Taking the Law to Court: Citizen Suits and the Legislative Process

Abstract

The institution of citizen suits is a decentralized form of public participation, which allows citizens to influence the implementation of public laws in courts. How does this institution influence policy-making? This paper proposes a model of citizen suits. It then analyzes how this institution influences legislative decisions. The legislature bargains to choose the budget, distributive spending and spending on an ideologically contested public good (such as health care or environmental protection). I find that citizen suits enable courts to forge a compromise between opponents and proponents of the public good by responding to the diverse claims of citizens. Anticipating the mobilization of citizens in courts, legislators in turn craft more socially efficient bills, with less distributive spending and which better represent the distribution of preferences for the public good compared to when citizens have no role in the implementation of legislation.

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1 Introduction

Citizen participation in policy making comes in many guises. On June 30th, 2014, the Aransas Project – a diverse coalition of citizens and towns – came before the Fifth Circuit's Court of Appeals. Twenty-three of the world's only wild flock of whooping cranes – that most majestic of birds – had died because, they alleged, the government of Texas had issued permits for excessive water withdrawal. Their action constituted a "taking" of cranes' habitat, in violation of the Endangered Species Act. The group lost as judges deemed the causal relationship too tenuous (Aransas Project v. Shaw 2014). A few days earlier, a district court of Colorado had ordered the cessation of all coal mining exploration on a swath of wild public land at the bequest of High Country Conservation Advocates. The permits had not evaluated the harm to the climate from the mines' release of methane (High Country Conservation Advocates v. United States Forest Service 2014). So it is that multiple times a week, in the United States, citizens of all stripes dispute public policy matters in court via the institution of citizen suits. Judges rule, and their decisions, from broad matters of rulemaking to specific issues of enforcement, affect the reach of a myriad public goods and their associated funds.

Sometimes called public law litigation, what I call citizen suits includes any form of contestation of public policy by citizens in courts. The details vary: litigation may be justified by an appeal to constitutional rights, by a statute that empowers citizens to enforce its terms or by administrative law, which guarantees fair consideration of all relevant interests in agencies' decisions[1]. In U.S. environmental law, these suits sum to about 1500 decisions a year. The practice is taking hold in new democracies such as India and Brazil (Brinks and Gauri 2010), as well as in the European Union (Kelemen 2006). To some, this institution has normative appeal: it constitutes, for example, one of the three clauses of the Aarhus Convention, which focuses on the public's rights regarding environmental governance (Rose-Ackerman and Halpaap 2004). Qualitative studies depict citizen suits as a vibrant activity, which feeds into the rest of the political process (e.g. Barnes 2004; Feeley and Rubin 2000; Melnick 1983). Yet, we know little about how citizen suits affect policy.

As one step towards understanding the role of citizen suits in democracies, this study analyzes the way they influence decision making in legislatures governed by majority rule. The criticisms

[1] Litigants must demonstrate standing. The standing doctrine of the court has oscillated over time from narrow – requiring a specific personal interest in the case – to much broader – granting standing for general aesthetic, scientific and other cultural interests.

this institution attracts from some industries and political representatives suggests that it is not neutral[2]. It has an impact on the enforcement of laws. This paper proposes a model of citizen suits' direct impact on the implementation of laws. It then uses this model to understand their *indirect* political impact: how do citizen suits affect the power balances that underpin the legislative process itself? Citizen suits are likely to affect legislative decision-making because legislators and their constituencies are acutely aware that litigation will transform the bills they draft. Indeed, the Congressional Record exhibits that congressmen engage in lengthy discussions about the past effects of citizen suits to try to anticipate their future effect on the bills they negotiate[3]. Already in 1972, in House Hearings of the Clean Water Act, legislators took note of the way jurisprudence had developed around an earlier act, the *Refuse Act of 1899*. They noted that it had reinforced it, but also "created the political climate" for broadening anti-pollution policies (118 Cong. Rec. E5597, 1972). In other words, litigation had changed the terms of the political bargain.

I here formally analyze how litigation can change the political bargain. More precisely, the paper helps develop hypotheses to answer the following questions. How do citizen suits affect the outcomes of legislation? If legislators anticipate their laws being litigated, how does this affect the decisions they take? Who can we expect to benefit from the institution? And who should we expect to promote or oppose it?

The model focuses on situations where actors are in conflict over a public good. To model citizen suits, I consider a process in which, throughout the nation, people advance claims in courts regarding the public policy's proper interpretation. Judges resolve ambiguities in myriad ways (Sunstein 1995). As the examples of the cranes and of the coal mine demonstrate, both proponents and opponents of the public policy may win or lose in court, depending on the merits of their claim and the values of the judges. Gradually, these individual decisions cumulate to form the concrete reach of policies on the ground. A compromise emerges between the law as originally legislated, and the distribution of citizens' and judges' preferences. I find that citizen suits shift a very ambitious or very unambitious policy towards the center. Extreme legislation (including legislative inaction) does not survive civil society's downstream response: it is by

[2]Industries are lobbying against this institution arguing that these suits lead to opaque backdoor deals with advocacy groups (e.g. Chamber of Commerce 2013 Report "Sue and Settle: Regulating behind Close Doors"), echoed by diatribes of some in Congress, for e.g. "the hell or high water bill permits citizen's suits [...] opening the door for an unprecedented rash of legal harassment" 120 Cong. Rec 23682, 1974.

