difficult choices between often ambiguous alternatives. This difficulty is particularly apparent in the case of direct legislation (initiative and referendum) elections, where voters are asked to make a choice from a small set of specific electoral alternatives. The task that direct legislation voters face is complicated by the absence of party endorsements and the often technical nature of, and lack of previous experience with, the electoral alternatives. An important question in the substantive interpretation of electoral outcomes is whether or not a voter can be expected to cast an "informed vote" when the alternatives from which she chooses are complex? In this research, we define an "informed vote" as the vote that a voter would cast if she knew everything there was to know about the consequences associated with the electoral alternatives from which she could choose. Using this definition, we identify conditions under which a voter can cast an "informed vote" without making a large investment in the acquisition of relevant information.

The goal of our research is to determine whether or not certain general types of electoral competition can affect either a voter's knowledge of the content of electoral alternatives, the responsiveness of electoral outcomes, neither or both. In pursuit of this goal, we analyze a spatial model of direct legislation. We first use the model to identify the conditions under which *competition in the provision of campaign information* affects the likelihood that voters cast "informed votes." We then identify the conditions under which the same competition narrows the gap between aggregate direct legislation electoral outcomes and the preferences that a voter (or a set of voters) would express if she (they) knew everything there was to know about the relevant issues. We call this second relationship the *responsiveness* of direct legislation. If the spatial distance between a voter's (a set of voters) "informed" preference and the electoral outcome is large, we say that direct legislation is unresponsive to her (their) preferences. As the gap narrows, we say that the responsiveness of direct legislation to a voter's (the voters') preferences increases.

Our interest in the effect of competition arises from a seeming contradiction in the literature. On the one hand, basic microeconomic theory can be interpreted to imply that greater competition among political adversaries should generate electoral outcomes that are more responsive to the preferences of a relevant majority of voters. In an example of research that attempts to identify the effect of competition in the provision of information on the actions of incompletely informed decision makers, Milgrom and Roberts (1986) find that the existence of competing, adversarial information providers allows an uncertain decision maker to successfully replicate the decision he would have made if he were completely informed. On the other hand, however, empirical evidence suggests that an increase in the number of direct legislation campaigners (from one campaigner running a non-competitive campaign to two campaigners running a competitive campaign), leads to confusion among already uncertain voters.[1] Our research is designed to untangle this contradiction.

The model we examine features political elites, who are uncertain about what their electoral opponents or the electorate will do, and an electorate that is uncertain about the relationship between the two available electoral alternatives and their own well being. Two political elites, who disagree about which electoral outcome would be "best," decide whether or not to expend resources in an attempt to affect the electoral outcome (conduct a campaign). Voters observe any campaigning that takes place and then choose an electoral winner. The basic intuition that forms the foundation of the model is that a voter's ability to form accurate inferences about the consequences of competing electoral alternatives can be affected by information provider attributes. These attributes include the information provider's ability to take observable, costly effort and her credibility. When competition produces these attributes, we show that increasing the level of competition in the provision of information (from one active political elite/information provider to two adversarial political elites/information providers) increases the likelihood that voters cast "informed votes." It follows that when competition improves voter inferences, voters are more likely to cast "informed votes" and the actual aggregate electoral outcomes are more likely to be responsive. In contrast, if competition does not affect voters' ability to make informed decisions, then an increase in competition will not lead to an increase in direct legislation's responsiveness.

Our intent is to make the exposition of this paper accessible to a diverse audience while basing our findings on formal analysis. With this approach in mind, we proceed as follows. In section 2, we provide some necessary background on direct legislation. We describe the fundamental dynamics of the direct legislation process and motivate the development of our model. The model and the insight we glean from it are described in section 3. In section 4, we conclude. Appendix A contains the complete formal structure of the spatial model and necessary proofs. Specialists in spatial modeling are directed to the appendix for technical details.

[1]These accounts include Lowenstein 1982, Buck 1987, Price 1988 and Salzman 1988.

1 Defining Direct Legislation.

Direct legislation is widely used but not widely understood. Therefore, we begin with a brief definition. Direct legislation allows voters to make choices from a small set of specific resolutions to collective choice problems. The two most commonly used types of direct legislation are the direct initiative and the referendum. Where the direct initiative is allowed, citizens can propose a specific change to an existing law. These citizens are generally required to collect at least a constitutionally-mandated number of valid voter signatures in order to convert their proposed change into a ballot measure for an upcoming election. On the day of the election, voters are asked to vote "yes" or "no" on the ballot measure. If the proportion of "yes" votes is at or above a constitutionally-mandated level of support, the ballot measure becomes law, pending the approval of the courts. If the proportion of "yes" votes is below this level or an authorized court declares a winning ballot measure to be unconstitutional, the existing law (the status quo) prevails. The primary difference between the referendum and direct initiative is that the specific change to the law is proposed by a legislative body. Jurisdictions that use the referendum differ as to whether legislative approval, voter approval (in the form of signatures) or both is required to convert a legislative proposal into a ballot measure for an upcoming election.[2]

Direct legislation is widely used.[3] Wide usage provides the opportunity for many case studies as well as for experiments testing the effects of institutional design, culture, and in our case the effects of competition in the provision of information on the responsiveness of direct legislation. We examine one specific and frequently observed type of direct legislation election where voters are asked to choose between a single ballot measure and the status quo in order to resolve a collective disagreement.[4] Since it is often the case that one group takes the lead in running a campaign for a ballot measure, if there is a such a campaign, and another group takes the lead in running a campaign against the ballot measure, if there is one, we do not sacrifice much generality by treating direct legislation campaigns as though there are at most two campaigners, one on each side of the electoral debate, each a unitary actor. We refer to the group who qualifies a ballot measure and runs a campaign for it as the *proposer* and the group who runs a campaign against a ballot measure as the *opponent*.[5]

We believe that studies of direct legislation can provide us with useful insights for

[2]A more comprehensive description of direct legislation rules and procedures can be found in Magleby 1984.

[3]A review of the international use of direct legislation can be found in Butler and Ranney 1978.

[4]This assumption does not preclude our examination of ballot measures on ballots where there is more than one measure, however, it does preclude our examination of a ballot measure when there is at least one other ballot measure on the same ballot that deals with the same policy disagreement. While the strategic possibilities in multiple referendum cases are interesting, they are outside the scope of this paper. See Dubin, Kiewiet and Noussair 1992 for an empirical analysis of voting on competing ballot measures.

[5]Our treatment also precludes a discussion of the case where it is widely known that a certain policy disagreement will be settled by a series of ballot measures that will appear on a series of ballots over a certain period of time. Theoretical and empirical research on this topic is reviewed in Rosenthal 1990.

understanding a broader class of collective choice processes. One reason for this belief is that direct legislation voters reveal preferences over specific pairs of potential policies. This is unlike voters in candidate-centered elections who vote for candidates whose precise effects on the resolution of any particular issue are obscured by the complex structure of legislative decision making. This difference in the context of the voter's decision means that, all else constant (including information), there should be a relatively close correspondence between a voter's issue preferences and her voting behavior in direct legislation elections. A second reason for our belief about the utility of studying direct legislation is the relationship between direct legislation voting behavior and voting behavior in legislatures. While both legislators and direct legislation voters have opportunities to choose from among a set of specific policy alternatives, direct legislation voters can cast their vote in private. To be sure, the direct legislation voter's privacy makes measuring individual-level voting relatively difficult, however, when these votes can be measured they are free of many of the strategic qualities of legislative votes that often make it impossible to infer a legislator's issue preferences from her voting behavior. Finally, unlike candidate-centered elections or legislative votes, political parties are often not a primary source of campaign information in direct legislation elections. The absence of parties, and the variance in the characteristics of the groups that provide information in direct legislation campaigns (many form only to support or oppose a single ballot measure), provides us with a greater opportunity to identify the general characteristics of political campaigns that affect voter beliefs and electoral outcomes.

