Political Resource Allocation: Benefits and Costs of Voter Initiatives

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This article explores the benefits and costs of the voter initiative, a direct democracy device that allows policy decisions to be made by voters rather than their elected representatives. Previous research suggests that by introducing "competition" into the proposal process, the initiative leads to policies that are closer to the median voter's ideal point. In our model, in contrast, the effect of the initiative is conditional on the severity of representative agency problems and uncertainty about voter preferences. The initiative always makes the voter better off when representatives are faithful agents, but when voter preferences are uncertain, initiatives can cause "shirking" representatives to choose policies farther from the voter's ideal point. Our evidence shows that initiatives are more common in states with heterogeneous populations, and initiatives reduce state spending when Democrats control the government and when citizens have diverse preferences.

1. Introduction

A central goal of political economy research is to understand how nonmarket institutions allocate resources. The most common institution, and the focus of most research, is where decisions are made exclusively by elected representatives. Yet in many jurisdictions, resources are also allocated directly by voters through the use of initiatives. In these jurisdictions, representatives set the initial policies, but voters have the option to amend and/or override them.[1] Although voter initiatives are highly visible policy instruments,

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1. To clarify terms, an *initiative* is a particular kind of referendum. A *referendum* is a policy decision (law, constitutional change, treaty, etc.) that is approved or rejected by a vote of the electorate at large. An *initiative* is a referendum that proposes a new law and reaches the ballot by citizen petition (after the measure's sponsors collect a predetermined number of signatures from fellow citizens.) There are other kinds of referendums that we do not consider, such as

and an emerging empirical literature suggests that they have significant policy effects, our understanding of the institution's benefits and costs is in its infancy.[2]

The prevailing view in the literature is that initiatives provide a benefit by inducing policy choices closer to those preferred by the median voter.[3] Initiatives are believed to promote median voter outcomes directly, by replacing bad policies of representatives with those chosen by the voters themselves, and indirectly, by causing representatives to select more favorable policies initially to stave off the threat of an initiative. Intuitively the initiative allows "entry" into decision making that is otherwise monopolized by representatives, leading to policies that are closer to the "competitive" median voter outcome.

This view of the initiative seems fundamentally incomplete. Initiatives are not the rule—only 24 of 50 states and half of the municipalities in the United States permit them. If direct resource allocation can only result in policies closer to the median voter's position, it is difficult to explain why initiatives are not more common, especially at the local level where Tiebout competition should put some pressure on governments to adopt policies that please the voters. Perhaps what we are missing is an understanding of the *costs* of direct decision making.

The goal of this article is to develop a simple model in which initiatives have costs as well as benefits, and thereby provide a way to begin thinking about the trade-offs between direct and representative decision making. We study a model with three actors, a representative, an interest group, and a voter, in which agenda control issues and agency problems between the voter and the representative play important roles.[4] The representative makes the initial policy choice. When initiatives are unavailable, this policy stands. When initiatives are possible, the interest group can pay a cost and make a counterproposal; the voter then chooses either the representative's or the interest group's proposal.

The key difference between our model and the existing literature is our assumption that the representative and interest group face some uncertainty

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measures placed on the ballot by the legislature or those that seek only to reverse a law enacted by the legislature. Other names for the initiative are "popular initiative," "citizen initiative," and "initiative referendum."

2. For example, Matsusaka (1995, 2000) finds that tax and spending policies are different in initiative and noninitiative states, and Gerber (1996, 1999) reports differences in death penalty and abortion parental notification policies. In recent years, voter initiatives have been used to cut property taxes, crack down on illegal immigrants, impose term limits on elected officials, and scale back affirmative action programs. Initiatives were also instrumental in providing for women's suffrage, abolishing poll taxes, establishing presidential primary elections, prohibiting and then repealing the prohibition of alcohol, setting environmental protection standards, and reforming campaign finance laws (Cronin, 1989). There is also a small literature focusing on shareholder initiatives in corporations, for example, Karpoff, Malatesta, and Walkling (1996).

3. For instance, see Denzau, Mackay, and Weaver (1981) and Gerber (1996).

4. This follows the archetype of Romer and Rosenthal (1978, 1979). Below we also consider an extension with multiple interest groups.

about the voter's preferences. Uncertainty affects the trade-off between direct and representative resource allocation in two important ways. First, it makes initiatives valuable simply because they provide the voter with a choice: the ultimate policy will be closer to the voter's ideal point if he selects from a menu of possibilities instead of having a policy chosen for him. For this reason, direct decision making can be desirable even if the representative has different preferences than the median voter, and even if initiatives propose more extreme policies than the representative chooses.

Uncertainty has a second and more surprising effect on the behavior of the representative. When preferences are known with certainty, the representative ignores interest groups that threaten an initiative farther from the voter's ideal point than the representative's choice because such an initiative is sure to be rejected by the voter. However, when voter preferences are uncertain, even an extreme interest group's initiative could turn out to match the voter's preferences and end up defeating the representative's policy in an election. To avoid this risk, the representative may find it optimal to choose a policy closer to the interest group's ideal point. This accommodation can deter the interest group from proposing an initiative if the cost of initiating is high enough. Consequently the threat of an initiative can cause the representative to adopt a more extreme policy than he would have otherwise. We therefore show how availability of the initiative can lead to policy choices that are *farther* from the voter's ideal point than if there were no initiative. This provides a logical foundation for the objection that initiatives increase the power of special interest groups at the expense of the "common good."[5]

However, in another sense our results stand the conventional wisdom on its head. The usual argument in favor of direct resource allocation is that it gives the electorate a weapon against representatives who act against the voters' interests. That is, initiatives are valuable when representatives are bad. While this can happen as a special case in our model, the general pattern is that (1) direct decision making always makes the electorate better off when representatives are faithful agents, and (2) direct decision making can make the electorate worse off only *when representatives are not faithful agents*. The main reason is that the representative has an incentive to adjust policy to deter an initiative only when he has a policy preference (as opposed to a desire to maximize the welfare of the voter). Our results suggest that giving interest groups the power to influence the agenda is a two-edged sword: when moderate interest groups make the proposals, the voters are better off, but voters can be made worse off when extreme interest groups appear.

5. For example, Magleby (1984: 29) says: "Groups with money will set the agenda of direct legislation by placing measures they desire on the ballot and then financing the campaign for passage. In the event that a proposition runs counter to their political desires, they will dominate the ensuing campaign and defeat the issue. Thus, under direct legislation it is not the people who rule but the special interests." This view is echoed in Broder (2000). However, our results suggest that the power of interest groups arises through their ability to distort representative behavior, not through an ability to dominate initiative elections. The most comprehensive reference available on the role of interest groups in the direct legislation process is the study by Gerber (1999).

The central idea of our article is that direct decision making has both benefits and costs. A major implication is that the overall effect of the initiative (on the voter's utility and on policy) is *conditional*, depending on the factors that determine the benefits and costs. The factors we emphasize are the nature of representation and uncertainty about voter preferences. Our model suggests that the initiative has the greatest effect when representatives have extreme preferences and when uncertainty about preferences is great. To see if the effect of the initiative is in fact conditional on these factors, we examine U.S. state and local expenditure data from 1960 to 1990. As documented in Matsusaka (1995), states with initiatives tended to spend less than representative-only states during this period. We find that the initiative has the largest anti-spending effect in states where (1) Democrats control both the executive and the legislature, and (2) the population is heterogeneous (which we interpret as making it more difficult to infer the median voter's preferences).

Beyond the policy effects of voter uncertainty, the model also yields testable implications about the frequency of initiative use. Initiatives occur in equilibrium in our model, unlike its complete information predecessors, in which initiatives are threatened but never used. Initiatives are predicted to be more common in states where the cost of proposing an initiative is low, and less obviously, where voter preferences are uncertain. We study the use of initiatives in the United States between 1959 and 1993, and document several empirical relations consistent with the model: more initiatives reach the ballot in states where (1) signature requirements are low, (2) geographic distribution of signatures is not required, (3) the population is large, and (4) the population is more evenly distributed between urban and rural dwellers. The first two variables proxy for costs, and we argue the last two are plausibly correlated with uncertainty about the median voter's preferences.

In the next section we present the model. Section 3 describes the solution of the model. Section 4 identifies the basic benefits and costs of voter initiatives. Section 5 develops testable implications concerning policies and the number of initiatives. Section 6 presents evidence on the determinants of initiative use and the effect of the initiative on state and local fiscal policy. Section 7 summarizes and discusses extensions.

2. A Spatial Model of the Two Decision-Making Institutions

We assume that a policy $x \in \Re$ must be chosen. This policy affects the welfare of a voter, a representative, and an interest group. Under "monopolistic representative" (MR) decision making, the policy is selected by the representative. Under "direct-and-representative" (DR) decision making, the representative selects a policy but the interest group can make a counter proposal, in which case the voter chooses between the two options.

2.1 Preferences

The voter has utility

$$V(x) = -|x - v|,$$

where v is his ideal point. To capture uncertainty about preferences, we assume that v takes one of three values, $-\theta, 0$, and θ, with probabilities $\sigma, 1-2\sigma$, and σ, respectively.[6] Therefore $E[v]=0$, and the amount of uncertainty about preferences is parameterized by σ.[7] Note that $0 \leq \sigma \leq 1/2$.

The utility of the interest group is

$$I(x) = -|x-i| - \lambda C,$$

where i is the ideal point, λ is an indicator variable equal to 1 if the group makes an initiative proposal, and $C > 0$ is the (exogenous) cost of doing so. We will study three types of interest groups, corresponding to each of the voter types, with i equal to $-\theta, 0$, and θ. The parameter C represents signature-gathering costs, registration fees, and other opportunity costs associated with placing an initiative on the ballot.

Finally, the representative's utility is

$$R(x) = (1-\alpha)E[V] - \alpha|x-r|,$$

where $E[V]$ is the expected value of the voter's utility (over realizations of v). The parameter α measures the severity of the agency problem between the voter and his representative.[8] The literature contains significant disagreement whether representatives are faithful agents who maximize voter welfare or "shirkers" with their own ideological preferences.[9] Our parameterization of α allows us to study the impact of the initiative under different assumptions of how well the representative process works. If $\alpha = 0$, then $R = E[V]$ and there is no agency problem between the voter and representative—the representative wants to maximize the voter's utility. If $\alpha > 0$, then the representative has a policy preference of his own, with an ideal point r. We shall consider the cases of a "moderate" representative ($r = 0$) and "extreme" representatives ($r = \theta$ and $r = -\theta$). The terms "moderate" and "extreme" should be understood as relative to the expected value of the voter's preference.[10]

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6. None of our results would be affected by assuming a continuous distribution of voter types. The assumption makes the explication and comparative statics much more transparent.