[3]e.g. *Amending the Endangered species act of 1973: Hearings before the Subcommittee on Resource Protection of the Committee on Environment and Public Works*, Senate, 95th Congress (1978); in amendments of CERCLA (131 Cong. Rec. 24747-24749, 1985); in *Jobs for America Act* (160 Cong. Rec. H7773-H7819, 2014).

force moderated by the diversity of citizens who seek reform in courts.

In the legislative stage, legislators are also in conflict regarding the public good, some supporting and others opposing it. The legislative and the litigation stages are coupled as one sequential game: legislators anticipate downstream litigation as they bargain over legislation. This assumes that citizen suits are exogenous to the legislative bargaining game. In reality, legislators spend considerable time negotiating the fine-print of citizens' legal rights in the implementation process (Farhang 2009). For this reason, I endogenize the choice of the institution at the end of the paper. However, citizen suits are also fruitfully seen as an exogenous institution. In some countries, citizen suits are a constitutional part of the policy process (e.g. India). Internationally, they have emerged as a norm of good governance (c.f. the Aarhus Convention). In the United States, they have become institutionalized by the *Administrative Procedures Act*, early court rulings (e.g. *Sierra Club vs. Morton 1972*), and their embrace by civil society. Thus, in the main analysis, legislators do not control the litigation process but anticipate its effect as they draft legislation.

The legislature bargains to choose the budget, as well as spending on a public good and particularistic goods. Legislators are in conflict regarding the public good, some supporting and others opposing it. The legislative bargaining game involves choosing the budget, public good spending and the distribution of particularistic goods. As in Volden and Wiseman (2007), legislators can forge agreements from a rich menu, since a proposer can offer a mixture of the public good and of transfers to secure the agreement of a diverse coalition. Absent citizen suits, I show that legislative bargaining by majority rule leads to socially inefficient policy. Because of its majority voting rule, the legislature alone is often pulled by the extreme of one party, while at the same time dedicating a large part of the budget to distributive spending and logrolling.

In the coupled institutional system, the legislature strikes bargains that are usually more socially efficient. This is due to the direct effect of citizen suits which temper policy and to the way they weaken the bargaining position of legislators who make extreme proposals. There are two important consequences. First, citizen suits increases the bargaining power of those who support the public good and lessens the ability of proposers to extract constituency rents. This often leads to more public good spending and less distributive spending. Second, the bargaining position of the minority improves in some scenarios, which allows for more compromise. My analysis thus lends credence and precision to the claim that active courts contribute to the search for compromise by empowering a plurality of citizens (Barnes 2004; Sunstein 1995) and thereby enhance welfare.

The model developed in this paper differs in several ways from the prevalent approach of modeling legislature-court interaction as zero-sum, each branch contributing a veto player to the policy game (e.g. Rodriguez and McCubbins 2006; Shipan 2000). Instead, I capture important differences between the legislature and the courts in a non zero-sum context. This model is closest to Rogers and Vanberg's (2007) who show that judicial review by a diverse court improves the efficiency of a majority group's decision. Unlike them, I portray the legislature and the courts as representative of the same public, but representing it in different ways. Both are imperfect representatives, yet diversely imperfect, and I ask how well they work together. I thus depart from the traditional concern over "unguided" judicial review, in which an unelected Supreme Court irrevocably modifies policy. The courts here are guided, since citizens set the agenda. In a seminal paper, McCubbins, Noll, and Weingast (1987) argue that citizen suits and other procedural controls of rulemaking empower the interest groups that initially favored the legislation. Unlike them, I consider the implications of citizen suits given that they empower all interests.

Far from pitching the legislative and the judiciary branches against each other, to gauge their relative merits as fora of policy making, my analysis considers them as a system. It thus contributes to a growing literature interested in the properties of systems of diverse institutions (e.g. Bednar 2008), and specifically how the legislature functions in a larger institutional context. Examples include Matsusaka's (2005) analysis of citizen initiatives, McCarty's (2000) analysis of the presidential veto, or Ting's (2012) model of bureaucratic allocation of the legislature's distributional spending. The findings in this paper also cohere with those of the popular constitutionalism scholarship. That scholarship finds that courts, although staffed with unelected judges, are responsive to and representative of the plurality of citizens' preferences (e.g. Eskridge and Ferejohn 2010; Friedman 2009). Since legal action is an advocacy strategy, this paper contributes to the literature on advocacy groups. A key question in this literature concerns the relative effectiveness of different advocacy strategies. For example, is the private politics approach (Baron 2001) more effective than political lobbying? Some analyses find that they discourage government action when it is warranted (Kim and Urpelainen 2013). My analysis instead highlights the capacity of downstream legal action to constructively restructure the political conflict between proponents and opponents in the legislature.

2 The model

The model combines legislative bargaining over public and particularistic goods with a model of citizen suits. The outcome of the game is a budget and its allocation between a public good and particularistic funding across n districts. This outcome is determined first by legislation decided by the legislature and, second, by the implementation phase in which citizens can influence the enforcement of the legislation by presenting claims in courts. The decisions made by these courts together affect the effective level of the public good. There are two types of legislators and citizens. Type **1** legislators support investment in the public good and type **0** oppose it. Therefore, the marginal valuation for the public good of type **1** legislators and citizens is positive ($q_{\mathbf{1}} > 0$) and that of type **0** legislators and citizens is negative ($q_{\mathbf{0}} < 0$). These valuations can arise from ideology, or can reflect the economic repercussion of the public good on a district. The legislature is of size n and is composed of a majority n_M of legislators and a minority of size $n_m = n - n_M$.