2 A Spatial Model of Direct Legislation.

Direct legislation is modeled as a one-shot game between a *proposer*, an *opponent* and n *voters*. The object of the game is to select one of two policies, called the *status quo* and the *ballot measure*, that determines a payoff for all players. Each policy is represented as a point on the interval $[0, 1]$. Without a loss of generality, we describe the case where players choose pure strategies.

2.1 The players.

Players have three relevant characteristics: their preferences, their information and the amount it costs them to take certain actions. Each player's preferences over outcomes can be described by an ideal point and a utility function. A player's ideal point is the point in $[0, 1]$ that, if chosen, provides her with a higher payoff than any other point. We describe the case where each player has a linear, single-peaked utility function, which means that no player strictly prefers an outcome that is relatively far from her own ideal point to an outcome that is relatively close. It follows that every player prefers the electoral outcome, either the status quo or the ballot measure, that is the minimum distance from her ideal point.

We describe player information by simply saying that unless stated otherwise, all aspects of the game are common knowledge. We now state otherwise. Every player is uncertain about an important aspect of the game. The primary source of each player's uncertainty is a lack of information about other players' preferences.[6] In general, we assume that each player knows the spatial location of her own ideal point, but is uncertain about the spatial location of any other player's ideal point. To represent this uncertainty, we assume that the proposer's and all voters' ideal points are drawn from distinct, common knowledge probability distributions over points in $[0, 1]$. So, for example, the proposer is the only player who knows the actual location of her ideal point. The opponent and the voters do not know the location of the proposer's ideal point, but they do have beliefs about its location. These beliefs are represented as the distribution from which the proponent's ideal point was drawn. The one exception to this assumption is that it is common knowledge that the opponent's ideal point is the status quo. Since a campaign against the ballot measure is equivalent, in this model, to a campaign for the status quo, this exception allows us to simplify the mathematical statement of the model and does not result in a significant loss of substantive generality.

The third important player attribute is the cost associated with taking certain actions. We examine the case where proposing a ballot measure and/or waging a campaign are costly activities, while voting is not.[7] The substantive motivation for introducing costs on campaigners is our observation of the money and effort that proposers and opponents expend when they attempt to affect the outcome of direct legislation elections. These include costs associated with collecting the required signatures (for initiatives) or forming a legislative coalition (for referendums) and waging a campaign. Our simplifying interpretation of player costs is that a cost is the amount that the proponent or opponent expects they must spend to qualify a ballot measure and/or run a "winning" campaign. Therefore, we assume that players do not choose the magnitude of their costs – a player's only decision is whether or not to pay the costs she faces. Unless stated otherwise, we assume that the magnitudes of player costs are common knowledge.

We now state otherwise. To introduce proposer uncertainty about the opponent in a substantively justifiable way, we assume that at the time she chooses her strategy the proposer is uncertain about the magnitude of the opponent's costs. To represent this uncertainty, we assume that the magnitude of the opponent's costs are drawn from a common knowledge probability distribution over points in $[0, 1]$. Since, in reality, a ballot measure proposer must initiate a direct legislation campaign (i.e. she must move before she can observe the magnitude of the opponent's costs), this assumption is substantively

[6]Our model can be placed into the class of "setter models," of which Romer and Rosenthal 1978 is the best-known. Other spatial models of political decision making under conditions of uncertainty that provide insight into how incompletely informed decision voters make decisions include Austen-Smith 1990, Banks 1990, Calvert 1985, Cameron and Jung 1992, Gilligan and Krehbiel 1987, Grofman and Norrander 1990, McCubbins and Schwartz 1984 and McKelvey and Ordeshook 1985. Ferejohn and Kuklinski 1990 provide a review of both spatial and psychological perspectives on the relationship between information and electoral behavior.

[7]While adding a cost for voting might affect turnout, a discussion of voter turnout is outside the scope of this paper.

justifiable.

2.2 The sequence of events.

The sequence of events is depicted as an extensive form game in Figure 1. Table 1 provides a summary of what each player knows at the time she chooses her strategy. Its relevance should become clearer as we describe the extensive form.

[Figure 1 and Table 1 here.]

The proposer moves first by choosing a strategy that has up to three components. The proposer's first strategic decision is whether or not to propose a ballot measure. To take this action, the proposer must first must commit to pay a "cost of challenging the status quo." If the proposer chooses not to pay this cost, the game ends and each player's payoff is based on the distance between the status quo and her own ideal point (the larger the distance, the lower the payoff). If the proposer chooses to pay this cost, the game continues.

The magnitude of the "cost of challenging the status quo" depends on the opponent's future actions. We model the commitment to challenge the status quo as a contingent contract where the proposer agrees to pay one price if the opponent does not wage a campaign and another price if the opponent does decide to wage a campaign. Since the proposer is uncertain about the costs the opponent faces, she is uncertain about what actions the opponent will take and, hence, is uncertain about whether she will have to pay to wage a competitive or non-competitive campaign. Therefore, the amount she expects to pay is based on her beliefs about the opponent's costs.

The second component of the proposer's strategy is to determine the content of the ballot measure. We model her choice of the ballot measure's content as the choice of a single point on $[0, 1]$. We assume that the opponent knows the content of the ballot measure, while voters do not. Our motivation for allowing the opponent to have this type of information is that direct legislation campaigns are typically run by groups who understand a ballot measure well enough to organize an effort against it. Our motivation for assuming that voters do not know the content of the ballot measure is that ballot measures offered to voters in direct legislation are often complex. Therefore, we construct a simple representation of voter uncertainty by assuming that voters know the content of the status quo, but are uncertain about the content of the ballot measure (and, hence, about how the electoral outcome will affect their own payoff). The case where voters do understand the content of the ballot measure is a special case of our model.[8]

[8]This aspect of voter uncertainty is a direct result of voter uncertainty about the proposer's ideal point. Since the voters have consistent beliefs about the location of the proposer's ideal point, and since the proposer has no other private information at the time she chooses the ballot measure, voters can form consistent beliefs about the location of the ballot measure. The formation of these beliefs is described in Appendix A.

The third component of the proposer's strategy is to send a campaign message to voters about the content of the ballot measure. The proposer's campaign message is modeled as a simple left/right signal. The signal "left" is understood to mean that the proposer claims that the ballot measure is to the left of the status quo. The signal "right" is defined accordingly. We do not restrict the proposer to the transmission of a truthful campaign message.

Though the proposer is restricted to signaling either "left" or "right," the intuition provided by examining this type of communication is quite general. Since each player knows the location of her ideal point, and, thus, knows whether he or she prefers points to the left or right of the status quo, the messages "left" and "right" are equivalent to more general signals like "the ballot measure is better for you than the status quo" and "the ballot measure is worse for you than the status quo." We observe that many direct legislation campaign advertisements contain simple messages that have these types of implications.

When a ballot measure is proposed, the opponent then has to decide whether or not to wage a campaign against it. We assume that the opponent knows the content of the ballot measure, the proponent's costs (and how they are related to her own choice of strategy) and the content of the proposer's campaign message. The opponent's sole source of uncertainty is the location of voter ideal points (and, hence, how voter behavior will be affected by her campaign message). If the opponent wants to campaign against the ballot measure she must pay the exogenously determined cost of taking such an action. Paying this cost allows the opponent to send the electorate a left/right signal, which is defined in the same way as the proposer's campaign message. As was the case with the proposer, we do not restrict the opponent to the transmission of a truthful campaign message.

The voters have the last move in this game. All voters know how much the proponent and the opponent paid to wage their campaigns for and against the ballot measure and observe all campaign messages. Voters are uncertain about the spatial location of the ballot measure and other voters' ideal points.[9] Voters end the game by casting a vote for either the ballot measure or the status quo. Majority (or supermajority) rule determines whether the ballot measure or the status quo will be the outcome.

2.3 Description of theoretical findings.

We use the model to show that the effect of competition in the provision of information on the responsiveness of direct legislation depends on how campaign activity affects voter

[9]The assumption that voters can observe campaign effort and messages is without loss of generality to a class of assumptions where voter perceptiveness on these matters is impaired. We also make the simplifying and substantively justifiable assumption that voters are not sophisticated enough to draw an inference about the content of the ballot measure when the opponent does not wage a campaign against the ballot measure.

beliefs about the content of the ballot measure. We begin by detailing the characteristics of campaign activity that affect voter beliefs. We then discuss how competition affects the responsiveness of direct legislation as a function of these characteristics.