7. The baseline preference of 0 could representative a moderate, conservative, or liberal (absolute) policy position. Our specification simply posits that there is some dispersion around that expectation. For example, if 0 is a conservative position, then $-\theta$ would mean extremely conservative, and θ would mean moderate or liberal. The symmetry assumption is only for simplifying the analysis. It plays no substantive role in the results.

8. It may be worth noting that we only focus on agency problems at the policy formation stage. Gerber et al. (2001) point out that agency problems also arise at the implementation stage, after a law has been approved.

9. See the special June 1993 issue of *Public Choice* and Peltzman (1984).

10. The model does not directly address the issue of how an ideological representative with different preferences than the (expected) median voter could be elected. One possibility that we discuss in the empirical section is that features of the electoral system may create partisan biases in the translation of votes to seats.

Table 1. Opinion Polls and Votes on Two California Ballot Propositions, June 1998

	% In Favor	% Opposed
Prop. 223. Limited administrative spending to 5% of a school district's budget		
April (Field poll)	55	26
May (Field poll)	40	38
June (election returns)	46	55
Prop. 226. Required member permission for unions to make political contributions		
April (Field poll)	66	26
May (Field poll)	51	37
June (election returns)	47	53

Field poll numbers and election returns were taken from the *Los Angeles Times* web page.

2.2 Information

While ideal points of the interest group and representative are common knowledge, the voter's ideal point is known only by the voter and he has no way of conveying this information to the other parties. One interpretation is that v is the ideal point of the median voter—it is uncertain from the viewpoint of the interest group and representative due to their limited information or randomness in turnout. A second formally equivalent approach is to assume that even the voter himself is unsure what policy is in his best interest until after he hears the pro and con arguments during the campaign.

The assumption that voter preferences are uncertain from the viewpoint of the representative and interest group is an important point of departure from the existing literature.[11] Its validity ultimately hinges on the empirical performance of the model as a whole, but it may be useful to indicate why we think it is reasonable. In practice, there are many ways representatives can try to determine voter preferences, such as opinion polls and town meetings. However, these practices are likely to reduce uncertainty, not eliminate it completely. As an illustration, Table 1 reports a sequence of monthly opinion polls on two California ballot propositions from June 1998. As can be seen, the polls initially indicated strong support for both measures, yet both failed when the votes were actually cast. It appears that voters changed their minds after hearing the arguments during the campaigns. We believe that this kind of (irreducible) ex ante uncertainty is present for many issues—until the voters hear the arguments, it is not certain what policy they prefer.

2.3 Sequence of Actions

Under the MR institution, resource allocation begins and ends with the representative selecting a policy. All parties then take their payoffs.

11. For example, the models of Lupia (1992) and Gerber and Lupia (1995) assume that voters are uncertain about the utility of a proposed initiative but that legislators and interest groups know what preferences the voter would have if informed. Our assumption is consistent with the notion that no actor knows how the voter will respond to information produced during the campaign.

Under the DR institution, the sequence is more involved (see Figure 1): (i) an interest group arrives with ideal point i; (ii) the representative chooses a policy x_r; (iii) the interest group decides whether to accept x_r or pay the cost C and propose an initiative policy x_i; and (iv) if a counterproposal is made, the voter's preferences are determined, and he decides between x_r and x_i. The DR sequence incorporates the regularity that interest groups take their cases to the representatives before going forward with a costly initiative. Therefore, when representatives make their policy choices, they know the nature of the threat that waits in the wings.[12]

3. Equilibrium Behavior of the Voter and Interest Group

We begin by characterizing equilibrium behavior for the voter and interest group under DR resource allocation. If an initiative is proposed, the last actor is the voter. Faced with a choice between x_i and x_r, he chooses the policy closest to his ideal point. The proposal that is smaller in absolute value will be supported by the moderate voter type and one of the extreme types (we ignore the dominated strategies of $|x_i| > \theta$ and $|x_r| > \theta$.) Therefore the probability that x_i defeats x_r is[13]

$$p(x_i, x_r) = \begin{cases} \sigma & \text{if } |x_i| > |x_r|; \\ 1-\sigma & \text{if } |x_i| \leq |x_r|. \end{cases} \tag{1}$$

The interest group decides whether to send an initiative to the voter, taking into account the likelihood of success given by Equation (1). The expected payoff from proposing an initiative is $E[I_{\lambda=1}] = -p|x_i - i| - (1-p)|x_r - i| - C$. The interest group's optimal proposal is then

$$x_i^* = \begin{cases} -x_r & \text{if } [i = -\theta \text{ and } x_r \geq z] \text{ or } [i = \theta \text{ and } x_r \leq -z]; \\ i & \text{otherwise;} \end{cases} \tag{2}$$

where $z \equiv \theta\sigma/(2-3\sigma) > 0$. The interest group is best off proposing either its ideal point or the policy that makes the moderate voter indifferent between the initiative and the representative's policy. The interest group's payoff from accepting the representative's policy is $I_{\lambda=0} = -|x_r - i|$. Then the group does not initiate when

$$I_{\lambda=0} - E[I_{\lambda=1}] = C - p|x_r - i| + p|x_i^* - i| \geq 0. \tag{3}$$

12. The ability of the representative to deter an initiative (see below) depends on the representative's ability to commit to a policy. If the representative could costlessly adjust his policy choice after the interest group moves, commitment would be impossible. In practice, policy changes may be costly for representatives in terms of time and in terms of unhappy constituents who made decisions based on the previous policy. Our model can be thought of as exploring the case where those costs are prohibitively large.

13. The fact that the interest group wins if the voter is indifferent is necessary in a subgame perfect equilibrium. Any other voter strategy (including mixed strategies) would lead the group to propose a policy infinitesimally closer to the indifferent voter type, destroying the equilibrium.

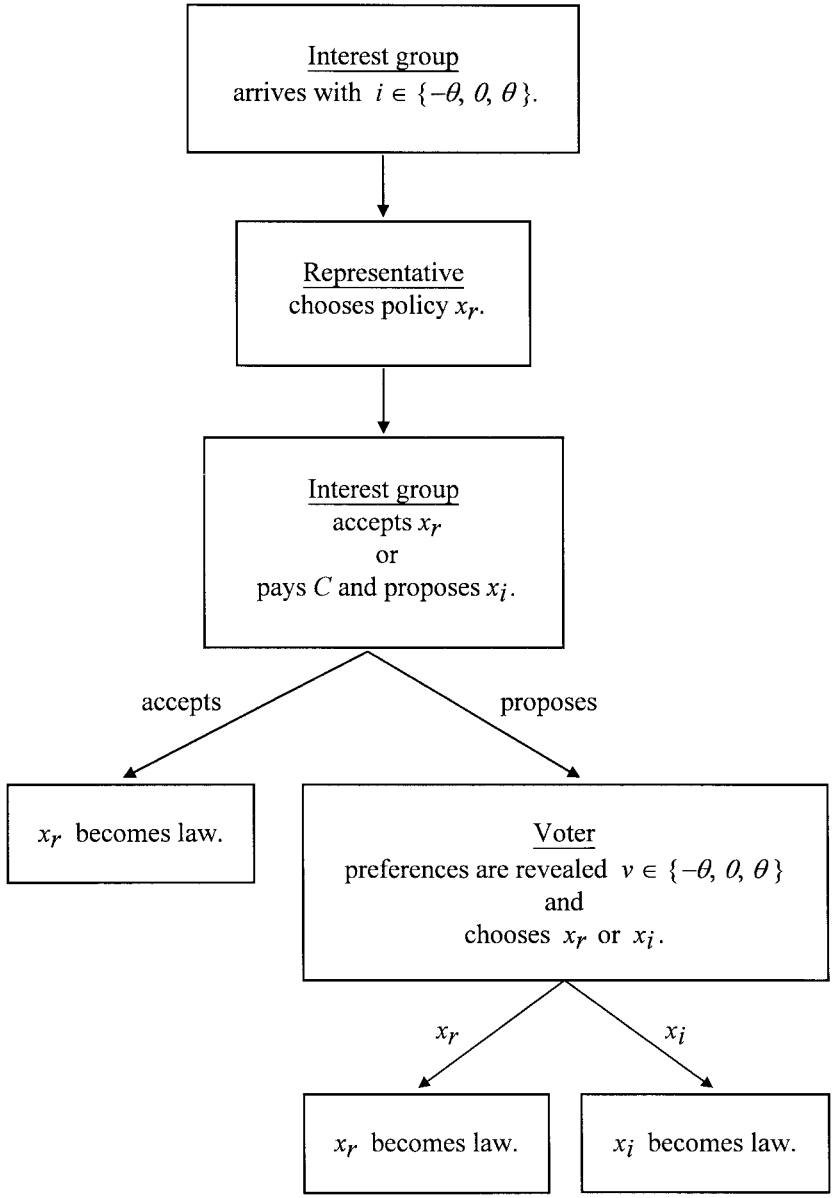

Figure 1. Sequence of actions under direct-and-representative allocation.

Equation (3) defines the set of representative policy choices that are close enough to the interest group's ideal point to deter an initiative. Specifically, if $i = \theta$ $(i = -\theta)$ then deterrence is achieved with $x_r \geq \theta - C/\sigma$ $(x_r \leq C/\sigma - \theta)$; and if $i = 0$ then deterrence is achieved with $|x_r| \leq C/(1-\sigma)$. We shall assume that $C < \theta\sigma$, which implies that an extreme interest group is not deterred by a moderate policy, $x_r = 0$.

4. Benefits and Costs

This section isolates the basic trade-offs between MR and DR resource allocation from the voter's perspective. The main trade-offs can be seen by studying the polar extremes $\alpha = 0$ and $\alpha = 1$.

4.1 Perfect Legislative Agent ($\alpha = 0$)

First, we consider $\alpha = 0$, in which case $R = E[V]$ and the representative's interests are perfectly aligned with the voter's. Because the representative does not observe v, he can maximize only the *expected* value of V.

4.1.1 MR and DR Resource Allocation.

Under the MR institution, whatever policy the representative proposes becomes law. Given that v is distributed symmetrically around zero, the optimal policy is $x_r^* = 0$. This delivers an expected payoff to the voter of $-2\theta\sigma$.