The legislative bargaining part of the model is a variant of Baron and Ferejohn (1989). Bargaining happens via a closed rule process and majority rule voting. The horizon of play is indefinite, the legislature moving on to a new round until a proposal is accepted by a majority of legislators. To simplify the model, I assume that legislators do not discount between rounds of bargaining[4]. In each period, a legislator is recognized at random to make a proposal. The proposal consists of a level of public good provision and nonnegative transfers to all legislators. We will denote y_i the public good proposed by legislator i and $\{x_{ij}\}$ all the transfers to the other legislators (indexed by j). The public good and the transfers determine the overall budget raised by the proposer: $B_i = y_i + \sum_{j \in \text{legislature}} x_{ij}$.

How do decentralized citizen suits shape the effective reach of the public good on the ground? Citizens present a claim to a judge as to the proper reach of the law in their specific case. This claim can be lower or higher than the level y decided by legislators. In deciding whether to accept the claim, judges weigh both the text of the statute, which specifies y, and their policy preferences. A large number of these lawsuits happen in the society, in a variety of courts, each with a different result, the distribution of which will depend on the distribution of judge and citizen preferences. I model the effective scope of the public policy as the average of the results of this flow of disputes. In general, this effective level – denoted $\tilde{y}$ – will differ from

[4]This allows me to focus solely on the role of internal divisions. If we allowed for discounting, this would simply exacerbate the proposer's power.

the original legislation y. Since the public good requires investments, litigation also affects the budget. Importantly, however, it does not bear on the distributive transfers $\{x_{ij}\}$, which are not part of the statute governing the public good, but rather part of the spending bill, or other appropriations' bills.

The impact of court decisions on the public good bares discussion before presenting the litigation process more formally. In the legislature, statutes are crafted as complex bundles of many narrower policies. In other words, y represents an overall ambition level for achieving a public goal, and encompasses a large number of specific policies. In contrast, each court case questions the implementation of a specific policy point within the broader legislation, and often addresses contingencies that arise from local contexts. For example, in *Aransas Project v. Shaw*, the court decided whether water withdrawals had a sufficiently strong causal impact on cranes' habitat, given what was known about the hydrology of that region. All such decisions are to some extent local decisions, but also affect the overall public good. The *Aransas Project v. Shaw* decision determined the local distribution of water, but it also contributed to the reach of the *Endangered Species Act* by shaping the fate an endangered species and by establishing a general rule regarding the necessary strength of the causal relation between habitat quality and the human actions to be regulated. The local and national scales are thus inherently intertwined in any implementation of a public good (Zemans 1983). As another example, each decision taken to implement the *Americans with Disabilities Act* affects the working conditions of a particular individual in a particular company, but at the same time determines on average the equality of opportunity of individuals with disabilities in the United States. Citizens may be motivated to bring suit either to affect the national level goal (such as large non-profit advocacy groups), or to shape the local or private consequences of the public good legislation (such as a firm seeking to lower their cost of compliance) (also see Kagan 2001). In either case, citizens and courts' actions shape $\tilde{y}$ in a way that affects everyone.

To formalize this process, a citizen suit i consists of a litigant making a claim c and a judge who chooses $l_i \in \{c, y\}$. In other words, the judge adjudicates between the petitioner's claim and the status quo y, determining the scope l_i of the public good in that particular decision. The formal letter of the law is thus fixed, and the concrete case-by-case implementation varies. I assume that judges have idiosyncratic preferences about the public good but also care about respecting the statute. Thus, in each decision, the judge maximizes $u_i^J(l_i) = -(l_i - \frac{y+y_i^*}{2})^2$, where y is the legislation (known by the judge) and y_i^* is the *a priori* policy preference of the judge involved.

The policy preferences of judges are distributed uniformly on some interval that lies between 0 and proponents' ideal level of the good: $y_i^* \sim U(a,b)$ with $[a,b]$ included in $[0, y_{\mathbf{1}}^*]$. Therefore, the ideal points l_i^* of judges (decisions about l_i that maximize $u_i^J(l_i)$) are uniformly distributed on $[\frac{a+y}{2}, \frac{b+y}{2}]$. In other words, the ideal points represent an equal weighing of judges' *a priori* preferences y_i^* and the legislation y. The judiciary is composed of a diverse set of judges. Yet all judges' preferences are pulled toward what the statute stipulates, so that the final distribution of judicial preferences is partially exogenous and partially influenced by y. This assumption is supported by recent work, which shows that judges' decisions are shaped both by the law and their personal policy attitudes (Bailey and Maltzman 2011; Epstein and Knight 2013).

Denote r the proportion of citizens who oppose the public good[5]. In all the results presented, we will assume that legislators represent their constituencies and so $r = \frac{n_m}{n}$. Of course, the model also allows us to decouple the distribution of legislators' and engaged citizens' preferences. Petitioners choose c to shape $\tilde{y}$ to their liking. For ease of exposition, we will assume that the petitioners can ascertain the judge's preference ahead of making their claim. Since most disputes are negotiated with a judge and settled, it seems plausible that petitioners are able to learn the judge's preference and tailor their claim accordingly. None of the results will hinge on this assumption though, and results based on alternative assumptions in which citizens have much less information about judges' preferences are presented in the Appendix.

The effective reach of the policy y arising from a multitude of petitioner claims and judicial decisions is the additive effect of all the disputes. Assuming a continuum of judicial preferences and a very large number of disputes, $\tilde{y}$ can be modeled as the integral over the range of citizen and judicial preferences. This integral creates a mapping $l : y \mapsto \tilde{y}$. The litigation process also modifies B. The effective budget is $\tilde{B} = B - y + \tilde{y}$, such that the budget is increased if litigation expands the scope of the public good, and decreased if litigation contracts it[6].