2.3.1 Costly effort and voter inferences.

Let c^* be the cost actually paid by a campaigner (this discussion applies to either the proposer or the opponent). Because the campaigner need not pay c^* to attempt to affect the electoral outcome, the fact that she does so conveys information to voters. The information provided by this action is that the campaigner believes that she can recover (at least) her costs. That is, from the observation that the campaigner has waged a costly campaign, voters can infer that the ballot measure and the status quo must be far enough apart to justify her expenditure. Figures 2(a) and 2(b) depict the relationship between a voter's beliefs about the location of the ballot measure before and after she learns that a campaigner paid c^* to wage a campaign.

[Figure 2 about here.]

In Figure 2(a), we present an example in which voters know that the status quo is located at .7, but are initially uncertain about the content of the ballot measure, which is actually located at .2. (Other examples can be constructed using the model as it is presented in Appendix A.) Figure 2(b) depicts how voters' beliefs about the content of the ballot measure change as a result of observing campaign expenditure c^* and knowing that the shape of the campaigner's utility function makes an expenditure of c^* worthwhile only if it can produce a policy change of a distance greater than, say .15. It follows that after observing campaign expenditure c^*, voters can correctly infer that the spatial location of the ballot measure is not between .55 and .85 (otherwise the campaigner would keep c^* and accept her least preferred electoral outcome).

We argue that a voter's ability to observe costly campaign effort makes her better able to form an accurate inference about the content of the ballot measure. In our example, when voters observe costly effort, updated voter beliefs must assign a higher probability to all possible locations of the ballot measure that are not within the interval $[.55, .85]$. Since the true location of the ballot measure cannot be located in this interval, voters who observe costly campaign effort must assign a higher probability to the true location of the ballot measure than they did before they observed the expenditure. Therefore, we can say that the observation of costly effort allows voters to form more accurate inferences about the content of the ballot measure because a voter who is given a single opportunity to guess the exact location of the ballot measure (or which of a finite number of non-overlapping intervals the ballot measure lies within) before and after observing costly effort, is more likely to guess correctly after the observation. It follows that the larger the observable level of campaigner effort, the wider is the interval in which the voters know the ballot measure cannot lie and the more accurate are voter inferences, all else constant. In general, more accurate inferences make a voter more likely to cast an "informed vote."

The improvement in voter inferences due to the observation of costly campaign effort is independent of the content of campaign messages. Whether or not a voter can also use the content of a campaign message to learn about the content of the ballot measure depends on her beliefs about the campaigner's credibility. With respect to the issue of credibility, we recognize that in many collective choice situations, those who have the resources to provide information sometimes have an incentive to mislead those who receive it. To identify the effect of an information provider's credibility on voter inferences, we examine two extreme cases. In the first case, no voter is able to verify whether or not the content of a message is truthful (*a minimally credible campaign message*). In the second case, the content of a message is known to be truthful (*a perfectly credible campaign message*). We assume that all players know which circumstance prevails for each campaigner. Comparing voter inferences in each case provides insight about the general effects of an information provider's credibility on voter inferences (a comprehensive study of the effects of credibility on the behavior of a direct legislation proposer and incompletely informed voters is the subject of Lupia 1993).

In the minimal credibility case, there exists no sanction for campaigners who send untruthful messages. This implies that the content of a minimally credible campaign message does not necessarily depend on the true directional relationship between the ballot measure and the status quo and that voters cannot use the message's content to form a more accurate inference about the content of the ballot measure.[10] Figure 2(c) shows an example of voter beliefs about the location of the ballot measure before and after she receives a minimally credible campaign message. That figure shows that a voter's prior and updated beliefs about the location of the ballot measure are identical -- implying that voters learn nothing from the content of a minimally credible campaign message. Figure 2(d) shows an example of the total effect of a "minimally credible campaign" on voter inferences. Since the voters learn nothing from the content of a minimally credible message, the change in voter beliefs is due solely to voter's observation of the associated costly campaign effort.

We now consider the case where the campaign message is perfectly credible. Voters can infer that the ballot measure is not to the right of the status quo when they receive the perfectly credible message "the ballot measure is to the left of the status quo." While this type of message is not sufficient for voters to infer the exact location of the ballot measure, it does allow them to eliminate ranges in which the ballot measure cannot lie. Figures 3(a) and 3(b) shows an example of the relationship between a voter's beliefs about the location of the ballot measure before and after she receives the perfectly credible message "left." A comparison of Figure 3(b) with Figure 2(c) shows the effect of campaigner credibility on

[10]Both Cameron and Jung 1992 and Lupia 1993 show conditions under which voters in direct legislation-type models can learn from "cheap talk" (a term due to Crawford and Sobel 1982). Cameron and Jung show that a voter can learn from cheap talk when they know that the campaigner shares their preferences over outcomes. Lupia shows that a voter can increase her expected utility from the act of voting when her prior beliefs about a campaigner's preferences suggest a relatively high probability that the campaigner shares her interests over outcomes. The minimally credible campaign message, from which such inferences are not possible by definition, is an extreme case of the interaction studied in both of these models.

voter inferences. When an campaign message is perfectly credible, voters can form more accurate inferences about the location of the ballot measure than when the campaign message is minimally credible.

[Figure 3 about here.]

Figure 3(c) shows the total effect of a perfectly credible campaign message on voter inferences. From the observation of costly effort, voters can conclude that the ballot measure is not very close to the status quo (as in Figure 2(b)). From the content of the perfectly credible message "left," voters can infer that the ballot measure is not to the right of the status quo (as in Figure 3(b)). In this case, voters who observe a perfectly credible campaign message are more likely than voters who observe either a minimally credible campaign message or no campaign message to be able to correctly guess the true content of the ballot measure.

2.3.2 The effect of competition on responsiveness.

Since a voter who can form an accurate inference about the content of the ballot measure is generally better able to discriminate between the electoral alternatives that make her better off and the alternatives that make her worse off, we argue that competition increases responsiveness only if competition allows voters to form more accurate inferences about the ballot measure. This effect of competition on responsiveness manifests itself in four ways:

1. the proposer's beliefs about the opponent's willingness and ability to wage an effective campaign against the ballot measure can affect her decision about whether or not to propose a ballot measure;
2. these same beliefs can also affect the proposer's choice of ballot measure content;
3. when competition increases the observable effort of at least one of the campaigners, a voter's ability to observe campaigner effort allows her to form a more accurate inference about the content of the ballot measure;
4. when competition increases the credibility of at least one of the campaigners, a voter can use the content of campaign message to form a more accurate inference about the content of the ballot measure.

In the remainder of this section, we use the findings of our model to explain why competition has these effects and how these effects are related to the responsiveness of direct legislation.

The first effect of competition is on the proposer's decision about whether or not to propose a ballot measure. The intuition here is straightforward: if the proposer either expects to, or knows that she will, face an opponent who is able to wage a campaign that

will lead a majority of voters to reject the ballot measure, then she may be better off not expending the effort necessary to qualify and support a ballot measure. This scenario is relatively likely when the proposer and a majority of voters prefer very different types of outcomes and the opponent is able, by means of her observable effort or the credibility of her campaign message, to convince voters of this difference. In contrast, if the proposer expects that her opposition will be ineffective, or that the opponent's costs are sufficiently high that she would not find it worthwhile to campaign against the ballot measure, then the proposer's decision to participate is not affected by competition. This scenario is relatively likely when either the opponent does not see enough difference between the ballot measure and the status quo to wage a campaign or the opponent is neither credible enough nor can exert the necessary amount of costly effort to affect voter behavior.