Now suppose that initiatives are available. The representative's optimal strategy is to select the policy that complements the initiative and provides the voter with the most attractive menu of choices when the initiative comes to a vote. If $i = 0$, then $x_i^* = 0$; the interest group proposes the representative's optimal monopoly policy. The representative then maximizes the voter's expected utility with a positive-value policy that solves $\min_{x_r} \sigma\theta + \sigma|\theta - x_r|$, giving $x_r^* = \theta$. Similarly $x_r^* = -\theta$ is the best negative-value policy. The payoff in either case is $E[V] = -\theta\sigma$.

When $i = \theta$, the interest group chooses $x_i^* = \theta$ if $x_r > -z$, and $x_i^* = -x_r$ otherwise. Then the representative chooses x_r to solve

$$\min_{x_r} \begin{Bmatrix} -\sigma(\theta + x_r) - (1 - 2\sigma)|x_r| & \text{if } x_r > -z \\ -2\sigma(\theta + x_r) - (1 - 2\sigma)|x_r| & \text{if } x_r \leq -z \end{Bmatrix}.$$

The solution is $x_r^* = 0$ if $\sigma \leq 1/3$, and $x_r^* = -\theta$ if $\sigma \geq 1/3$, which gives a payoff of $E[V] = -\theta \min\{\sigma, 1 - 2\sigma\}$. In words, the representative chooses the policy most likely to be the voter's ideal point from among the positions not taken by the interest group. The case of $i = -\theta$ is symmetric.

4.1.2 Comparison of the Institutions.

The difference between the voter's expected utility under DR and MR given i,

$$E[V|DR] - E[V|MR] = \begin{cases} \theta\sigma & \text{if } i = 0 \text{ or } \sigma \leq 1/3 \\ \theta(4\sigma - 1) & \text{if } i \in \{-\theta, \theta\} \text{ and } \sigma \geq 1/3, \end{cases} \tag{4}$$

is nonnegative. In the absence of an agency problem, the voter is never worse off when the initiative is available. This is because the representative uses the initiative to give the voter a second choice, which makes the adopted policy closer to the voter's ideal point. We summarize this in the following proposition.

Proposition 1. When there is no agency problem, the voter's expected utility is at least as high with DR allocation than with MR resource allocation.

4.1.3 Remarks. Proposition 1 is predicated on a benefit of DR allocation that has not been recognized in the literature, namely, that the voter is made better off simply by having a choice. Alternatively, the proposition can be seen as identifying a cost of MR allocation: even a well-intentioned representative may inadvertently choose a policy that the voter does not like. Because of this benefit, there is some value in having an initiative even when the representative tries to maximize the welfare of the median voter. This contrasts with the existing literature in which initiatives are beneficial only when there is an agency problem between the voters and representatives.

The analysis also suggests why a successful initiative may catalyze similar policy changes in other jurisdictions. For example, California's Proposition 13 is said to have "spurred" (Ladd and Tideman, 1981) and "started" (Magleby, 1984) a national taxpayer revolt. When an initiative passes, it reveals information about voter preferences. The information is likely to be particularly surprising when an extreme initiative passes. We expect a reaction from other jurisdictions for two reasons: a vote-maximizing representative will adjust his policy position toward the revealed preference, and interest groups will be more inclined to promote their favored policy if they discover it has a constituency. A similar argument might explain why initiative campaigns tell voters they can "send a message" by voting in favor.[14]

Equation (4) shows that DR becomes increasingly valuable relative to MR as σ rises, other things being equal. Intuitively, when the voter's preferences are more variable, the representative is more likely to choose the wrong policy so it is better for the voter to make the decision. This suggests that the DR institution provides the largest benefits to the voter in jurisdictions where representatives are rather uncertain about the voter's preferences. Thus we might expect DR to be more useful in a big heterogeneous city than a small homogeneous town if representatives know less about their constituents in the former than the latter, as seems plausible.[15] For the same reason we might expect DR decision making to be more beneficial in jurisdictions where (i) the population has undergone significant turnover, for example, due to immigration, (ii) the population is more heterogeneous demographically, and (iii) representatives are less informed, for example, where legislators have small staffs or are not professionals. If governments adopt efficient or vote-maximizing institutions (e.g., if Tiebout competition is present), then these observations could be recast as empirical predictions about which jurisdictions are likely to have DR decision making.

14. These implications distinguish our approach from models in which voters are uncertain about the policy consequences of a proposed initiative [for instance, Gerber and Lupia (1995)]. While the two approaches share some implications, in a model with policy uncertainty, nothing is learned about the voters from the outcome of an initiative election. Therefore, such models do not predict that successful initiatives are mimicked and they do not capture the notion that initiatives can be used to send a message to representatives.

15. In fact, the DR institution is more common in large cities than small cities (Matsusaka, 2001).

4.2 Ideological Representatives ($\alpha = 1$)

This section studies the case $\alpha = 1$, where the representative's utility is $R(x) = -|x - r|$.

4.2.1 MR and DR Resource Allocation.

Under the MR institution, the representative's optimal choice is to set the policy at his ideal point, $x_r^* = r$.

Under the DR institution, the representative may not set the policy at his ideal point. The representative knows that if he selects a policy that deters the initiative, the policy will stand, but if his policy does not deter then the interest group will propose an initiative x_i^* given by Equation (2), and the voter will choose between them. Then the representative's problem is

$$\max_{x_r} E[R] = \begin{cases} p(x_i^*, x_r)R(x_i^*) + (1 - p(x_i^*, x_r))R(x_r) & \text{if } x_r \text{ does not deter;} \\ R(x_r) & \text{if } x_r \text{ deters.} \end{cases}$$

Clearly, if the representative can deter by choosing his ideal point, that is what he will do. Otherwise deterrence is costly to the representative and may not be optimal.

We first characterize the representative's optimal nondeterring policy and then turn to the issue of deterrence. Lemma 1 states the optimal policies. The proof, which is fairly mechanical, is given in the appendix.

Lemma 1. If the representative does not deter the initiative, then $x_r^* = r$ except when (a) $r = 0$, $|i| = \theta$, and $\sigma \leq 1/3$, or (b) $|r - i| = 2\theta$. When (a) or (b) hold, $|x_r^*| = z$.

Now we consider deterrence. The representative would like to push the policy toward his ideal point, but if he sets the policy too far from the interest group's ideal point, an initiative will be proposed. Because of uncertainty about the voter's preferences, the initiative may pass, and the representative may end up with a policy he particularly dislikes. The solution is to deter when i is close to r and allow the initiative when i and r are far apart. Intuitively, when i and r are close, the representative only needs to move a little from his ideal policy to deter. When i and r are distant, the representative has to choose a policy far from his ideal point to deter, and he would rather take his chances with the initiative. As this suggests, there is a critical distance between the two ideal points, below which deterrence is optimal. The critical values of the region are straightforward to calculate. We state the next lemma and consign the proof to the appendix.

Lemma 2. The representative chooses a deterring policy if $|r - i| \leq C/\Sigma$, where

$$\sum = \begin{cases} \sigma(1 - \sigma) & \text{if } |r| = \theta \text{ and } i = 0; \\ \sigma(1 - \min\{\sigma, \sigma/(2 - 3\sigma)\}) & \text{if } r = 0 \text{ and } |i| = \theta; \\ \sigma(1 - \sigma(1 - 2\sigma)/(2 - 3\sigma))/2 & \text{if } r = -i. \end{cases}$$

An important property that we employ below is that Σ is increasing in σ.

4.2.2 Comparison of the Institutions. We can now compare the voter's expected utility under MR and DR allocation when there is an agency problem. First, when the representative's ideal point deters, availability of the initiative has no effect. The representative chooses $x_r^* = r$ regardless of whether the initiative is available, and an initiative is not proposed.

The second case is when $r \neq i$ but the representative finds it optimal to deter the initiative. Although the voter does not benefit from having a second choice, under DR the threat of a counterproposal causes the representative to choose a policy closer to i than under MR. When the interest group is moderate, $i = 0$, and the representative is extreme, $r = \theta$, the representative chooses $x_r^* = \theta$ under MR and chooses $x_r^* = C/(1-\sigma)$ under DR. The initiative is deterred but the voter ends up with a more appealing policy because of the initiative threat. This is the conventional benefit of direct decision making: by breaking the representative's agenda-setting monopoly, he can be forced to adopt more favorable policies.

The most interesting case is when deterrence is optimal, the interest group is extreme, $i = \theta$, and the representative is moderate, $r = 0$. Under MR, the representative chooses $x_r^* = 0$, while under DR he chooses $x_r^* = \theta - C/\sigma$. Here the threat of an initiative causes the representative to choose a policy *less* appealing to the voter. As a result, the voter is worse off under DR than MR. This captures an important cost of direct decision making: by taking away the representative's agenda-setting monopoly, DR may lead a moderate representative to adopt more extreme policies to accommodate an extreme interest group.

Finally, when the representative chooses not to deter, the initiative gives the voter a valuable choice. This tends to make DR better for the voter than MR. The exception is when $r = 0$ and $\sigma < 1/4$. Under these conditions the voter finds the menu of choices under DR (z and $-z$) less attractive than the policy $x_r^* = 0$ under MR.

We summarize these results in the next proposition.

Proposition 2. When there is an agency problem, the voter is at least as well off with DR than MR decision making, except when the representative is moderate, the interest group is extreme, and either (a) $C > \theta\Sigma$, or (b) $C < \theta\Sigma$ and $\sigma < 1/4$.

4.2.3 Remarks. These results highlight both an important benefit and cost of DR resource allocation. The benefit is that an extreme representative can be forced to adopt a more moderate policy by an initiative threat from a moderate interest group. This is the benefit most commonly attributed to the DR institution. But there is a cost: a moderate representative can end up adopting a more extreme policy when threatened by an extreme interest group. Of interest, this suggests that if the representative process works well enough to elect a moderate representative, the DR institution can hurt.

The conventional view is that the initiative is a useful tool for voters to address agency problems with their representatives. In a sense, Propositions 1

and 2 taken together stand this view on its head. Proposition 1 shows that DR always helps when there is *not* an agency problem, while Proposition 2 shows that DR can hurt only when there *is* an agency problem.