The utility of a legislator j from the proposal made by legislator i and resulting in $\tilde{y}_i$, $\tilde{B}_i$ and x_{ij} is:

$$u_j = q_j \tilde{y}_i + x_{ij} - k\tilde{B}_i^2 \tag{1}$$

[5] The results are qualitatively the same if I assume a smoother distribution.

[6] In practice, decisions by courts regarding public goods feed back indirectly into the budget via agencies' annual budget requests, which then feed into the bargaining over the budget between the executive and legislative branches.

k is a coefficient reflecting the marginal rate of increase of the cost of raising public funds. Equation 1 holds both with and without citizen suits. In the baseline without citizen suits, legislation is implemented perfectly. In that case, $\tilde{y} = y$ and $\tilde{B} = B$. If bargaining fails, legislators receive 0.

The legislative model is largely based on Volden and Wiseman (2007). However, there are three crucial differences. First, the budget is endogenous. This has the effect of attenuating the power of proposers, since everybody bears the costs of raising funds. Second, legislators are divided in their valuation of the public good, and the members of the minority have some probability of making proposals. We are therefore not in a fully majoritarian setting, while at the same time, the often partisan conflicts over support for public goods are taken into account (as in Krehbiel, Meirowitz, and Wiseman 2015). Third, as I explain below, legislated and implemented policies may differ because of downstream societal contestation.

The sequence of the game is as follows. All moves are perfectly observable.

1. *Legislation - Recognition Stage:* In a given round, a legislator is recognized to make a proposal. The recognition probability is $\frac{1}{n}$ for all legislators across all rounds.

2. *Legislation - Proposal Stage:* The recognized proposer makes a proposal $(y_i, \{x_{ij}\}_{j\in \text{ legislature}})$.

3. *Legislation - Voting Stage:* Each legislator casts a vote for or against the proposal. If a majority is in favor, the proposal passes and bargaining ends. If a majority opposes the proposal, the game returns to Step 1.

4. *Litigation:* Litigants throughout the population, independently and in parallel, file claims in different court. Each judge chooses whether to accept the claim received. These decisions are reached independently of other judges and independently of other suits. The aggregation of all these decisions yields an effective public policy $\tilde{y} = l(y)$ and effective budget $\tilde{B}$.

I characterize the stationary symmetric subgame perfect equilibrium (SSPE) of the legislative game with and without the litigation stage. Legislators' strategies are defined by a proposal strategy that is a best response to the proposal strategy of the other group. Since it's an SSPE the strategies do not depend on the history of legislative play and legislators of the same type adopt identical strategies and are treated identically. I will thus index the actions and payoffs of legislators by their group membership $\in (M, m)$. In particular, x_{ij} with $i, j \in (M, m)$ will denote the transfers from legislators of group i to members of group j that are in the coalitions of group i proposers, and $x_{i,p}$ will denote transfers to group i proposers. Strategies in the litigation stage consists of: 1) the judge's decision to accept or reject a claim given the legislated value of y and the judge's own *a priori* policy preference, and 2) type **1** and type **0** litigants' choice of claim given the legislated value of y and given their estimates of a judge's *a priori* policy preference.

3 Strategies and Equilibria

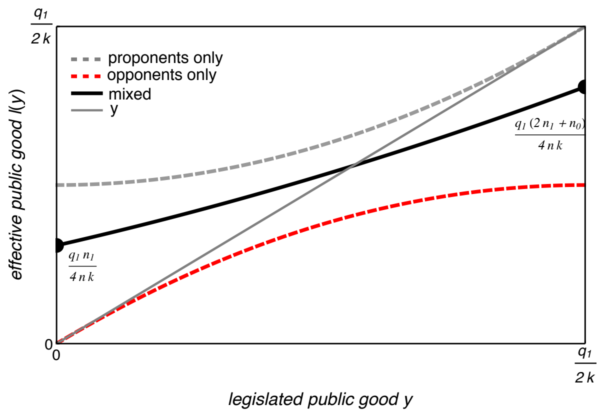
This section lays the groundwork for the main results, in which I will show that citizen suits moderate public policy in ways that usually enhance welfare – lowering the public good when the majority would otherwise over-invest by imposing its ideal in spite of the minority's negative valuation, and enhancing the public good when legislators would otherwise under-invest due to the proposer's ability to direct funds towards particularistic spending. We start by analyzing how citizen suits reshape legislation (i.e. we obtain the mapping $l : y \rightarrow \tilde{y}$), and then define the strategies and equilibria of the legislative game.

3.1 The Reshaping of Legislation by Citizen Suits

To simplify the analysis, I assume that litigants can ascertain the policy preferences of the judge and therefore anticipate the judge's decision. None of the results qualitatively change if this assumption is relaxed, as shown in the Appendix, which provides two alternative versions in which citizens are imperfectly informed. Given the utility function of judge i, litigants will obtain their claim if it is closer to the judge's ideal point than the status quo (i.e. if$|c - l_i^*| < |y - l_i^*|$). Litigants with claim c will thus win for any claim that lies between the legislation and the judge's *a priori* policy preference, because such a claim strikes a balance between the law and the judge's preference. Therefore, if the judge is in favor of a policy that is more ambitious than the statute ($y_i^* > y$), then c will be successful if $y < c \leq y_i^*$. Conversely, if the judge wants a less ambitious policy ($y_i^* < y$), c will be successful if $y_i^* \leq c < y$. As a result, the best optimal action for type **1** litigants who want to expand the legislation is to present a claim $c = y_i^*$ to any judge i with $y_i^* > y$ and no claim to judges whose preference is $y_i^* < y$. Similarly, type **0** litigants who want to limit the legislation should present claim $c = y_i^*$ to any judge with $y_i^* < y$ and none to judges whose preference is $y_i^* > y$.