It follows that when a proposer is dissuaded from proposing a ballot measure because of her expectations about the electoral effects of competition, then competition makes direct legislation more responsive to voters whose ideal points are relatively close to the status quo and is less responsive to voters whose preferences are like those of the proposer. In contrast, when the opponent is impotent, an increase in competition does not affect responsiveness.[11]

The second effect of competition is on the content of the ballot measure. In the absence of competition in the provision of information, Lupia 1992 used a spatial election model with incompletely informed voters to show that when the proposer expects voters to have incomplete information about the ballot measure on election day, she considers only her own preferences when choosing the content of the ballot measure. (In fact, she always chooses the content of the ballot measure to correspond exactly to her ideal point.) In contrast to the case where the proposer knows that there will be no competition in the provision of information, we show that the specter of competition induces the proposer to consider the preferences of other players when choosing the content of the ballot measure. If the amount it costs the proposer to wage a competitive campaign is greater than the amount it costs her to wage a non-competitive campaign, or if the proposer believes that the opponent is able to wage a campaign that will lead to the electoral defeat of the ballot measure, then the proposer may have an incentive to choose the ballot measure's content so that it dissuades the opponent from waging a campaign. To support this insight, consider the following example:

> Suppose the proposer expects that if the opponent wages a campaign, her ballot measure will lose the election and if the opponent does not wage a campaign, her ballot measure will win the election. Suppose further that the proponent expects that the amount it will cost the opponent to wage a

[11]It also follows that as the cost of challenging the status quo increases, then the status quo is less likely to be challenged. If an increase in competition increases the cost of challenging the status quo, then when voters would be better off with the status quo as the outcome, as opposed to the ballot measure, an increase in competition increases the responsiveness of direct legislation to the preferences of voter who prefer the status quo. This finding is documented in experimental work by Herzberg and Wilson 1990.

campaign is one million dollars. The proposer may then have an incentive to choose the content of the ballot measure so that it is more like the status quo (the opponent's ideal point). The proposer has this incentive if: the opponent can affect the electoral outcome; moving the ballot measure closer to the status quo reduces the opponent's expected benefit of waging the campaign so much that it is no longer greater than her costs; and moving the ballot measure still leaves the proposer better off than if she had not contested the election.

While the presence of an opponent who can affect the electoral outcome forces the proposer to be more responsive to the preferences of the opponent, this does not necessarily imply that direct legislation outcomes will be more responsive to any voter's preferences. The presence of an opponent can only influence the proposer to choose a ballot measure that is closer to the status quo than her own ideal point would have been, it does not necessarily influence the proposer to consider the preferences of any subset of the electorate when drafting her proposal. All else held constant, the responsiveness of direct legislation improves as a result of increased competition only if the a voter's preferences are closer to the preferences of an opponent who can affect the electoral outcome than they are to the preferences of the proposer.

The third and fourth effects of competition follow straightforwardly from our discussion of the relationship between campaign activity and voter inferences. When an increase in competition increases the costs of campaigning, voters who can observe costly effort can form more accurate inferences about the content of the ballot measure. In general, the more accurate are voter inferences, the more likely voters are to cast the same votes they would have cast if they were well informed and the more responsive is direct legislation to those voter's preferences. In addition, if competition in the provision of information forces campaigners to be more credible (perhaps as a result of the enhanced ability of the electorate to detect an untruthful message), then, recalling that more credible messages allow voters to form more accurate inferences about the content of the ballot measure, an increase in competition leads to an increase in the responsiveness of direct legislation.

3 Conclusion.

We began with the question: "Can a voter be expected to cast an "informed vote" when the alternatives from which she choose are complex?" We offered the possibility that the level of competition in the provision of campaign information might affect voters' ability to cast informed votes, but pointed out that the nature of this relationship was unclear from previous research. Using a spatial model of direct legislation, we identified characteristics of campaign activity that affected both a voter's ability to comprehend the content of electoral alternatives and the outcomes of direct legislation elections.

Voters who face complex issues can use their observations of certain types of campaign activity to increase the likelihood that they cast the same vote they would have cast if they knew everything there was to know about the electoral alternatives. When there exist information providers who exert costly and observable effort, our analysis suggests that voters can use their observation of this effort to form more accurate inferences about the magnitude of the difference between a ballot measure and the status quo. We also demonstrate that an information provider's credibility has a similar effect on voter inferences. It follows that when competition in the provision of information leads to improved voter inferences direct legislation is more responsive to the preferences voters would have expressed if they had gone out and acquired information about the ballot measure themselves.

Competition in the provision of information also affects responsiveness through the strategic interaction of the competing electoral contestants. Specifically, when the proposer of a ballot measure expects that those opposed to the ballot measure are credible enough or can exert sufficient observable and costly effort to affect the electoral outcome, she is compelled to consider the preferences of the opposition when choosing whether or not to challenge the status quo and when selecting the content of the ballot measure. Thus an increase in the level of competition in the provision of information (the introduction of an electoral opponent) increases responsiveness only if the opponent has the characteristics that allow it to take actions that affect voter inferences enough to affect voting behavior and a voter's preferences are relatively close to those of the opposition. When the opponent lacks these characteristics, an increase in competition does not lead to an increase in responsiveness.

Elsewhere (Gerber and Lupia 1992), we have attempted an empirical test of some of our findings. Using the premise that well-informed survey respondents were more likely than poorly-informed survey respondents to cast the same vote they would have cast if they knew everything there was to know about the relevant electoral alternatives, we provide empirical evidence of the conditional relationship between competition and responsiveness. Our analysis reveals a strong negative relationship between the amount of expenditure by the direct legislation campaigner and the difference between actual aggregate electoral outcomes and what we estimate these electorates would have chosen if they had been better informed. Using campaign expenditure as a surrogate for observable campaign effort and the absolute value of the difference between actual and estimated "informed" electoral outcomes as a surrogate for direct legislation responsiveness, our empirical analysis supports our theoretical findings about the conditional nature of the relationship between competition and responsiveness.

Our theoretical and empirical efforts are part of an ongoing attempt to understand collective choice through an analysis of direct legislation. Our future research in this area involves the introduction of other types of competition into our analyses. One type of competition is the presence of multiple proponents. While intuition from microeconomic theory might lead us to believe that more competition in the provision of specific alternatives would lead to more responsive electoral outcomes, at least some activists believe

differently. Consider the statement: "The current way for special interests to stave off reforms proposed by citizens is not to debate the issues but to put on measures that will be smokescreens or diversion tactics."[12] Another type of competition is that from a legislature. Specifically, how does the existence of direct legislation affect the decisions made by legislators. We will examine whether or not the threat of citizen sponsored remedies to collective choice problems induces legislators to be more or less responsive to voter preferences.

The policy implications of our analysis are straightforward. More responsive electoral outcomes will not necessarily be produced by more competition in the provision of information, such as is suggested in several reforms of elections that include public financing. Only if such reforms are accompanied by ways of either enhancing campaigner credibility through institutional design or providing more information about the preferences (identities) of proponents and opponents of measures, can greater competition lead to greater responsiveness.

[12]Jim Wheaton, executive director of California Common Cause, "a 55,000 member, non-profit, non-partisan public interest group." Reported in the *California Journal*, August 1990.

A Definition of the model.

Direct legislation is modeled as a one shot, multi-stage game between $n+2$ players. "n" of the players, ($N = \{1, \ldots, n\}$, where n is finite), are called "voters," one player is called the "proponent," and another is called the "opponent." The purpose of the game is to choose a single point from the finite policy continuum $[0,1]$, which will determine a payoff for all players. Unless otherwise stated, all parameters of the game are assumed to be common knowledge. Without a loss of generality, we assume that all players choose pure and undominated strategies.

A.1 The players.

Each player's preferences are represented by a single-peaked utility function. The proponent's, opponent's and voter i's ideal points are denoted $PROP$, SQ and VOT_i, respectively. We assume that $PROP$ is the result of a single draw from the distribution π and that VOT_i is the result of a single draw from the distribution ψ_i. π and ψ_i are common knowledge and have densities π' and ψ_i', respectively. We assume that π has all of its support in the subset of $[0,1]$ called $\overline{PROP}$ and that ψ_i has all of its support in the subset of $[0,1]$ called $\overline{VOT_i}$. $PROP$ and VOT_i are private information. Notice that we do not assume that all voters to be drawn from a single distribution (for any two voters i and j, ψ_i need not equal ψ_j). Therefore, the proponent and opponent, who choose their strategies before the voters, can be truly uncertain about the election result. For notational simplicity, we denote the proponent's and opponent's beliefs about the electorates' preference profile as Ψ.