Proposition 2 indicates that the initiative is always beneficial (or at worst has no effect) when the representative's preferences are extreme relative to the voter's preferences. This suggests that it may not have been coincidental that most states adopted the initiative in the early 20th century amidst the Progressive movement. Historians describe this as a period in which it was widely believed that the state capitals were under the control of special interests.[16] More generally we would expect the DR institution to be more common when representatives have extreme preferences relative to the voters, at least insofar as institutions develop in response to voter demands. This implication could be examined empirically by identifying jurisdictions where representative preferences are likely to diverge from voter preferences, and by testing if they use DR or MR allocation. For example, theory suggests that representatives are likely to have "extreme" preferences (i) in states where gerrymandering distorts the representation process, (ii) in states with a large partisan bias (measured as the difference between the percentage of seats controlled by the majority party and the percentage of votes its candidates received), (iii) as the number of seats in a legislature increases [see Weingast, Shepsle, and Johnsen (1981) and Gilligan and Matsusaka (1995, 2001)] (iv) in jurisdictions that use district elections instead of at-large elections, and (v) in jurisdictions where elected officials become entrenched (long terms, no term limits, etc.).

Proposition 2 also implies that DR is costly only when there is not too much uncertainty about the voter's preferences. To see this, note that DR hurts the voter when either condition (a) or (b) holds. When condition (a) is satisfied, a moderate representative chooses to deter the initiative (to the detriment of the voter). Because Σ is increasing in σ, the condition holds for sufficiently small σ. Intuitively, as σ falls, the extreme interest group is in a weaker position, making it easier and hence more likely for the representative to deter. Condition (b) obviously holds for sufficiently small σ as well (that is, $\sigma < 1/4$). When this condition is satisfied, the moderate representative allows the initiative to occur, but moves away from the interest group in order to moderate the group's proposal. The representative's policy adjustment, which hurts the voter, is effective in moderating the interest group only when the group's position is weak, that is, when σ is small. In either case, as we saw when $\alpha = 0$, DR is valuable when preference uncertainty is high.[17]

16. For example, see pages 54–59 in Cronin (1989).

17. A study of constitutions in 102 Connecticut towns by Sass (1991) bears some relation to this implication. He finds that towns with more unequal incomes (which he interprets as greater diversity of voter preferences) are more likely to have a town meeting form of government than an MR government. A town meeting government is not the same as our notion of DR decision making, but it has in common that it breaks the agenda-setting monopoly of elected officials by allowing ordinary citizens to make proposals to the electorate at large.

The conditions under which MR is good for the voter are summarized in the following corollary.

Corollary 1. MR is better for the voter than DR when (a) the representative is moderate, (b) the interest group is extreme, and (c) preference uncertainty is low.

4.2.4 Multiple Interest Groups. Our model considers a single interest group. It is natural to wonder whether the main results extend to an environment with multiple interest groups. Here we sketch a simple multigroup extension to illustrate that the key trade-offs are fairly robust.

Suppose now that there are two interest groups, with ideal points i_1 and i_2. We shall focus on a situation where the representative is moderate ($r = 0$) and the interest groups are opposing and extreme ($i_1 = \theta$ and $i_2 = -\theta$). This is the most interesting case because in the analysis above DR decision making is costly only when the representative is moderate. In order to highlight the representative's behavior, we restrict the interest groups' strategic choices by assuming that if a group does go forward with an initiative, it must propose a policy equal to the group's ideal point.[18]

The modified sequence of the game is as follows. First, the two interest groups appear and their ideal points are known to all. The representative then chooses a policy. After this, each group can pay a cost (we assume their costs are identical) and propose an initiative. Because we look at Nash equilibria, it does not matter if the groups make proposals simultaneously or sequentially. Finally, the voter decides from among the available options.

To understand when the representative chooses to deter, we need to compare the payoff from deterrence and nondeterrence. Consider nondeterrence first. The equilibrium proposals are $x_r^* = 0$, $x_{i1}^* = \theta$, $x_{i2}^* = -\theta$. To see that this constitutes a Nash equilibrium, note that the voter chooses the policy equal to whatever his ideal point turns out to be. If the representative were to select a different policy than the equilibrium prescribes, the probability of its approval would be the same, but the payoff from its acceptance would be lower (since it is farther from his ideal point). Simple calculation gives $E[R \mid \text{no deter}] = -2\sigma\theta$.

Now consider deterrence. Obviously the representative can deter at most one of the groups, here taken to be group 1. What policy choice, x_d, will deter group 1? Group 1's decision whether to initiate depends only on what happens when $v = \theta$, since the ultimate policy is independent of its actions when $v = -\theta$ and $v = 0$. If the group does go forward with an initiative, it proposes $x_{i1} = \theta$ and pays the cost C. Then

$$E[I_{1,\lambda=1}] - E[I_{1,\lambda=0}] = -C - \sigma|\theta - x_d|,$$

18. The effect of this assumption is to rule out the possibility that the representative moves away from an interest group in order to attract a moderate initiative. This case is more involved analytically, but the main implications still go through.

and the optimal deterring policy is $x_d = \theta - C/\sigma$. This is the same as with only one interest group. Simple calculation gives $E[R \mid \text{deter}] = C(1-\sigma)/\sigma - \theta$.

Finally, we can compare the representative's payoff from deterrence and nondeterrence:

$$E[R \mid \text{ deter}] - E[R \mid \text{ no deter}] = C(1-\sigma)/\sigma - (1-2\sigma)\theta.$$

Deterrence is optimal if $\theta \leq C/\Sigma^*$, where $\Sigma^* = \sigma(1-2\sigma)/(1-\sigma)$.

Several things are worth noting. First, deterrence can be optimal for some parameter configurations. Since the voter is best off when both initiatives occur (the voter is guaranteed to end up with the policy at his ideal point when this happens), it follows immediately that deterring behavior by the representative can only make the voter worse off. One of our main results, then, continues to hold: the voter can be worse off under DR than MR decision making. The intuition is the same as above. Deterrence works against the voter's interest in two ways, by foreclosing a valuable opportunity to choose, and by making the representative more extreme.

A second observation is that the potential cost of DR continues to appear when the representative is moderate. Moreover, deterrence, the source of the potential cost, is more likely with multiple interest groups than with a single group. The reason is that when making a deterring proposal, the representative weighs the benefit of deterrence against the cost of distorting his policy from what it otherwise would have been. With multiple groups, the representative's policy is less likely to stand (because he must cede the policy choice to the nondeterred group in one state of the world), which lowers the opportunity cost of distorting his own policy choice. Thus a moderate representative is more likely to engage in costly deterrence with multiple groups. The flip side of this is that an extreme representative is less likely to respond to multiple interest groups because the potential gains are lower. A more complete analysis is needed, but the results here suggest that the benefits of DR are likely to be lower and the costs higher as the number of interest groups increases.

Third, with multiple interest groups, the effect of a change in the amount of voter uncertainty is ambiguous. With one interest group we could show that deterrence is more likely when σ is small. With two groups, the relation is nonmonotonic (formally, Σ^* is nonmonotonic in σ). This occurs because with two interest groups the deterrence proposal may still be overturned by an initiative of the nondeterred group. This probability is increasing in σ.[19] Thus, although the effect of DR continues to be conditional on the amount of preference uncertainty, the empirical predictions are not as stark.

19. However, Σ^* is only declining in σ for large values ($\sigma > 0.293$). Thus the three voter types must be almost equally likely to reverse the comparative static for the one group case.

5. Other Implications

5.1 Policy Consequences

As noted above, empirical research shows that DR decision making yields systematically different policy outcomes than MR decision making. Here we note the model's policy predictions. An important point is that the effect of decision-making institution is *conditional* on the representative and interest group ideal points, and the amount of uncertainty. We first state the main results and then discuss the underlying logic.

Proposition 3. (a) DR (compared to MR) makes the expected policy of the moderate representative more extreme and the expected policy of the extreme representative more moderate. (b) The DR institution has a more extreme (less moderating) effect on policy when preference uncertainty rises.

The logic behind part (a) is this: First, if the representative is moderate, he will set the policy at $x = 0$ under the MR institution. Under the DR institution, the expected policy will be pulled in the direction of the interest group, and therefore become more extreme, either because the representative adjusts his choice to deter an initiative, or because the interest group's (extreme) initiative has some chance of winning. If the representative is extreme, on the other hand, the DR institution will result in more moderate policies by causing the representative to choose a more moderate deterring policy, or by opening up the possibility that a moderate initiative is approved.

Part (b) of Proposition 3 underlines the importance of preference uncertainty. If the representative is moderate, the DR institution leads to increasingly extreme policies as σ rises. If the representative is extreme, DR leads to more moderate policies, but they become less moderate as σ rises. The logic is the same in both cases. A high value of σ strengthens the position of the extreme interest groups and weakens the moderate group. Thus the representative must be more accommodating (more extreme) to deter the extreme groups, and less accommodating (less moderate) to deter the moderate group. If, on the other hand, the representative chooses not to deter, a high value of σ makes it more likely that the extreme proposal will be approved.[20]

Proposition 3 is testable in principle if the positions of the agents and the amount of preference uncertainty can be measured. We illustrate several approaches in Section 6.

5.2 Number of Initiatives

In some states, like California and Oregon, voters face dozens of initiatives each decade while in other states, like Wyoming, initiatives are extremely rare. How can we account for the variation in the number of initiatives among those jurisdictions where direct decision making is available?

The model points in several directions. An initiative occurs when the representative chooses not to deter, which means that the number of initiatives

20. This is a sketch of the (omitted) proof of Proposition 3.

depends on whether or not $|r-i| \leq C/\Sigma$ (see Lemma 1), holding constant the representative's and interest group's ideal points. The representative deters when the inequality is satisfied. It follows that more initiatives will be allowed when C is low and σ is high (recall that Σ is increasing in σ). The result for C is not surprising. The result for σ implies that initiatives are more common when the representative faces greater uncertainty about constituent preferences. Uncertain preferences increase an extreme proposal's electoral prospects. This makes it easier to deter a moderate group and harder to deter an extreme group. If the representative is moderate, an increase in preference uncertainty reduces his expected utility from deterrence and from nondeterrence (because he is more likely to lose the initiative election). If the representative is extreme, it increases his expected utility from both deterrence and nondeterrence. In both cases, the former effect dominates the latter.