To obtain $l : y \mapsto \tilde{y}$, the average of all these local disputes, I integrate over the preferences

Figure 1: The Mapping from Legislated Public Good to Effective Public Good.



Three scenarios are shown: all citizens are opponents ($r = 1$, dotted redline), all citizens are proponents ($r = 0$, dotted gray line), and a mixed scenario where opponents are a minority ($r = \frac{n_\mathbf{0}}{n} = 0.4$, full black line). In the mixed scenario, the extreme policies 0 and $\frac{q_\mathbf{1}}{2k}$ are both pushed towards more moderate values (black dots), according to the formulas for $l(0)$ and $l(\frac{q_\mathbf{1}}{2k})$, which are both displayed (and used in the subsequent analysis).

of judges and citizens:

$$l(y) = \frac{1}{b-a}\left(r \int_a^b (y_i^* \; \mathbb{1}_{\{y_i^* < y\}} + y \; \mathbb{1}_{\{y_i^* \geq y\}}) \; dy_i^* \right.$$
$$\left. +(1-r) \int_a^b (y \; \mathbb{1}_{\{y_i^* \leq y\}} + y_i^* \; \mathbb{1}_{\{y_i^* > y\}}) \; dy_i^* \right) \qquad (2)$$

Figure 1 illustrates Equation 2 (see Appendix for the functional form). If the nation were fully inhabited by litigants of type **1**, the policy would be inflated (gray line), the more so the lower the initial legislation. Vice versa, if the nation were fully inhabited by litigants of type **0**, the policy would be deflated (red line). The central line represents the outcome in a mixed nation. We see that the decentralized litigation process tends to level policy, bringing it away from extremes. The reason is that the public good results from many local implementation actions and the aggregation of these diverse viewpoints. The reason why diverse viewpoints are considered is that citizen suits give citizens access to decision makers without the difficulties and corresponding limits of collective action. This form of public power is widely dispersed in the population.

We obtain qualitatively similar curves when varying the amount of information citizens have about judges' preferences. Better information means citizens can better target their claims. With perfect information, every claim is accepted. In contrast, if citizens only have imperfect expectations about a judge's preference, some claims are rejected so the effect of litigation is weaker. However, the same qualitative insight remains: if litigants are diverse, litigation levels policy.

3.2 Legislative decision-making

To focus the analysis and hone intuition, we consider here the legislative equilibria that arise in the case where public good proponents are a majority. The analysis of the minority case is in the Appendix and shows that the main results carry over. Moreover, the analysis shows that the range of parameters under which a minority could pass a substantial public good legislation under a random recognition rule is small, so it seems natural to focus on the majority case. Therefore, in what follows, $q_M \geq 0$ and $q_m \leq 0$.

We show here that the equilibrium is unique but that depending on the parameter values, three different types of equilibrium occur. In two of them, proposers maximize distributive spending to their constituency and are able to do so thanks to their proposer power. This in line with the literature on noncooperative legislative bargaining (Baron and Ferejohn 1989; Volden and Wiseman 2007) and empirical studies (Knight 2005). One of these equilibria is purely distributive. The other exhibits some public good spending but this spending is purely opportunistic: the public good is used by the majority proposer to build a majority coalition at a lesser cost, a strategy made possible by the presence of a minority who opposes the public good. In the third equilibrium, the majority group chooses its preferred public good spending level and ignores the wishes of the minority. In the presence of citizen suits, the same equilibria arise, but we will see that the level of spending on the public good versus private goods changes.

The recognized legislator must build a coalition of at least $(n-1)/2$ legislators, by offering them enough to make them indifferent between the proposal and their continuation payoffs. The coalition of a majority proposer will consist of other majority legislators. That of a minority proposer will also always include majority members, and possibly contain minority legislators as well. Table 1 summarizes the possible strategies for each type of legislator. The essential difference between these strategies resides in the coalition-building instrument used to gain the support of majority legislators: either the proposer gains their support by investing in the public good, or by handing them transfers.

Table 1: The Strategies of Both Types of Players

Majority Proposer		Minority Proposer	
Strat.	Description	Strat.	Description
C	Maj. proposer invests fully in the PG.	O	The min. proposer maximizes $q_m y_m$, giving transfers x_{mM} to some Maj. members.
P	Maj. proposer uses the PG to get Maj. members' support.	A	The min. proposer minimizes x_{mM}, using the PG to satisfy Maj. members.
D	The Maj. proposer uses transfers to obtain support of $\frac{n-1}{2}$ members and $y_M = 0$.	D	The min. proposer uses transfers to obtain support of $\frac{n-1}{2}$ members and $y_m = 0$.