Proponent and opponent actions are assumed to be costly. The proponent's costs are denoted $c_{nocomp} \in [0,1]$ when there is not a competitive campaign and $c_{comp} \in [0,1]$ when there is a competitive campaign. The opponent's costs are denoted $c_{opp} \in \Re^+$. We assume that these costs are determined exogenously and that once the costs are paid the magnitude of the payment is common knowledge. Therefore, we say that c_{opp} is drawn from the cumulative distribution function γ, which has density γ' and has all of its support over a subset of $[0,1]$, which we call $\overline{COST}$. γ represents the proponent's prior beliefs about the opponent's costs and is the basis of the proponent's beliefs about what the opponent will do. Since the proponent moves first, no player is uncertain about the magnitude of c_{comp} and c_{nocomp}.

A.1.1 The sequence of events.

The proponent moves first and must choose a strategy that has up to three components. The proponent's first strategic decision is $CHALL \in \{0,1\}$. When $CHALL = 0$ is chosen, the game ends and SQ is the outcome that determines a payoff for all players.

When $CHALL = 1$ is chosen, the proponent designs one ballot measure – denoted $BM \in [0,1]$, sends a campaign message and signs a costlessly enforceable contract,

the terms of which are common knowledge, to pay either c_{nocomp} or c_{comp} depending on whether or not the opponent also decides to become an active participant in the game. At the time she chooses her strategy, the proponent knows the magnitude of c_{comp} and c_{nocomp}, is uncertain about which cost she will pay, but does have beliefs γ with which she can form an inference about the expected cost of contesting the election. It follows that when an election is held it is of the form: SQ versus BM.

The third and final component of the proponent's strategy is to determine the content of a campaign message. The proponent's campaign strategy is denoted $MSG_{pro} \in \{-1, 1\}$. $MSG_{pro} = -1$ when the proponent sends the message: "BM is to the left of SQ". $MSG_{pro} = 1$ when the proponent sends the message: "OFFER is to the right of SQ". The proponent is not necessarily restricted to the transmission of truthful information. (We do not denote the case $BM = SQ$, as this location strategy is weakly dominated when the proponent's costs equal zero and is strictly dominated when these costs are positive.) The particular strategy chosen by the proponent takes the form $pro(PROP, c_{comp}, c_{nocomp}) = (CHALL, BM, MSG_{pro})$, where:

$$\text{pro: } [0,1]^3 \rightarrow \{0,1\} \times [0,1] \times \{-1,1\}.$$

If the proponent has chosen to make a proposal, the opponent then chooses her strategy. The opponent's strategic decision $MSG_{opp} \in \{-1, 0, 1\}$ equals **1** when the opponent pays c_{opp} and sends message "BM is to the left of SQ," **-1** when the opponent pays c_{opp} and sends message "BM is to the right of SQ," and **0** when the opponent chooses not to participate. The opponent is not restricted to the transmission of truthful information. The particular strategy chosen by the opponent takes the form $opp(SQ, c_{opp}, BM) = MSG_{opp}$, where:

$$\text{opp: } [0,1]^3 \rightarrow \{-1,0,1\}.$$

Voters have the final move in the game. Voters have beliefs about, but do not know, the exact location of BM. Each voter's beliefs about the location of BM are represented by the cumulative distribution $\beta(BM)$, which has corresponding density $\beta'(BM)$ and support over a known subset of $[0, 1]$.

Voters beliefs are consistent, in the sense of Kreps and Wilson 1982, and are derivable from voter prior beliefs about the location of the proponent's ideal point $\pi(PROP)$. The proponent's only private information, at the time he chooses his strategy, is the location of his ideal point. Since voters know the probability that the proponent's ideal point is any particular point $p \in [0,1]$, they can use these beliefs and the common knowledge to form consistent beliefs about the location of BM. For any $x \in [0,1]$, $\beta'(BM = x) = \int prob(BM = x|p)\pi'(PROP)d\overline{PROP}$. Let $\overline{BM}$ be the subset of $[0,1]$ over which β has all of its support.

After voters observe the proponent's and opponent's effort and campaign message, they vote for either BM ($VOTE_i = 1$) or SQ ($VOTE_i = 0$). The particular strategy chosen by voter i takes the form $vot_i(VOT_i, c_{comp}, c_{nocomp}, MSG_{pro}, c_{opp}, MSG_{opp}) = VOTE_i$,

where

$$\text{vot}_i\text{: } [0,1]^4 \times \{-1,1\} \times \{-1,0,1\} \rightarrow \{0,1\}.$$

Majority (or supermajority) rule determines the outcome of the election. (None of our results depend on the use of simple majority rule.) We assume that players choose pure strategies, which gives the outcome function a relatively simple form. For any $pro \in \{1\} \times [0,1] \times \{-1,0,1\}$, $opp \in \{-1,0,1\}$ and $vot_i \in \{-1,1\}$

$$out(pro, opp, vot_1, \ldots, vot_n) = BM \text{ if: } \sum_{i=1}^{n} vot_i > \frac{n}{2} \text{ and } SQ \text{ if: } \sum_{i=1}^{n} vot_i \leq \frac{n}{2}.$$

The outcome determines the payoffs to all players. We describe the case where SQ wins ties, indifferent voters vote for SQ and indifferent proponents and opponents choose not to take costly action. The electoral tie-breaking assumption is consistent with the tie-breaking rule used in many of direct legislation elections. To simplify notation, we denote $out(pro, opp, vot_1, \ldots, vot_n)$ as $out(*)$.

A.2 Player Objective Functions.

Without a loss of generality to other quasi-concave (single-peaked) preference functions, we describe the case where each player has a symmetric, linear and single peaked utility function. Players attempt to maximize their *ex post* utility. A player's *ex post* utility is determined by the distance between their own ideal point and whichever of SQ and BM was chosen as the outcome and the costs of their own actions. Let $c_* \in \{c_{comp}, c_{nocomp}\}$ be the costs that the Proponent actually pays. The *ex post* utility for each player can be written as:

proponent:	$-\lvert PROP - out(*)\rvert - (c_{nocomp} \times CHALL \times (1 - \lvert MSG_{opp}\rvert))$
	$-(c_{comp} \times CHALL \times \lvert MSG_{opp}\rvert)$
opponent:	$-\lvert SQ - out(*)\rvert - (c_{comp} \times \lvert MSG_{opp}\rvert)$
voter i:	$-\lvert VOT_i - out(*)\rvert$

Since players are uncertain about the value of their *ex post* utility at the time they choose their strategies, each attempts to maximize their *ex post* utility by maximizing their interim expected utility. As interim expected utility is based on a player's beliefs about the effect of their own actions as well as the actions of other players whose choices follow later in the game, we develop the notation for each player's interim utility by working backwards through the sequence of events.