One way to think about preference uncertainty, as discussed above, is as an attribute of a jurisdiction. The model predicts that there will be more initiatives in jurisdictions with greater uncertainty about preferences. This may be part of the reason why initiatives are used so often in diverse California and so rarely in homogeneous Wyoming. We provide some direct evidence on this in Section 6. Another way to think of preference uncertainty is as an attribute of an issue. Some issues might present the representative with very little uncertainty about the voter's preferences, for example, whether or not to locate a nuclear waste dump nearby. Other issues might be fraught with uncertainty, for example, distributional issues concerning government spending and taxes. The model predicts that the latter type of issue is more likely to appear on initiatives than the former type of issue.[21]

The relation between the number of initiatives and the position of the representative depends on C and σ. There are three regions of interest. The first is a sufficiently large C and/or a sufficiently small σ so that $C > \theta\sigma(1-\min\{\sigma, \sigma/(2-3\sigma)\})$. In this case, a moderate representative deters all interest groups; an extreme representative deters a moderate interest group and a like-minded extreme group, but finds it too costly to deter opposite extreme interest groups. Therefore initiatives are more common when the representative is extreme. This situation captures the view that a large number of initiatives is symptomatic of dissatisfaction with elected representatives. For example, Matsusaka (1992) shows that the number of initiatives in California was particularly high in the 1920s and 1980s, two periods that featured significant discontent with the state legislature.[22]

However, the model also indicates that initiatives can be common even when the representative is moderate. This happens in an "intermediate" region where C and σ satisfy $\sigma(1-\sigma) < C < \theta\sigma(1-\min\{\sigma, \sigma/(2-3\sigma)\})$. Then the moderate representative deters only the moderate interest

21. Matsusaka (1992) documents such a pattern for California and North Dakota.

22. In the 1920s, dissatisfaction was centered on the influence of the Southern Pacific Railroad. In the 1980s, a Democratic gerrymander of the state resulted in Democrats controlling roughly two-thirds of the seats in the legislature while polling only about half of the votes.

group, while the extreme representative deters all but an opposite extreme interest group. Therefore a moderate representative is more likely to attract an initiative than an extreme representative.

In the third region, $C < \sigma(1-\sigma)$, only interest groups with the same ideal point as the representative are deterred. The number of initiatives depends on the frequency of appearance of different types of interest groups.

The theoretical results are summarized in the following proposition.

Proposition 4. (a) More initiatives appear when the cost of initiating is low and uncertainty about voter preferences is high. (b) When C is sufficiently large/σ is sufficiently small, more initiatives appear when the representative is moderate; when C and σ take on "intermediate" values, more initiatives occur when the representative is extreme; and when C is sufficiently low/σ is sufficiently high, the number of initiatives depends on the distribution of interest group types.

6. Some Evidence

This section reports some evidence designed to shed light on the empirical relevance of the model. First, we study the factors that determine how often initiatives are used in a state. This offers a direct test of the hypotheses identified in Proposition 4. Second, we study the determinants of state fiscal policy. Central to our theory is the idea that the effect of the initiative is conditional on the amount of uncertainty about voter preferences and the relative preferences of voters and their representatives. We investigate whether such a dependence can be found in the data.

6.1 Determinants of the Number of Initiatives

Proposition 4 states that initiatives should be more common in states where the cost of initiating is low and uncertainty about voter preferences is high. We test these two predictions by studying initiative activity from 1959 to 1993 in the 22 states that allowed initiatives during the period.[23] The dependent variable in the analysis is a count of the number of initiatives, so we estimate Poisson regressions instead of ordinary least squares. Our empirical framework assumes that the Poisson parameter λ is determined according to

$$\log \lambda_{jt} = A \times \text{cost variables}_{jt} + B \times \text{uncertainy variables}_{jt} + C \times \text{controls}_{jt},$$

where j indexes states, t indexes time, and A, B, and C are parameters to be estimated. The Poisson distribution has the feature that the expected number of initiatives conditional on the explanatory variables is simply λ. Therefore

23. We exclude Illinois, which adopted the initiative in 1970, because the courts have so restricted its use as to make it essentially unavailable. Mississippi adopted the initiative in 1993, so it does not appear in the sample.

the coefficients represent approximately the percentage change in the number of initiatives given a unit increase in the explanatory variables.[24]

The dependent variable was constructed from a list of all state-level initiatives in the United States compiled by the Initiative & Referendum Institute (Washington, D.C.).[25] For each state, we calculated the total number of initiatives over five-year intervals.[26] The periods were centered on census years to the extent possible, giving seven time periods, $t =$1959–1963, 1964–1968, . . . ,1984–1988, 1989–1993. Twenty states allowed initiatives in 1960, increasing to 22 states by 1990, so $i = 1, \ldots, 22$ by 1990. The basic sample contains 148 observations.

The model does not tell us exactly how to measure the cost of proposing an initiative and uncertainty about voter preferences. Our strategy is to identify several variables that theory or intuition suggest might be correlated with the variables we want, and let the data tell us if they are appropriate. We do not expect all of the variables to be empirically important, but unless some of them matter, the model's operational relevance is questionable.

Three variables are used to capture the cost to an interest group of proposing an initiative.

Signature requirement. In order for a group to qualify an initiative for the ballot, it must collect a constitutionally determined number of signatures from citizens in the state. The required number of signatures is typically stated as a percentage of the total number of votes cast in the most recent gubernatorial election. It seems clear that as the signature requirement increases, holding constant the population of the state, the cost of using the initiative rises. The variable we use is the signature requirement as a percent, taken from Matsusaka (1995), and we also include state population directly in the regressions in order to "hold it constant."

Dummy = 1 for geographic dispersion requirement. Some states require signatures to be collected broadly across the state rather than from just a few areas. For example, Massachusetts prohibits more than 25% of the signatures coming from a single county. A geographic dispersion requirement is expected to increase the cost of qualifying an initiative.

Circulation period. In most states, petitioners must collect the required signatures within a specified period of time, called the circulation period. If insufficient signatures are collected within the time period, the signature collection process must start again from scratch. We expect that the cost of proposing an initiative rises as the circulation period becomes shorter.[27]

24. Cameron and Trivedi (1998) contains a comprehensive review of count data techniques.

25. We thank Dane Waters at the institute for providing the initiative data, as well as information on signature collection times and geographic dispersion requirements.

26. We chose to sample at 5-year intervals because our explanatory variables do not show much variation on a year-to-year basis. The results do not change much if we adjust these five-year windows or run individual cross sections (except for the obvious loss of efficiency in the later).

27. Arizona, Ohio, Oregon, and Utah have unlimited circulation periods. We coded them as 4-year (1,460-day) circulation periods, which is otherwise the maximum period in the sample. None of our results depend in any important way on the coding of these states.

We now turn to the difficult issue of how to operationalize uncertainty about voter preferences. One approach would be to utilize state-specific polling information, but the necessary data are not available for more than a couple of states. Instead, we adopt an approach based on the premise that jurisdictions with more heterogeneous populations are likely to have more uncertain election outcomes. This premise deserves some comment. In a homogeneous population, the only uncertainty is how the dominant group of voters will come down on the issue. However, in heterogeneous jurisdictions, there is uncertainty about how any particular group of voters will vote and also about which group of voters will be pivotal. For example, consider a state evenly divided between rural and urban constituents. Interest groups and legislators must not only forecast how each type of voter will vote but also which type will mobilize better and end up being pivotal.

Based on the idea that heterogeneity gives rise to uncertainty, we use five variables to account for the amount of uncertainty about voter preferences.

Population. The first variable, admittedly crude, is the population of the state. We expect that it is harder to know what the voters want in a populous state like California than a thinly populated state like Wyoming.

Urban-rural. The second variable is the fraction of the population living in a metropolitan area times the fraction that lives elsewhere. This variable attains its theoretical maximum when the population is evenly divided between rural and urban areas. We conjecture that as the urban and rural populations become more equal, uncertainty about the (median) voter's preferences rises.

Ethnic/race index. This variable is a Hirfindahl index calculated by squaring and then summing the fraction of the population that is (i) black, (ii) Hispanic, and (iii) neither black nor Hispanic. As the index increases, the population becomes more homogeneous.

Income and poverty rate. We include two variables that together are intended to capture the dispersion of income, the average income in the state, and the fraction of the state's population under the poverty line. An increase in one variable holding constant the other implies a rise in the dispersion of income.[28] The conjecture is that income inequality leads to preference uncertainty.

Finally, as control variables we include a dummy for each of the time periods, and four region dummies, one each for the West, South, Northeast, and Midwest. Table 2 reports summary statistics for the variables and gives the rest of the data sources.

The regression estimates are presented in Table 3. Each column is a regression. The main entry is the coefficient estimate, and the standard error is in parentheses beneath it.

28. Note that for a pure income effect, the coefficients on per capita income and the poverty rate would have opposite signs, while an inequality effect hypothesizes that both coefficients have the same sign.

Table 2. Poisson Regressions: Summary Statistics and Variable Definitions

	Mean	S.E.	Minimum	Maximum	*N*
Panel A. Number of initiatives in a state					
Full sample (all periods, all states)	4.7	5.2	0	29	148
Period 1. 1959–1963	1.9	2.0	0	6	20
Period 2. 1964–1968	2.5	2.9	0	10	20
Period 3. 1969–1973	2.5	3.1	0	11	21
Period 4. 1974–1978	7.9	6.0	0	23	21
Period 5. 1979–1983	4.9	3.2	0	14	22
Period 6. 1984–1988	6.8	7.6	0	29	22
Period 7. 1989–1993	6.4	5.8	0	25	22
Panel B. Cost variables					
Signature requirement: number of signatures required to put petition on ballot, as a percent of votes in previous gubernatorial election	7.47	2.67	2	15	148
Geographic dispersion requirement: dummy = 1 if state requires a geographic dispersion of signatures	0.45	0.50	0	1	148
Circulation period: number of days allowed to collect signatures	570.1	482.3	90	1,460	148
Panel C. Uncertainty variables					
Population: logarithm of population	14.5	11.1	12.3	17.2	148
Urban-rural: fraction of population living in metropolitan area times fraction living elsewhere	0.18	0.06	0.01	0.25	148
Ethnic/race index: Hirfindahl based on fraction of population black, Hispanic, and neither	0.84	0.12	0.52	0.99	108
Income: real income per capita in thousands of 1990 dollars	12.7	2.9	5.9	21.8	148
Poverty rate: fraction of population with income below the poverty line	0.14	0.06	0.08	0.48	148

The number of initiatives and cost variables were provided by the Initiative & Referendum Institute (Washington, D.C.) and supplemented with information from state constitutions. The data for the uncertainty variables were collected from various issues of *Governmental Finances*, *State Governmental Finances*, *State and Metropolitan Area Data Book*, and *Statistical Abstract of the United States*, all publications of the U.S. Census Bureau (Washington, D.C.).