To understand why these two instruments are mutually exclusive, consider the continuation payoffs of a random legislator from the majority and minority group given respectively by Eq. 3 and 4. These are the payoffs a legislator would receive if the proposal is rejected. They reflect the possibility that the legislator will become proposer in the future, in addition to the possibility that they will incur the consequences of a majority proposal (with probability p_M) or those of a minority proposal (with probability p_m). And if a minority proposal, the majority payoffs also reflect the possibility that the majority member will be part of the minority's coalition and receive transfers (with probability $p_c = 1 - \frac{n-1}{2n_M}$). We see that the utility functions and the continuation payoffs are linear in the public good and in particularistic goods. Hence, one of the two coalition building instruments dominates[7].

$$v_M = p_M(q_M\tilde{y}_M - k\tilde{B}_M^2) + p_m(q_M\tilde{y}_m - k\tilde{B}_m^2 + p_c x_{mM}) + \frac{1}{n}(\tilde{B}_M - \tilde{y}_M) \tag{3}$$

$$v_m = p_M(q_m\tilde{y}_M - k\tilde{B}_M^2) + p_m(q_m\tilde{y}_m - k\tilde{B}_m^2) + \frac{1}{n}(\tilde{B}_m - \tilde{y}_m - n_M p_c x_{mM}) \tag{4}$$

When the public good is more valuable than particularistic goods (i.e. q_M is at least larger than 1), majority proposers will maximize the part of the utility coming from the public good. They will therefore try to invest maximally in the public good (their ideal level is $y_M = B_M = \frac{q_M}{2k}$). Following Volden and Wiseman (2007), I call this the "collective" strategy (C), which

[7] see Remark A.1.

gets the support from all majority legislators. When $q_M < 1$, majority proposers seek to maximize spending for their constituency and must choose whether to buy the support of other majority members by handing transfers ("distributive" strategy D) or investing in the public good ("public" strategy P). Turning to minority proposers, they can obtain the support of majority members by manipulating their public good proposal y_m in the direction favored by the majority, which avoids having to pay transfers x_{mM} to $p_c n$ majority members. I call this the "acquiescence strategy" (A) because it consists in acquiescing to the preference of the majority. Alternatively, the minority proposer can increase transfers to some majority members and choose a public good level y_m that yields higher value to the minority even though it is less favorable to the majority. I call this the "opposition strategy" (O) because the minority proposer attempts to push policy in the direction opposite to the wishes of the majority.

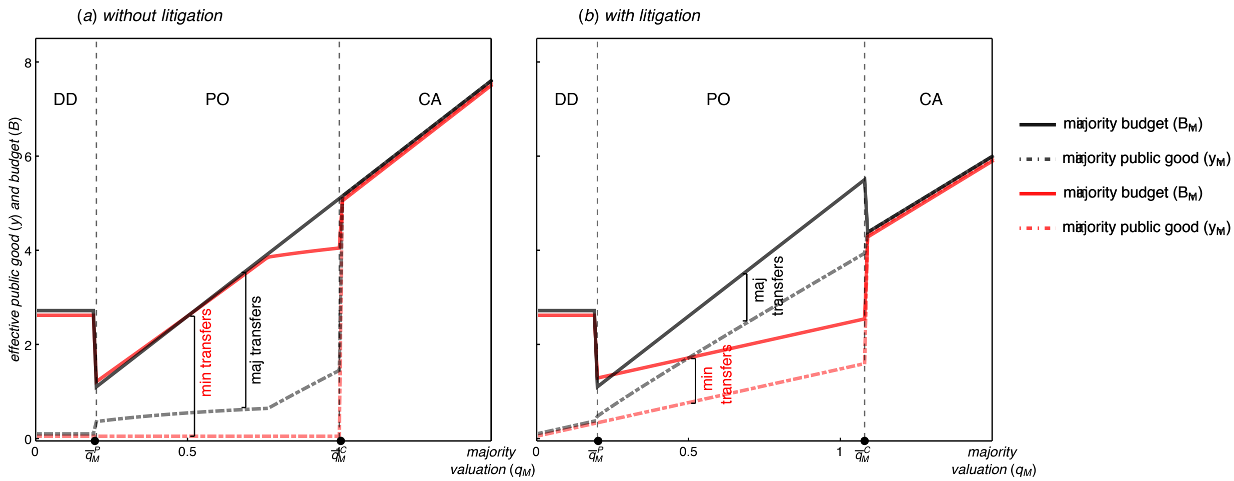
Remark 1 below summarizes the equilibria that arise from the combination of these strategies. Recall that $\tilde{y}^*$ and $\tilde{B}^*$ indicate the *effective* values of the legislated public good and budget, after implementation (the star indicating the equilibrium). Without citizen suits, this is equivalent to the legislated values: $\tilde{y}^* = l(y^*) = y^*$ and $\tilde{B}^* = B^*$. But with citizen suits $\tilde{y}^* = l(y^*) \neq y^*$ and $\tilde{B}^* = B^* - l(y^*) + y^*$ with $l(\cdot)$ given by Equation 2. All transfers not explicitly stated are equal to zero.

Remark 1. *In the majority case, there are three equilibria:*

1. *For $0 \leq q_M < \bar{q}_M^P$, the equilibrium is DD where both types of proposers use the D strategy. It yields :*
   - $\tilde{y}_i^* = l(0)$, $\tilde{B}_i^* = \frac{n+1}{4nk}$ *and* $x_{ij}^* = \frac{n+1-l(0)}{4n^2k}$ *to* $\frac{n-1}{2}$ *legislators, for* $i, j \in (m, M)$.
2. *For $\bar{q}_M^P \leq q_M < \bar{q}_M^C$, the equilibrium is PO, where majority proposers use the P strategy and minority proposers the O strategy. It yields:*
   - $0 < \tilde{y}_M^* < \tilde{B}_M^* = \frac{q_M}{2k}$, $x_{M,p}^* = \tilde{B}_M^* - \tilde{y}_M^*$ *for majority proposals;*
   - $\tilde{y}_m^* = l(0) < \tilde{B}_m^*$, $x_{mM}^* > 0$ *to* $\frac{n-1}{2} - n_m$ *majority legislators, and* $x_{m,p}^* = \tilde{B}_m^* - (\frac{n-1}{2} - n_m)x_{mM}^*$ *for minority proposals.*
3. *For $\bar{q}_M^C \leq q_M$, the equilibrium is CA, where majority proposers use the C strategy and minority proposers the A strategy. It yields:*
   - $\tilde{y}_i^* = \tilde{B}_i^* = l(\frac{q_M}{2k})$ *for* $i \in (m, M)$.