We start with the derivation of the interim utility of the voters. To simplify notation, let $SIG_{pro} = (c_*, MSG_{pro})$ be the vector of signals that is sent by the proponent to the voters. Let $SIG_{opp} = (c_{opp}, MSG_{opp})$ denote the vector of signals that is sent by the opponent to the voters. For any voter i and $\forall(SIG_{pro}, SIG_{opp})$ let:

$$
\begin{aligned}
Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}) &= 1 \text{ if } -\int |BM - VOT_i| \\
&\quad \times \beta(BM|SIG_{pro}, SIG_{opp}) d\overline{BM} > -|SQ - VOT_i|, \\
Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}) &= 0 \text{ otherwise.} \\
No_i(\beta(BM), SIG_{pro}, SIG_{opp}) &= 1 - Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}).
\end{aligned}
$$

$Yes_i(\beta(BM), SIG_{pro}, SIG_{opp})$ is a binary variable that identifies whether a voter with ideal point VOT_i, prior beliefs $\beta(BM)$ and campaign messages (SIG_{pro}, SIG_{opp}) would receive expected utility from BM that is greater than the utility from SQ. $No_i(\beta(BM), SIG_{pro}, SIG_{opp})$ is a binary variable that identifies whether a voter with ideal point VOT_i, prior beliefs $\beta(BM)$ and campaign messages (SIG_{pro}, SIG_{opp}) would receive expected utility from BM that is less than or equal to the utility from SQ. (The set of voter types who would be indifferent is, theoretically, of measure zero, but is included for notational consistency.) We can now state voter i's interim expected utility as:

$$
\begin{aligned}
&\Phi_i(vot_i|VOT_i, \beta(BM|SIG_{pro}, SIG_{opp}, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi) = \\
&- \quad [\textstyle\int |BM - VOT_i| \beta'(BM|SIG_{pro}, SIG_{opp}) d\overline{BM} \\
&\times \quad (\textstyle\sum_{i \in N\ i} \int Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}) \psi_i d\overline{VOT_i} + \frac{vot_i}{n})] \\
&- \quad [|SQ - VOT_i| \times (\textstyle\sum_{i \in N\ i} \int No_i(\beta(BM), SIG_{pro}, SIG_{opp}) \psi_i d\overline{VOT_i} + \frac{1 - vot_i}{n})]
\end{aligned}
$$

We can now also state the opponent's interim expected utility as:

$$
\begin{aligned}
&\Phi_o(opp|SQ, SIG_{opp}, \beta(BM|SIG_{pro}, SIG_{opp}), Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi) = \\
&- \quad [|BM - SQ| \times (\textstyle\sum_{i \in N} \int Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}) \psi_i d\overline{VOT_i})] \\
&- \quad [c_{opp} \times |MSG_{opp}|]
\end{aligned}
$$

The proponent's maximization problem is similar to the opponent's. The proponent is uncertain about which strategies the electorate will choose, but has the same information (and beliefs) about voter behavior as the opponent's does (Yes_i and Ψ). In addition, the proponent is uncertain about which strategy the opponent will choose.

Let $m_{opp}(0|BM, c_{opp}, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi)$ equal 1 if an opponent who observes ballot measure BM, has costs c_{opp} and beliefs about voter strategies Yes_i and Ψ would choose not to run a campaign. Let $m_{opp}(0|BM, c_{opp}, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi)$ equal 0 otherwise. $m_{opp}(1|.) = 1$ and $m_{opp}(-1|.) = 1$ are similarly defined for the opponent's decision to send the campaign message $MSG_{opp} = 1$ and $MSG_{opp} = -1$, respectively. Stated formally, $m_{opp}(0|.) = 1$ if:

$$
\begin{aligned}
&\Phi_o(0|SQ, SIG_{opp}, \beta(BM|SIG_{pro}, SIG_{opp}), Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi) \geq \\
&max(\Phi_o(-1|SQ, SIG_{opp}, \beta(BM|SIG_{pro}, SIG_{opp}), Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi), \\
&\Phi_o(1|SQ, SIG_{opp}, \beta(BM|SIG_{pro}, SIG_{opp}), Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi))
\end{aligned}
$$

The proponent can infer the likely actions of the opponent's by integrating the m_{opp} terms over the distribution that represents her beliefs about the opponent's costs. We

denote the proponent's beliefs about the probability that the opponent will choose not to campaign when he observes BM as $\mu_{opp}(0|BM, \gamma, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi)$ $\mu_{opp}(1|.)$ and $\mu_{opp}(-1|.)$ are similarly defined. For $MSG_{opp} = M \in \{-1, 0, 1\}$,

$$\mu(M|BM, \gamma, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi) =$$
$$\int m_{opp}(M|BM, \gamma, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi)\gamma' d\overline{COST}.$$

The proponent's interim utility is expressed as: (square brackets are subscripted to ease readability)

$$\begin{aligned}
&\Phi_p(pro|PROP, c_{comp}, c_{nocomp}, \mu_{opp}(MSG_{opp}|BM, \gamma, \\
&\quad Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi), Yes_i, \Psi)) = \\
&[_a CHALL \times [_b [_c \tfrac{|MSG_{pro}+1|}{2} \times [_d -|SQ - PROP| \\
&\times \quad ((\textstyle\sum_{MSG_{opp}=M} \mu(M|BM, \gamma, No_i(\beta(BM), c_*, 1, c_{opp}, M), \Psi) \\
&\times \quad (\textstyle\sum_{i \in N}{}_i \int No_i(\beta(BM), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i})))]_d \\
&\times \quad [_e -|BM - PROP| \\
&\times \quad ((\textstyle\sum_{MSG_{opp}=M} \mu(M|BM, \gamma, Yes_i(\beta(BM), c_*, 1, c_{opp}, M), \Psi) \\
&\times \quad (\textstyle\sum_{i \in N}{}_i \int Yes_i(\beta(BM), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i})) \\
&- \quad c_{nocomp*} - ((c_{comp} - c_{nocomp}) \times |MSG_{opp}|)]_e]_c \\
&+ \quad [_f [_g \tfrac{|MSG_{pro}-1|}{2} \times [_h -|SQ - PROP| \\
&\times \quad ((\textstyle\sum_{MSG_{opp}=M} \mu(M|BM, \gamma, No_i(\beta(BM), c_*, 1, c_{opp}, M), \Psi) \\
&\times \quad (\textstyle\sum_{i \in N}{}_i \int No_i(\beta(BM), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i})))]_h \\
&\times \quad [_i -|BM - PROP| \\
&\times \quad ((\textstyle\sum_{MSG_{opp}=M} \mu(M|BM, \gamma, Yes_i(\beta(BM), c_*, 1, c_{opp}, M), \Psi) \\
&\times \quad (\textstyle\sum_{i \in N}{}_i \int Yes_i(\beta(BM), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i})))]_i]_g \\
&- \quad c_{nocomp*} - ((c_{comp} - c_{nocomp}) \times |MSG_{opp}|)]_e]_c \\
&+ \quad [(1 - CHALL) \times -|PROP - SQ|]
\end{aligned}$$

A.3 Equilibrium Concept.

An equilibrium for this model is defined as a set of pure strategies and beliefs such that each player maximizes their own interim expected utility. We assume, like Kreps and Wilson 1982 that all players have consistent beliefs. In addition, we assume that information recipients use Bayes' Rule to update their beliefs about the location of BM. We also assume voters always vote as if they are the pivotal voter (i.e., they adopt strategies that are weakly dominant with respect to the strategies of other voters.) Let $A(SIG_{pro}, SIG_{opp})$ be the set of all points on $[0, 1]$ that are possible locations of BM given that signals SIG_{pro} and SIG_{opp} have been sent. We state the equilibrium concept for our model as a set of strategies (pro, opp, vot_i) and beliefs, such that for all (SIG_{pro}, SIG_{opp}).

Proponent: $\forall PROP, pro(A, c_{comp}, c_{nocomp})$ satisfies: $max_{pro \in \{0,1\} \times [0,1] \times \{-1,1\}}$ $\Phi_p(pro \mid PROP, c_{comp}, c_{nocomp}, \mu_{opp}(MSG_{opp} \mid BM, \gamma, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi)$
Opponent: $\forall OPP, opp(SQ, c_{opp}, BM)$ satisfies: $max_{opp \in \{-1,0,1\}}$ $\Phi_o(opp \mid SQ, SIG_{opp}, \beta(BM \mid SIG_{pro}, SIG_{opp}), Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi)$
voter i: $\forall VOT_i, vot_i(VOT_i, c_{comp}, c_{nocomp}, MSG_{pro}, c_{opp}, MSG_{opp})$ satisfies $max_{vot_i \in \{0,1\}}$ $\Phi_P(pri \mid (vot_i \mid VOT_i, \beta(BM \mid SIG_{pro}, SIG_{opp}, Yes_i(\beta(BM), SIG_{pro}, SIG_{opp}), \Psi))$
Beliefs: $\forall (SIG_{pro}, SIG_{opp})$, $\beta'(BM \mid SIG_{pro}, SIG_{opp}) = \begin{cases} \frac{\beta'(BM)}{pr(SIG_{pro}, SIG_{opp})} & \text{if } x \in A(SIG_{pro}, SIG_{opp}) \\ 0 & \text{otherwise} \end{cases}$ where $pr(SIG_{pro}, SIG_{opp}) = \int_{A(SIG_{pro}, SIG_{opp})} d\beta'(BM)$.