Table 3. Poisson Regressions: Relation Between Number of Initiatives in a State and Variables Proxying for the Cost of Proposing Initiatives and Uncertainty about Voter Preferences

	(1)	(2)	(3)
Signature requirement	−0.22***	−0.22***	−0.21***
	(0.02)	(0.02)	(0.02)
Dummy = 1 if state requires	−0.44***	−0.46***	−0.52***
geographic dispersion of signatures	(0.12)	(0.12)	(0.11)
Circulation period in days[a]	0.03	0.02	0.00
	(0.13)	(0.13)	(0.11)
Population (logarithm)[a]	0.32***	0.30***	0.33***
	(0.09)	(0.10)	(0.06)
Urban-rural	3.93***	3.66***	3.97***
	(1.40)	(1.59)	(1.24)
Ethnic/race index	0.12	0.22	—
	(0.75)	(0.76)	
Income	29.69	7.33	20.98
	(39.21)	(41.60)	(33.44)
Poverty rate	3.30	1.76	3.68**
	(3.12)	(3.45)	(1.75)
Pseudo-R^2	0.709	0.667	0.681
Observations	108	101	148

Each column contains estimates from a Poisson regression. The main entries are the coefficients, and the standard errors are in parentheses. The dependent variable is the number of initiatives in a state in a given five-year period. The sample runs from 1959 to 1993. All regressions include time dummies for each five-year period and four region dummies (Midwest, Northeast, South, West), but those coefficients are not reported. Significance levels are indicated by (*) 10%, (**) 5%, and (***) 1%. The regression in column (2) excludes observations for California. Variables are defined in Table 2.

[a] Coefficients and standard errors are multiplied by 1,000 for readability.

The regression in column (1) contains the main results. Two of the cost variables are negative, as predicted. A higher signature requirement and a geographic dispersion requirement reduced the number of initiatives that appeared in a state. Both coefficients are different from zero at greater than the 1% level. The circulation period does not have a measurable effect on the number of initiatives, which suggests that it might not be an important determinant of the cost of proposing an initiative.

The significant coefficients on two of the uncertainty variables lend support to the model as well. States with larger populations and more evenly balanced urban and rural populations have more initiatives. Both coefficients are statistically significant at greater than the 1% level. The coefficients on the income dispersion variables are the expected sign but are not distinguishable from zero at conventional levels of significance. The ethnic/race index coefficient takes the wrong sign but is small and insignificant. One interpretation is that income dispersion and racial/ethnic heterogeneity do not give rise to relevant uncertainty about voter preferences.[29]

29. The significance levels on the income dispersion and racial/ethnic index are similar even if the other two uncertainty variables are deleted, suggesting that their insignificance is not caused by a high correlation with the population and urban-rural variables.

California looms large in the public consciousness when it comes to direct legislation, and it was the scene of the largest number of initiatives during the sample period. Because California had so many initiatives and is also a large diverse state, it is natural to wonder if the results are driven by California. The regression in column (2) addresses this question by reestimating the regressions after deleting California from the sample. As it turns out, the results do not depend on California in any important way. The coefficients on the signature requirement and geographic dispersion variables are virtually unchanged, and remain significantly negative. More important, state population and the urban-rural variables change only slightly, and remain significantly positive.

The census did not collect information on Hispanics prior to 1970. As a result, we are unable to calculate the ethnic/race index for the first two sample periods and are forced to drop 40 observations when we include the index. The regression in column (3) omits the ethnic/race index so we can take advantage of all observations in the sample.

Again, the results are virtually unchanged. The two cost variables remain negative and different from zero at greater than the 1% level, and the two uncertainty variables remain positive and statistically significant. The main difference in this regression is that the poverty variable is now significantly positive. We hesitate to make too much of a single regression, but this does provide a shred of support for the notion that higher income dispersion leads to more initiatives and is a source of preference uncertainty.

The findings appear to be robust, and taken together are generally consistent with the model.[30] As predicted by Proposition 4, there is a significant negative relation between the number of initiatives and two variables plausibly related to the cost of initiating, and there is a significant positive relation between initiative frequency and two variables plausibly related to preference uncertainty. In addition to lending some support to the theory, this evidence suggests that the objects in the model have empirical analogs.[31]

We also investigated a number of statistical issues that might complicate the inferences. One assumption of the Poisson regression model is that the conditional mean is equal to the conditional variance. If this condition is violated, the coefficient estimates will be consistent but the standard errors will not be consistent. For example, if initiatives beget initiatives so that they tend to cluster, the variance may exceed the mean. This would imply that the counts are "overdispersed." The summary statistics on the unconditional mean and standard deviation in Table 2 suggest that we might have

30. The main results are also robust to inclusion of variables indicating divided government, the partisan makeup of the government, and other demographics.

31. We also estimated specifications with a measure of partisan heterogeneity based on presidential voting in the state. This measure was computed identically to the rural-urban variable using Republican party vote shares across the previous three elections. Its inclusion had little consistent effect across specifications. We conjecture this may be because (i) it is highly multicollinear with our other measures of heterogeneity (urban-rural, income, and poverty rate) and (ii) most initiatives are not highly salient partisan issues.

an overdispersion problem, so we performed several diagnostics. First, we tested for overdispersion in the Poisson regressions using a test suggested by Cameron and Trivedi (1990) that involves regressing the estimated squared deviations of the Poisson model on the actual initiative counts. This test rejected equality of the conditional mean and variance, but the magnitude of the deviation was quantitatively small.[32] We then took a closer look at the data and determined that the rejection could be attributed to four observations. When we reestimated the regressions without these observations, the results were essentially unchanged. We also estimated negative binomial models for the three specifications in Table 3. The negative binomial nests the Poisson regression as a special case. The results again were almost identical, and we were unable to reject the hypothesis that the conditional mean and variance were the same.[33]

Another potential problem is serial correlation in the state "errors" over time. If such a correlation is present, the effective degrees of freedom would be less than we assume. To investigate this issue, we computed the residuals from the Poisson regressions and estimated the autocorrelations. The first-order autocorrelation never exceeded 0.1. We also checked to see if there were patterns in the "residuals" from any particular state. In no case were a state's residuals consistently positive or negative.

6.2 Fiscal Policy and the Initiative

A major implication of our article is that the effect of the initiative on the voter's utility and the policy is conditional on the amount of uncertainty about voter preferences and the relation between the voter's and representative's preferences. This stands in contrast to most of the empirical literature, which looks for unconditional effects of the initiative [e.g., Matsusaka (1995, 2000) and Gerber (1996)]. Here we provide some evidence to suggest that the effect of the initiative is in fact conditional on the factors we have emphasized.

Because it is difficult to measure the voter's utility, we do not pursue the implications of Propositions 1 and 2. Instead we focus on Proposition 3, which describes how the initiative affects the expected policy. As the proposition suggests, we expect the policy consequences of the initiative to depend on the relation between the amount of uncertainty about voter preferences and the preferences of the actors. Again, since the variables of interest cannot be observed directly, we shall use variables that are plausibly correlated with the objects in the model. Our results from the previous section help in this respect, because they suggest which variables seem to be capturing preference uncertainty.

We focus on fiscal policy, specifically the total spending of U.S. state and local governments from 1960 to 1990. This is a natural policy to study

32. A LaGrange multiplier test produced similar results.

33. A less plausible violation of the Poisson assumption is that the occurrence of an initiative lowers the expected number of initiatives in subsequent periods, leading to underdispersion. We found no evidence for this problem in any of our specifications.

because the data are good, and there is a preexisting empirical literature from which to draw control variables [e.g., Crain and Muris (1995), Matsusaka (1995), Gilligan and Matsusaka (1995)].

Our analysis is built around a series of regressions of the form

$$\text{expenditure}_{jt} = A \times \text{uncertainty and preference variables}_{jt} + B \times \text{controls}_{jt} + \text{errors}_{jt},$$

where j indexes states and t indexes years. We include all 50 states except Alaska (which is an outlier due to extraordinary revenue from petroleum and other minerals) and sample at five-year intervals starting in 1960. This gives a total of 343 observations in the basic sample. The dependent variable is combined state and local direct general expenditure per capita. Panel A of Table 4 reports the summary statistics for the dependent variable. The control variables are listed and defined in panel B and summary statistics are given. These controls are intended to capture benefits and costs of public spending.[34] We also include four regional dummies and year dummies, but do not report their coefficients. Panel C lists our uncertainty and agency variables. All financial variables are expressed in 1990 dollars per capita.

The regressions primarily make use of the cross-sectional variation in availability of the initiative, although there is also a small amount of time-series variation.[35] The basic research strategy is to see if initiative states select different fiscal policies than noninitiative states and, if so, to determine whether the effects of the initiative are conditional on the factors emphasized in our model.

Column (1) of Table 5 provides a baseline regression of spending on a dummy variable equal to 1 if the state provides for the initiative and the controls. This measures the unconditional effect of the initiative. Essentially as in Matsusaka (1995), states with initiatives spent $70.24 per capita less on average than those with monopoly representatives, and the difference is statistically significant.[36]

The next regressions in Table 5 test whether the effect of the initiative is conditional on preference uncertainty. The regression in column (2) includes interaction terms for the two heterogeneity variables that turned out to be important in the Poisson regressions in the previous section—population and urban-rural. As can be seen, both interaction terms are negative and significantly different from zero at greater than the 1% level. Uncertainty measured in this way appears to have reduced spending in initiative states. These

34. For a discussion of the theoretical rational for the controls, see Matsusaka (1995). Peltzman (1980) suggests that income dispersion is an important determinant of the size of government, so we include both income and the poverty rate.

35. Two states adopted the initiative during the sample period, Wyoming in 1968 and Florida in 1978. Illinois adopted it in 1970, but we continue to treat it as a noninitiative state, as discussed above.