For any set of parameters, these equilibria are unique (see Appendix). They are separated by threshold values of q_M, the valuation of the pro-public good majority proposer (as shown by

Figure 2: Equilibrium Values of the Budget and the Public Good for the Majority Case



The x-axis shows the valuation q_M of the majority and the threshold values at which the equilibria change. The wedges between the budget and the public good correspond to distributive transfers. Panel b) shows how these equilibrium values change with citizen suits. In both panels, $n = 21$, $n_M = 12$, $k = 0.1$ and $q_m = -.5$.

annotations on the x-axis of Figure 2). These equilibrium thresholds are affected by downstream litigation because litigation changes the relative attractiveness of different strategies in ways that will soon become clear.

I now discuss the key features of these three equilibria, with and without citizen suits. Figure 2 shows the equilibrium outcomes of B and y for selected parameter values under both institutional environments. The DD equilibrium occurs when the public good has little value to the majority. The proposer finds it cheaper to build a coalition with transfers to $(n-1)/2$ legislators and the minority does so as well since there is no public policy to oppose or acquiesce to. The equilibrium values correspond to standard results of distributive bargaining games, in which the proposer obtains a large share of spending. Importantly, citizen suits induce positive investments in the public good ($\tilde{y} = l(0) > 0$ as long as there are proponents amongst litigants) without affecting the budget. This lowers the total amount of distributive spending relative to when the legislature acts alone.

When the majority proposer uses the public strategy, the minority proposer's best response is to use the opposition strategy (see Appendix). We thus obtain the PO equilibrium. In this equilibrium, the minority proposer sets $y_m = 0$ and makes transfers to $\frac{n-1}{2} - n_m$ majority members, keeping the rest as rents. This strategy lowers the continuation payoffs of the majority members, which strengthens the bargaining power of the majority proposer who is able to set $y_M^* < B_M^*$ and keep the difference as constituency spending. The effect is the wedge between B_M and y_M in panel (a) of Figure 2. The public and opposition strategies mutually reinforce each other: the fact that the majority proposer extracts rents at a cost to others makes it easier for the minority to use the opposition strategy, which in turn weakens majority members, making it easier for the majority proposer to pursue the public strategy and impose costs on the rest of the majority coalition. Citizen suits transform $y_m = 0$ into $\tilde{y}_m = l(0)$. This leads to an increase in $\tilde{y}_M$ as well and a decrease in the amount that proposers can extract for their constituencies. We see in Figure 2 panel (b) that the wedges between the budgets and the public good investments of each proposer type are much smaller relative to the case where the legislature acts alone.

When the majority proposer uses the C strategy, the minority must acquiesce and we obtain the CA equilibrium. Minority proposers have no other choice than to acquiesce because the majority is united in purpose. Indeed, if they tried to limit the scope of the public policy (by offering transfers to some majority members), majority members would be assured of a better outcome by voting down such a proposal since all majority members want the same outcome. Both types of legislators therefore enact $y = B = \frac{q_M}{2k}$. As stated in Remark 1 and visible in Figure 2, citizen suits reduce these values to $\tilde{y} = \tilde{B} = l(\frac{q_M}{2k})$.

4 Main Results

The results in this section compare the outcomes of legislation with and without citizen suits. It shows that citizen suits change the bargaining power of different legislators, in turn modifying the balance of public good and distributive spending, as well as the representation of the minority's preferences. Overall, the effect is to moderate public policy, forging a better compromise between the majority and minority. Importantly, citizen suits also reduce the advantage of proposers and their ability to impose costs on others by obtaining rents for their own constituency. The superscript l is used to denote the institutional environment with litigation.

The first result shows that in the DD and PO equilibria – the equilibria in which there is no or minimal spending on the public good – citizen suits increase the level of public good provision, even though proponents and opponents have equal access to courts.

Result 1. *In the DD and PO equilibria, citizen suits increase public good provision by both types of legislators:* $\tilde{y}_M^l > y_M$ *and* $\tilde{y}_m^l > y_m$.

This result arises because citizen suits preclude the extreme position $y = 0$. As we saw, in the PO equilibrium without citizen suits, majority members have a weak bargaining power relative to the proposer due to the opposition strategy of the minority. By ensuring that $\tilde{y}$ is at least $l(0)$ in the case of a minority proposal, citizen suits increase the continuation payoffs of majority legislators. This forces the proposer to invest more in the public good. In the DD equilibrium, citizen suits simply force both groups to dedicate some level of funding to the public good and reduce the amount spent in particularistic spending. It does not change legislators' bargaining power because citizen suits affect the proposals of both types of legislators equally (since they pursue the same distributive strategy).