A.3.1 Costly Action and Voter Inferences.

Because the proponent and/or opponent need not contest the election the fact that they pay to do so can convey information to the voters. The information provided to voters by this action is that the spender believes that she can recover (at least) her costs.

Let $\epsilon(c_*)$, henceforth referred to as ϵ, be a distance on the policy continuum which is an increasing function of c_*. ϵ determines the range of alternatives within which it will never be profitable for the spender to wage a campaign an election. Since c_* and the shape of the proponent and opponent utility functions are known, so is the correspondence between c_* and ϵ. Lemma 1 shows that for BM within the "range of unprofitable alternatives" $[SQ - \epsilon, SQ + \epsilon]$, there exist no costly strategies which provide the proponent with a higher level of utility than costlessly accepting SQ.

Lemma 1 *If either the proponent's ideal point or BM are located within the proponent's range of unprofitable alternatives, it is a dominated strategy to contest the election and/or wage a campaign.*

Proof:

Consider the most favorable case for the proponent, where he is certain that the electorate will choose BM:

$$\sum_{i \in N} \int_i Yes_i(\beta(BM), c_*, -1, c_{opp}, -1))\psi_i d\overline{VOT_i} = 1.$$

Without loss of generality we examine the case where the proponent is certain that the election will be contested. The proponent's interim expected utility from $CHALL = 1$

simplifies to $-|BM - PROP| - c_{comp}$. Recall that the expected interim utility from $CHALL = 0$ is $-|SQ - PROP|$. From the definition of ϵ, it follows that for any point in $[SQ - \epsilon, SQ + \epsilon]$, $-|SQ - PROP| > -|BM - PROP| - c_*$. Even in the most favorable case for the proponent, $CHALL = 1$ is a dominated strategy **QED.**

When $c_* > 0$, and the proponent contests the election, voters know that $BM \notin [SQ - \epsilon, SQ + \epsilon]$ and the voters' updated beliefs will have no support on this range.

When the proponent enters, voters use Bayes Rule to incorporate this information into their beliefs about the location of BM. A voter's (posterior) beliefs after observing costly proponent effort are related to her prior beliefs, $\beta(BM)$ in the following manner:

When voters know that c_* has been paid:	
0	$\in [SQ - \epsilon, SQ + \epsilon]$
$\beta'(BM) \times \frac{1}{1-\beta(SQ+\epsilon)+\beta(SQ-\epsilon)}$	$\in [0, SQ - \epsilon), (SQ + \epsilon, 1]$.

A similar relationship holds for voter observation of the opponent's expenditure. To see this relationship replace ϵ with ϵ_{opp} in the preceding discussion. For the opponent, ϵ_{opp} is a function of c_{opp} and the shape of the opponent's utility function. For the proponent, ϵ is determined by the shape of her utility function and her beliefs about whether or not the election will be contested:

$$\epsilon_{pro} = f([(\mu(1|*) + \mu(-1|*)) \times c_{comp}] + [(\mu(0|*) \times c_{nocomp}]).$$

A.3.2 Credibility and Voter Inference.

In a one-shot interaction, where the cost of sending truthful messages equals the cost of sending untruthful messages, there exists no sanction for campaigners who send untruthful messages. Therefore, the content of a minimally credible message is "cheap talk" and is thus uninformative to voters. That voters do not condition their beliefs on the content of minimally credible messages strikes us as obvious. For a more general discussion of credibility in the direct legislation context, see Lupia 1993.

We now consider the case where the campaigner, either the proponent or the opponent, is perfectly credible. In addition to updating their beliefs about the position of the alternative when they observe a costly alternative, voters who receive perfectly credible messages can further update their prior beliefs according to the content of the messages. Voters can infer that BM is not to the right of SQ when they receive the perfectly credible message "BM is to the left of SQ." In general, this type of message is not sufficient for voters to infer the exact location of BM. Voters use Bayes Rule to incorporate this perfectly credible information into their prior beliefs about the location of BM. The density of a voter's "updated" beliefs are related to the her prior beliefs, β in the following manner:

If "left" is perfectly credible	
$\beta'(BM) \times \frac{1}{\beta(SQ)}$	$\in [0, SQ)$
0	$\in (SQ, 1]$

If "right" is perfectly credible	
0	$\in [0, SQ)$
$\beta'(BM) \times \frac{1}{1-\beta(SQ)}$	$\in (SQ, 1]$

When both of the campaigners are minimally credible, voters condition their beliefs about the location of BM on their observation of the campaigners' costs only. In this case, the boundaries of the "range of unprofitable alternatives" are determined by the larger of ϵ and ϵ_{opp}.

A.3.3 The Proponent's Equilibrium Strategy.

Lemma 2 $CHALL = 1$ *if and only if* $\exists$ $BM \in [0, 1]$ *such that the expected return to proposing is greater than the expected cost of proposing.*

The proof is obvious and follows from the assumption of interim utility maximization.

Corollary 1 *If* $CHALL = 1$, BM *and* $PROP$ *cannot be on different sides of* SQ.

The proof is trivial. If BM is on the opposite side of SQ than $PROP$, then SQ offers strictly greater utility to the proponent, in which case $CHALL = 1$ is a dominated strategy. This also implies that for all values of [0, 1] that the proponent could profitably choose as BM, he should either choose the same value of MSG_{pro} or the value of MSG_{pro} must be inconsequential in determining the outcome.

It follows from the previous lemmas that BM must be a point on [0, 1] that is not in $[SQ - \epsilon, SQ + \epsilon]$ and is on the same side of SQ as $PROP$. Let $MSG_{pro} = m$ be the message that the proponent would choose for all of the values of BM that meet the requirements just stated. (If she is perfectly credible, MSG_{pro} will have only one value for this set of BM by definition. If she is not perfectly credible, the content of MSG_{pro} does not affect the outcome.

It follows from interim utility maximization that $\forall bm, bm' \in [0, 1]$ that $BM = bm$ if and only if:

$$
\begin{array}{ll}
[_e & -|bm - PROP| \\
\times & ((\mu(-1|bm, \gamma, Yes_i(\beta(bm), c_*, 1, c_{opp}, -1), \Psi) \\
\times & (\sum_{i \in N\ i} \int Yes_i(\beta(bm), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i}) \\
+ & (\mu(0|bm, \gamma, Yes_i(\beta(bm), c_*, 1), \Psi) \\
\times & (\sum_{i \in N\ i} \int Yes_i(\beta(bm), c_*, 1)\psi_i d\overline{VOT_i}) \\
+ & (\mu(1|bm, \gamma, Yes_i(\beta(bm), c_*, 1, c_{opp}, 1), \Psi) \\
\times & (\sum_{i \in N\ i} \int Yes_i(\beta(bm), c_*, 1, c_{opp}, 1))\psi_i d\overline{VOT_i})) \\
- & c_{nocomp*} - ((c_{comp} - c_{nocomp}) \times |MSG_{opp}|)]_e \\
- & [_e -|bm' - PROP| \\
\times & ((\mu(-1|bm', \gamma, Yes_i(\beta(bm'), c_*, 1, c_{opp}, -1), \Psi) \\
\times & (\sum_{i \in N\ i} \int Yes_i(\beta(bm'), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i}) \\
+ & (\mu(0|bm', \gamma, Yes_i(\beta(bm'), c_*, 1), \Psi) \\
\times & (\sum_{i \in N\ i} \int Yes_i(\beta(bm'), c_*, 1)\psi_i d\overline{VOT_i}) \\
+ & (\mu(1|bm', \gamma, Yes_i(\beta(bm'), c_*, 1, c_{opp}, 1), \Psi) \\
\times & (\sum_{i \in N\ i} \int Yes_i(\beta(bm'), c_*, 1, c_{opp}, 1))\psi_i d\overline{VOT_i})) \\
- & c_{nocomp*} - ((c_{comp} - c_{nocomp}) \times |MSG_{opp}|)]_e > 0
\end{array}
$$

The two primary components of this equation are (1) the spatial proximity between bm and A and (2) the proponent's beliefs about how her choice of bm will affect the opponent's and the electorate's actions.