36. We adjust for heteroskedasticity using White standard errors.

Table 4. Expenditure Regressions: Summary Statistics and Variable Definitions

	Mean	S.E.	Minimum	Maximum	*N*
Panel A. Dependent variable					
State and local direct general expenditure per capita	2,295.56	761.79	808.53	5,060.81	343
Panel B. Control variables					
Initiative dummy: dummy = 1 if state allows initiatives	0.42	0.49	0	1	343
Income: income per capita	12,420.64	3,105.75	5,179.13	2,4318.83	343
Population in 100,000s	43.64	45.93	2.88	297.60	343
Population growth: percent growth rate of population over previous four years	5.21	6.03	−10.45	47.16	343
%Urban: percent of population living in a metropolitan area	63.12	22.71	12.76	100.00	343
Poverty rate: percent of population with income below the poverty line	15.69	7.52	6.40	54.50	343
Federal aid: revenue received by state and local governments from federal government per capita	454.86	190.36	83.76	1,174.13	343
Panel C. Uncertainty and preference divergence variables					
Urban-rural: fraction of population living in a metropolitan area times fraction living elsewhere	1,813.72	653.12	0	2,500	343
Ethnic/race index: hirfindahl index based on percentage of population black, Hispanic, and neither	7,812.21	1,473.30	4,707.04	9,891.44	245
Democratic monopoly: dummy = 1 if the governor and a majority of both houses are Democrats	0.40	0.49	0	1	333
Republican monopoly: dummy = 1 if the governor and a majority of both houses are Republicans	0.15	0.35	0	1	333
Democratic bias: dummy = 1 if both houses show a Democratic "bias" and the governor is Democrat (see text)	0.08	0.27	0	1	191
Republican bias: dummy = 1 if both houses show a Republican bias and the governor is Republican (see text)	0.02	0.14	0	1	191

Expenditure, income, and federal aid are expressed in 1990 dollars using the CPI. Data sources are given in Matsusaka (1995) and the text.

Table 5. Regressions of State and Local Spending on Uncertainty and Voter-Representative Preference Divergence Variables

	(1)	(2)	(3)	(4)	(5)	(6)
Dummy = 1 if state allows initiatives	−70.24***	261.11***	710.29***	330.60***	1, 137.03***	771.40***
	(25.63)	(101.89)	(227.36)	(100.02)	(252.25)	(255.73)
Population × initiative dummy	—	−2.06***	−2.74***	−2.04***	−3.46***	−3.04***
		(0.62)	(0.82)	(0.64)	(0.81)	(0.82)
Urban-rural	—	0.06**	0.08**	0.05*	0.08**	0.09**
		(0.03)	(0.04)	(0.03)	(0.04)	(0.04)
Urban-rural × initiative dummy	—	−0.13***	−0.11**	−0.14***	−0.16***	−0.12**
		(0.04)	(0.05)	(0.04)	(0.05)	(0.06)
Ethnic/race index	—	—	−0.04	—	−0.04*	−0.05*
			(0.02)		(0.02)	(0.03)
Ethnic/race index × initiative dummy	—	—	−0.06***	—	−0.08***	−0.06**
			(0.02)		(0.02)	(0.03)
Dummy = 1 if Democratic monopoly	—	—	—	10.98	57.72	—
				(31.56)	(36.74)	
Dummy = 1 if Republican monopoly	—	—	—	66.47	54.92	—
				(62.24)	(70.94)	
Dummy = 1 if Democratic monopoly and initiative state	—	—	—	−97.75**	−210.51***	—
				(44.76)	(60.56)	
Dummy = 1 if Republican monopoly and initiative state	—	—	—	−112.69	−220.21**	—
				(76.89)	(91.07)	
Dummy = 1 if Democratic bias	—	—	—	—	—	32.10
						(53.55)
Dummy = 1 if Republican bias	—	—	—	—	—	−51.98
						(100.08)
Dummy = 1 if Democratic bias and initiative state	—	—	—	—	—	−208.51**
						(99.82)

Continued

Table 5. *Continued*

	(1)	(2)	(3)	(4)	(5)	(6)
Dummy = 1 if Republican bias and initiative state	—	—	—	—	—	131.81 (127.22)
Income	0.13***	0.13***	0.12***	0.13***	0.11***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Poverty rate	7.80***	8.63***	−13.76**	10.06***	−14.23**	−18.76**
	(3.03)	(2.95)	(6.90)	(3.03)	(6.75)	(8.94)
Population	0.51	1.39**	1.42**	1.27**	1.62**	1.70**
	(0.38)	(0.54)	(0.67)	(0.52)	(0.65)	(0.67)
Population growth	6.14***	6.55***	7.73***	6.11***	7.59***	6.57*
	(2.24)	(2.26)	(2.81)	(2.29)	(2.87)	(3.56)
%Urban	1.59**	2.21***	1.60*	2.47***	1.46	0.91
	(0.67)	(0.70)	(0.88)	(0.69)	(0.91)	(1.08)
Federal aid	2.25***	2.31***	2.71***	2.34***	2.82***	2.72***
	(0.20)	(0.20)	(0.20)	(0.20)	(0.19)	(0.23)
R^2	0.933	0.936	0.888	0.937	0.897	0.889
Adjusted R^2	0.929	0.932	0.878	0.932	0.885	0.873
Observations	343	343	245	336	239	191

Each column reports a regression. The dependent variable is state and local direct general expenditure per capita. White standard errors are in parentheses beneath the coefficient estimates. The basic data cover 49 states (Alaska is excluded) and 7 years (1960, 1965, … , 1985, 1990). Dummy variables were included for each year and four regions (Midwest, Northeast, South, West), but the coefficients are not reported. Significance levels are indicated by (*) 10%, (**) 5%, and (***) 1%. Variables are defined in Table 4.

results do not provide a formal test of the model since the conditional effect of uncertainty can be positive or negative. However, the finding that the same two variables help explain both the frequency of initiatives and state expenditure, and that the interaction effects have the same sign in the spending regressions paints a picture that is broadly consistent with the model.

In terms of Proposition 3, the evidence is consistent with a situation where interest groups tend to be fiscally conservative ($i = -\theta$) and representatives are fiscally moderate ($r = 0$) or liberal ($r = \theta$). With these configurations, (i) the initiative unconditionally reduces spending, and (ii) an increase in uncertainty causes an even larger decline of spending. Intuitively, preference uncertainty increases the chance that a conservative initiative will pass, which tilts the representative to the right or forces him to allow the initiative to appear. Put more simply, the model would imply the empirical patterns that we observe if, on average during the sample period, states tended to have fiscally moderate to liberal representatives, and the typical interest group using the initiative process was fiscally conservative.

The regression in column (3) adds the ethnic/race index and the corresponding interaction term. The Poisson regressions suggest that this variable is not a source of preference uncertainty, and because of limited data we sacrifice 98 observations when we include it, but we are interested in its effect on our other heterogeneity variables. Inclusion of the ethnic/race index does not have a material effect on the other two heterogeneity interactions; both remain significantly negative. The interaction term on the index is negative and significantly different from zero, implying that an increase in ethnic/racial heterogeneity *increases* spending in initiative states. This raises some questions. If the index does in fact capture preference uncertainty, then the significance of the interaction supports the broad point of the model that the effect of the initiative is conditional on uncertainty. However, the direction of the effect is the opposite of what we see for the other uncertainty measures. Since the ethnic/race index is not significant in the Poisson regression, it may be that the index is capturing something other than preference uncertainty in the spending regressions. The most we can say at this point is that further investigation of the ethnic/race index will be needed to resolve the issue.[37]

37. As with the Poisson regressions, we were concerned with the possibility of correlation across time in the state residuals. A check of the residuals did reveal some serial correlation. This correlation should not bias the coefficient estimates, but it has the potential to understate the standard errors. Our robust errors correction of the variance-covariance matrix should address this problem to some extent. Intuitively, the main concern is that each year might not be an independent draw, and therefore we are overstating our effective degrees of freedom. To get a sense of how important this might be, we made the following estimates, motivated by similar procedures in Peltzman (1984). First, we calculated the residuals from Regression (1) and averaged them across time for each state, giving 49 observations. Then we regressed the average residual on the remaining dependent variables in Regression (3) for the available sample years (1970, 1975, 1980, 1985, 1990), again using White standard errors. The *t*-statistics on the Democratic control interaction were -1.9, -0.9, -1.0, 0.5, and -0.3, for years 1970, . . . ,1990. For

We next investigate the role of divergent voter and representative preferences. Theory predicts that the initiative's effect depends on whether or not the preferences of the representatives are extreme relative to those of the voters. We try to capture a divergence between the preferences of the representatives and voters in two ways. First, we employ two dummy variables, one for the Democrats and one for the Republicans, equal to 1 if all branches of the state's government (lower house, upper house, and governor) were controlled by the same party.[38] The idea is that when one party controls all of the government, the legislature's preferences might be more extreme than the median voter's. The summary statistics show that Democrats monopolized the government in 40% of the observations compared to 15% for the Republicans.

In a simple unidimensional Downsian world with perfect information, party positions converge to those of the median voter, and there is no divergence between voter preferences and those of their representatives, even if one party has a monopoly over branches of the government. Still, there are reasons to suspect that parties might not end up representing the median voter. A large theoretical literature demonstrates that parties do not converge to the median voter's position when the basic Downsian model is complicated with multidimensional issue spaces or asymmetric information.[39] Gerrymandering can also cause the preferences of the elected legislature to diverge from those of the median voter. We present some empirical evidence that the party monopoly variable is correlated with a divergence in preferences below.

The regressions in columns (4) and (5) add the two-party monopoly dummies, and interaction terms between these variables and the initiative dummy. Column (4) omits the ethnic/race index to take advantage of the full sample, while column (5) includes the index. It can be seen that one-party control did not have a significant effect on spending after accounting for income, population growth, etc. This is consistent with a large literature on party effects, for example, Blais, Blake, and Dion (1993) and Gilligan and Matsusaka (1995, 2001). However, the interaction terms are negative. The Democratic control interaction is significant in both regressions, and the Republican control is significant in the smaller sample. This says that the effect of the initiative was conditional on monopoly control of the government, particularly the Democratic party. The point estimate suggests that the initiative was used to reduce the per capita spending of Democratic governments by $98 in column (4) and $211 in column (5). The pattern here has the flavor of Peltzman's

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the same years, the t-statistics for the population interaction were -2.3, -2.8, -2.4, -2.7, and -3.2. The t-statistics for the urban-rural interaction were -0.7, -1.2, -1.4, -1.4, and -1.5. With fewer degrees of freedom, the t-statistics fall, but only 1 case out of 15 produces the wrong sign.

38. The omitted category is divided government.

39. For instance, see Ingberman and Villani (1993). See McCarty, Poole, and Rosenthal (1997) for evidence that the Democratic and Republican parties are polarized and increasingly so in the U.S. Congress. Erikson, Wright, and McIver (1993) find similar differences between the activists, candidates, and officeholders of each party in a cross section of states.