Lemma 3 *If $CHALL = 1$, $BM \neq PROP$ if and only if $\exists bm \neq PROP \in [0,1]$ such that the lower utility from setting $bm \neq PROP$ is offset by the higher probability that bm is the outcome.*

Corollary 2 *If $CHALL = 1$, $BM = A$ if and only if $\nexists bm \neq A \in [0,1]$ such that the lower utility from setting $BM \neq A$ is offset by the higher probability that BM is the outcome.*

Proof of Lemma: $(\longrightarrow)$
If $CHALL = 1$ and $MSG_{pro} = 1$, then since $-|BM - PROP| > -|bm - PROP| > -|SQ - PROP|$, for $bm \neq A = max\Phi_A(*|*)$ to be true, it must be true that:

$$
\begin{array}{ll}
 & (\mu(-1|bm, c_*, 1, PEN_A, \nu(SQ|(bm?), 1, -1))\nu(SQ|(bm?), 1, -1) \\
+ & \mu(0|c_*, 1, PEN_A, \nu(SQ|(bm?), 1, 0))\nu(SQ|(bm?), 1, 0) \\
+ & \mu(1|bm, c_*, 1, PEN_A, \nu(SQ|(bm?), 1, 1))\nu(SQ|(bm?), 1, 1)) < \\
 & (\mu(-1|A, c_*, 1, PEN_A, \nu(SQ|(A?), 1, -1))\nu(SQ|(A?), 1, -1) \\
+ & \mu(0|c_*, 1, PEN_A, \nu(SQ|(A?), 1, 0))\nu(SQ|(A?), 1, 0) \\
+ & \mu(1|A, c_*, 1, PEN_A, \nu(SQ|(A?), 1, 1))\nu(SQ|(A?), 1, 1))
\end{array}
$$

That is, the proponent expects that the probability that SQ is the outcome is lower if $BM = bm$ than it is when $BM = A$. Recall that when SQ is the outcome, proposing

causes the proponent to have *ex post* regret. This implies that the proponent is willing to trade bm the lower utility from setting $BM \neq A$ in exchange for a higher probability that BM is the outcome:

$$
\begin{array}{ll}
 & [(\mu(-1|bm, \gamma, No_i(\beta(bm), c_*, 1, c_{opp}, -1), \Psi) \\
\times & (\sum_{i \in N} {}_i \int No_i(\beta(bm), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i}) \\
\times & (\mu(-1|bm, \gamma, No_i(\beta(bm), c_*, 1, c_{opp}, 0), \Psi) \\
\times & (\sum_{i \in N} {}_i \int No_i(\beta(bm), c_*, 1, c_{opp}, 0))\psi_i d\overline{VOT_i}) \\
\times & (\mu(-1|bm, \gamma, No_i(\beta(bm), c_*, 1, c_{opp}, 1), \Psi) \\
\times & (\sum_{i \in N} {}_i \int No_i(\beta(bm), c_*, 1, c_{opp}, 1))\psi_i d\overline{VOT_i})] \\
- & [(\mu(-1|bm', \gamma, No_i(\beta(bm), c_*, 1, c_{opp}, -1), \Psi) \\
\times & (\sum_{i \in N} {}_i \int No_i(\beta(bm), c_*, 1, c_{opp}, -1))\psi_i d\overline{VOT_i}) \\
\times & (\mu(-1|bm', \gamma, No_i(\beta(bm), c_*, 1, c_{opp}, 0), \Psi) \\
\times & (\sum_{i \in N} {}_i \int No_i(\beta(bm), c_*, 1, c_{opp}, 0))\psi_i d\overline{VOT_i}) \\
\times & (\mu(-1|bm', \gamma, No_i(\beta(bm), c_*, 1, c_{opp}, 1), \Psi) \\
\times & (\sum_{i \in N} {}_i \int No_i(\beta(bm), c_*, 1, c_{opp}, 1))\psi_i d\overline{VOT_i})] > \\
 & |PROP - bm|
\end{array}
$$

$(\longleftarrow)$
Follows straightforwardly from previous argument. **QED.**

It follows from the previous lemma that $BM = bm \neq PROP$ when the proponent believes that the opponent will wage a campaign that will affect the electoral outcome and $-|bm - SQ| - c_{opp} > -|PROP - SQ|$.

Corollary 3 *If $CHALL = 1$, $BM = A$ if and only if $\nexists bm \neq A \in [0, 1]$ such that the lower utility from setting $BM \neq A$ is offset by the higher probability that BM is the outcome.*

A.4 When will the campaign be competitive?

Only when the opponent believes that she is credible enough or can exert observable costly effort sufficient to affect the electoral outcome, will she find it profitable to pay the costs of waging a campaign.

Lemma 4 *If the probability that the opponent can affect the outcome is positive, she wages a campaign when the difference in expected utility from the two alternatives is larger than the cost of participation divided by the likelihood that the campaign will affect the outcome.*

Proof:
The opponent participates when:

$$- \quad \sum_{i \in N} {}_i \int Yes_i(\beta(bm), SIG_{pro}, c_{opp}, \neq 0))\psi_i d\overline{VOT_i}) \times |BM - SQ|)$$
$$- \quad (|MSG_{opp} \times c_{opp}) >$$
$$- \quad \sum_{i \in N} {}_i \int Yes_i(\beta(bm), SIG_{pro}, 0))\psi_i d\overline{VOT_i}) \times |BM - SQ|$$

Which simplifies to:

$$+ \quad -|BM - SQ| > \frac{c_{opp}}{\sum_{i \in N} {}_i \int Yes_i(\beta(bm), SIG_{pro}, c_{opp}, \neq 0) - Yes_i(\beta(bm), SIG_{pro}, 0))\psi_i d\overline{VOT_i})}$$

Notice that the denominator of the right hand side of the inequality ranges between -1 and 1. When the difference between the probabilities is 1 – the outcome is certain to be BM if $MSG_{opp} \neq 0$ and is certain to be SQ if $MSG_{opp} = 0$, then the right hand side of the inequality equals c_{opp}, and for participation to be profitable in this extreme case the expected utility from BM must be at least c_{opp} greater than the utility from SQ. When the difference between the probabilities is -1 – the outcome is certain to be BM if $MSG_{opp} \neq 0$ and is certain to be SQ if $MSG_{opp} = 0$, then for participation to be profitable in this extreme case the utility from SQ must be at least c_{opp} greater than the expected utility from BM. When the difference between the probabilities approaches zero from either side – the outcome is likely to be unaffected by the opponent's decision, then the right hand side of the inequality approaches infinity, and it becomes less likely that any the opponent's type would find it profitable to participate. **QED.**

In the context of our non-repeated game, neither the proposer nor the opponent will find it profitable to wage a campaign if they do not think that such behavior will produce their preferred electoral outcome. This implies that a competitive direct legislation campaign can only take place when both the opponent and the proposer are uncertain about voter preferences and are not too risk averse.

	Proposer	Opponent	Voter i
The extensive form	yes	yes	yes
Shape of all utility functions	yes	yes	yes
Proposer's ideal point	yes	no	no
Opponent's ideal point	yes	yes	yes
Voter i's ideal point	no	no	yes
Other voters' ideal points (not i)	no	no	no
Status Quo content	yes	yes	yes
Ballot Measure content	yes[1]	yes	no
Magnitude of proposer's costs	yes[2]	yes	yes
Magnitude of opponent's costs	no	yes	yes
Proponent campaign message content	yes[1]	yes	yes
Opponent campaign message content	no	yes[1]	yes

[1] Chosen by that player.
[2] Knows it for non-competitive and competitive cases, does not know the level of competition.

Table 1: What each player knows when they choose their strategies

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