(1992) finding that voters heavily penalized spending by Democratic governors but were more lenient about spending by Republican governors. If the results in column (5) are taken at face value—and we think caution is advised with all of these partisan results—it seems that both parties tended to spend more than the voters wanted when they achieved a monopoly control of government.

A second and more direct measure of divergence in representative and voter preferences is the partisan "bias" in the state's representation. For each house (upper and lower) of each state and each time period, we calculated Democratic bias as

$$\text{bias} = \frac{\%\text{ seats held by Democrats}}{\%\text{ votes received by Democrats}}.$$

If bias = 1, then each party's share of seats in the legislature was strictly proportional to the share of votes it received statewide. If bias > 1, then the Democrats were "overrepresented," and if bias < 1 then the Republicans were overrepresented.[40]

The bias measures provide a way to assess empirically whether our party monopoly variables are really capturing a divergence between voter and representative preferences. We estimated a logit regression with Democratic control as the dummy and the bias measures for a state's upper and lower house as explanatory variables. Both coefficients were found to be positive and statistically significant. The results for Republican monopoly were the same.[41] Thus states where one party had a monopoly over branches of the government were significantly more likely to show a partisan bias in favor of the party in power.

The bias measures were used to construct two dummy variables, one for Democratic bias and the other for Republican bias. The Democratic bias variable was set equal to 1 if the bias in both houses of the legislature was greater than or equal to 1.2 and the governor was a Democrat. The Republican bias variable was equal to 1 if the bias in both houses was less than or equal to 0.8 and the governor was a Republican. We set the cutoff at 0.2 in each direction because that was the approximate standard deviation of bias in both houses in the full sample.[42]

40. The party makeup of state legislatures was taken from various issues of *Book of the States*, see Gilligan and Matsusaka (1995). The partisan makeup of election votes was taken from ICPSR study 8907. We calculated the fraction of votes received by all Democratic candidates (as a fraction of the two-party vote) in the general election immediately preceding the year in question. The ICPSR study only runs from 1968 to 1988, so the sample size falls when we use this variable. We also lost some observations because states were excluded when data were missing for more than 10% of the elections in a given year.

41. In the Democratic regression, the t-statistics on the upper and lower house coefficients were 2.79 and 4.25, respectively. In the Republican regression, the t-statistics were −2.28 and −2.43.

42. The mean bias for the upper house was 1.03 with a standard error of 0.19. The mean bias for the lower house was 1.02 with a standard error of 0.18.

In Equation (6), we include the two partisan bias measures and their interactions with the initiative dummy. The findings essentially mirror those using the party monopoly variables. The bias measures themselves are insignificant, but the Democratic interaction is negative and different from zero at the 5% level. Again, it seems that the initiative was used to cut back the spending of governments that were more Democratic than the electorate at large.

We should emphasize that none of these regressions constitutes a formal test of the model in the sense of the Poisson regressions. But taken together, the results tend to support the idea that the effect of initiative is conditional on the amount of uncertainty about voter preferences and the degree of divergence between voter and representative preferences. Indeed, although the model is highly abstract, it seems to provide a coherent way to organize all of the results, both those on the number of initiatives and the spending regressions.

7. Summary and Extensions

This article develops a model of political resource allocation that focuses on the procedures used to make decisions. We use the model to study the tradeoffs between two common decision making institutions, monopoly decision making by representatives and joint decision making by representatives and voter initiatives. We view this as a step toward understanding the growing empirical literature documenting that the *method* of decision making matters for outcomes.

The building blocks of our model are (1) an agency problem between the voter and representative, (2) assignment of agenda control, and (3) uncertainty about the voter's policy preferences. The first two are mainstays of the existing literature. They give rise to the conventional view that initiatives help the voter by breaking the representative's monopoly over the agenda. Our contribution is to emphasize the third building block, preference uncertainty. We show that when voter preferences are uncertain, the initiative has both benefits and costs. As a result, policies are not necessarily closer to median voter outcomes in DR jurisdictions than MR jurisdictions—the threat of an initiative can cause the representative to adopt a more extreme policy than he would have otherwise.

As for the broad question—does availability of the initiative make the voter better or worse off?—we find that the answer depends on the amount of preference uncertainty and the severity of the voter-representative agency problem. The voter benefits from (or at least is not hurt by) the initiative when preferences are very uncertain, or when there is no agency problem, or when there is an agency problem but the representative is extreme. The voter is hurt by the initiative only when preferences are fairly certain, there is an agency problem, and the representative is moderate. Thus, although an important point of the article is identifying a potential cost of initiatives, perhaps the main message is that these costs are decisive only in a particular set of circumstances.

Much work obviously remains to be done. Our model does not incorporate any notion of expertise on the part of the representative, and therefore

abstracts away from the specialization benefit that is surely an important reason for delegated decision making. We also assume that the voter is capable of determining which of the policy options is in his best interest. A natural starting point to address the issues of expertise and voter ignorance would be to include policy uncertainty along the lines of Gilligan and Krehbiel (1987). This would presumably make resource allocation by representatives more valuable. It would then be possible to study the effect of different institutions on the incentives to acquire information, an important issue addressed recently by Aghion and Tirole (1997). A signaling role for interest groups and endorsements would arise, as in Gerber and Lupia (1995).[43] In such an environment, it would also be possible to think more systematically about the apparent fact that certain types of interest groups have a comparative advantage in lobbying the legislature, while others do better with initiatives (Gerber, 1999).

Another issue that deserves attention is how the initiative affects the representative's probability of reelection. For example, voters may be less inclined to punish representatives for bad policy choices in a jurisdiction where an initiative override is possible than in one where the decision cannot be challenged. In terms of our model, by altering the electoral environment, the initiative may change the representative's (induced) ideal point—which we take as independent of the decision-making process—and change the way he responds to interest group threats. Although little work exists on this problem, Feldman (1998) reports that reelection probabilities are different in initiative than noninitiative states, which suggests that an effect of this sort may be at work.

Although we have focused on public sector decision making, the analysis could be recast to consider resource allocation in corporations. The question becomes, what are the benefits and costs of shareholder initiatives? Here is a sketch of how such an analysis might proceed: In a corporate context, the shareholders are the voters and the directors/managers are the representatives. For most corporate decisions, shareholders are likely to have similar preferences—they want the policy that will maximize value. Because managers face little uncertainty about shareholder preferences, initiatives are unlikely to be valuable for most decisions, which is consistent with the evidence in Karpoff, Malatesta, and Walkling (1996). However, our analysis suggests that shareholder initiatives will be beneficial for particular issues—those where manager and shareholder interests diverge (such as executive compensation and takeover defenses) and those where shareholder

43. Signaling considerations might also introduce a cost to the representative of being overridden. The model assumes that the representative does not mind being overridden by an initiative except to the extent that he dislikes the new policy. Observation suggests that representatives might dislike being overridden per se, however. It is easy to show that if the representative pays a pure utility cost from being overridden, the deterrence region changes, but the comparative statics and comparisons remain qualitatively the same. However, the situation would become more complicated if the representative had a privately observed skill level and an initiative override signaled a poor choice of policy and hence a low skill level.

interests are heterogeneous (such as an investment in apartheid South Africa in the 1980s).

Appendix

Proof of Lemma 1. Suppose that $i = 0$. By Equation (2), $x_r^* = 0$, and by Equation (1), $p(x_i^*, x_r) = 1 - \sigma$, independent of the choice of x_r. Then $E[R]$ is maximized with $x_r^* = r$.

Suppose that $i = \theta$ (the case of $i = -\theta$ is symmetric.) Then

$$E[R] = \begin{cases} \sigma R(\theta) + (1-\sigma)R(x_r) & \text{if } x_r > -z; \\ (1-\sigma)R(-x_r) + \sigma R(x_r) & \text{if } x_r \leq -z. \end{cases}$$

Consider $r = 0$. Then $x_r^* = 0$ if $x_r > -z$, and $x_r^* = -z$ if $x_r \leq -z$. The expected payoff is $\sigma R(\theta)$ in the first case and $R(-z)$ in the second. The first exceeds the second when $\sigma > 1/3$.

Consider $r = -\theta$. Then $x_r^* \to -z$ if $x_r > -z$, and $x_r^* = -z$ if $x_r \leq -z$. The expected payoff in the first case approaches from below the expected payoff in the second case. ■

Proof of Lemma 2. Suppose $r = \theta$ and $i = 0$. Then the representative either deters with $x_r = C/(1-\sigma)$ [see Equation (3)] or allows the initiative, leading to $x_i = 0$ and $x_r = \theta$ [from Equation (2) and Lemma 1]. Deterrence is optimal for the representative if

$$R\left(\frac{C}{1-\sigma}\right) > \sigma R(\theta) + (1-\sigma)R(0). \tag{A.1}$$

Equation (A.1) reduces to $C > \theta\sigma(1-\sigma)$. The case of $r = -\theta$ and $i = 0$ is symmetric.

Suppose $r = -\theta$ and $i = \theta$. Then the representative can deter with $x_r = \theta - C/\sigma$, or allow the initiative, giving $x_i = z$ and $x_r = z$ (Lemma 1). Deterrence is optimal if

$$R(\theta - C/\sigma) > \sigma R(-z) + (1-\sigma)R(z). \tag{A.2}$$

Equation (A.2) reduces to $C > \theta\sigma(1 - \sigma(1-2\sigma)/(2-3\sigma))$. The case of $r = \theta$ and $i = -\theta$ is symmetric.

Suppose $r = 0$ and $i = \theta$. Then the representative can deter with $x_r = \theta - C/\sigma$. Without deterrence, the representative's policy depends on σ. If $\sigma > 1/3$, then $x_r = 0$ and $x_i = \theta$. Deterrence is optimal if $R(\theta - C/\sigma) > (1-\sigma)R(0) + \sigma R(\theta)$, which reduces to

$$C > \theta\sigma(1-\sigma). \tag{A.3}$$

If $\sigma \leq 1/3$, then $x_r = -z$ and $x_i = z$. Deterrence is optimal if $R(\theta - C/\sigma) > \sigma R(-z) + (1-\sigma)R(z)$, which reduces to

$$C > \theta\sigma(1 - (\sigma/(2-3\sigma))). \tag{A.4}$$

Because $\sigma < \sigma/(2-3\sigma)$ if and only if $\sigma > 1/3$, Equations (A.3) and (A.4) can be condensed as

$$C > \theta\sigma(1-\min\{\sigma, \sigma/(2-3\sigma)\}).$$

The case of $r = 0$ and $i = -\theta$ is symmetric. ■

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