The empirical implication is that we expect citizen suits to boost public good provision in context where some but not all policy-makers support the public good and where the strength of that support is weak relative to the desire to obtain particularistic goods. A possible contemporary example is that of climate change mitigation in the United States. A majority of the population weakly supports investments to mitigate climate change (**?**). Starting with *Massachusetts vs EPA* in 2007, some court decisions compelled the government to regulate large emitters. These court cases should have signaled to legislators that climate change policy could be influenced by citizen suits in the future. If so, Result 1 says that it should have become easier for supporters of climate change policy to request somewhat more ambitious investments in mitigation. Indeed, legislated spending on mitigation substantially increased after 2007, although, of course, we cannot ascertain whether the mechanism underlying Result 1 played a substantial role in that trend without a detailed study of that particular policy process.

The second important result concerns the CA equilibrium. In the CA equilibrium without citizen suits, the majority is cohesive and as a result it unyieldingly brings the public policy to its maximal value. With citizen suits, such a high level of investment meets the resistance of some citizens in courts. The minority gets a voice, a voice it absolutely lacked in the legislature. As a result, the public good level investment is more moderate, as stated in Result 2.

Result 2. *When $q_M \geq 1$, citizen suits decrease public good provision by both types of legislators: $\tilde{y}_M^{CA,l} < y_M^{CA}$ and $\tilde{y}_m^{CA,l} < y_m^{CA}$.*

This result indicates that no matter how strong the support for a legislation is, citizens who oppose it can minimize its reach thanks to participation in the courts. Indeed, there are many instances of court cases in which limits were put on the implementation of statutes. In the eyes of proponents, this will be seen as a problem. However, in contexts where there is genuine disagreement about the value of the public good, it can be seen as a valuable mechanism to reach compromise.

The third result concerns the majority proposer's ability to exploit divisions within the legislature in the *PO* equilibrium to extract rents. Result 3 says first that as divisions grow (i.e. the size of the minority increases) and as the public good valuation of the majority *increases*, the *share* of funds going towards the public good *decreases*, and a greater proportion of the budget is appropriated by the proposer as rent. Second, and most importantly, it says that this proposer power, source of inefficiency, is reduced by citizen suits.

Result 3. *In the PO equilibrium, the share of the public good relative to the budget decreases as the size of the minority opposition increases and as the majority's valuation of the public good increases:*

- $\frac{d(B_M - y_M)}{dn_m} > 0$, *and*
- $\frac{d(B_M - y_M)}{dq_M} > 0$.

Both effects are dampened by citizen suits:

- $\frac{d(B_M - y_M)}{dn_m} > \frac{d(\tilde{B}^l_M - \tilde{y}^l_M)}{dn_m}$
- $\frac{d(B_M - y_M)}{dq_M} > \frac{d(\tilde{B}^l_M - \tilde{y}^l_M)}{dq_M}$

The first part of the result is related to the central result of Volden and Wiseman (2007), showing that proposer power can greatly compromise spending on public goods. In the present model, proposer power stems from the divisions within the legislature. Since only a fraction of majority members receives transfers in any minority proposal featuring $y^{PO}_m = 0$, the probability that a given majority member will benefit from the minority's compensatory transfers in a future minority proposal is low ($p_c = 1 - \frac{n-1}{2n_M})$). This probability decreases the larger the size of the minority group, so the continuation value Equation 3 decreases as n_m increases. This explains why the amount of rents extracted by the majority proposer increases with n_m .

The Result also states that although public good provision in the legislature monotonically increases with its value, its share of the total budget decreases as q_M increases. The reason is that as q_M increases, proponents require a lesser proportion of the budget spent on the public good to compensate for the opportunity costs of raising the funds. This outcome is similar in spirit to that in Volden and Wiseman (2007), but differs in one important way: they found that the *net* value of y (as opposed to its share of the budget) can *decrease* with its marginal value.

The reason for the difference is that here the budget is endogenous – the cost of raising the budget serves as a disciplining device.

Litigation increases the continuation value of proponents, so they require more public good to accept spending for the proposer's constituency, even as the marginal value of the public good increases and they are less affected by increases in the size of the minority. The result is further reinforced by the fact that $l(0)$ increases with q_M, so the bargaining power of proponents actually increases as the public good becomes more valuable. The wedge between the budget raised by the proposer and the level of the public good in the PO equilibrium is therefore far smaller in the presence of citizen suits and this decrease is strongest for larger values of q_M (which can be observed by comparing panels (a) and (b) in Figure 2).

Empirically, Result 3 implies that citizen suits will not only boost public good provision but also reduce particularistic spending. Indeed, the equilibrium budget is the same in both institutional environments, but less of it is appropriated as private spending by the proposer. The last result shows that proposer power and the role of citizen suits in mitigating it depends on how divided the legislature is regarding the public good. In particular, a larger opposition causes more funds to be dedicated to particularistic spending, especially in the baseline institutional environment. In the coupled institutional environment, downstream litigation dampens the effect of the opposition on public good provision.

In summary, citizen suits do not modify the types of equilibria of the legislative game, but they change the characteristics of these equilibria. The equilibria in the baseline legislative environment can be summed by two characteristics: 1) when the public good is merely attractive as a coalition building tool, much of the budget raised is allocated to the proposer's constituency because the proposer is able to exploit the divisions in the legislature, and 2) there are areas of the parameter space where the minority has no voice at all. Citizen suits changes the balances of power in the legislature, thereby changing public policy. Extremely ambitious or unambitious policies get pulled to the center in the second stage of the game. This undermines the bargaining power of legislators who benefit from extreme positions (minimal or maximal values of y). As a result, proponents of the public good are empowered in the equilibria where they otherwise had little power, which increases the share of spending on the public good relative to distributive spending (Result 3). Finally, for $q_M > 1$, the minority now gets a voice and the legislature enacts a compromise, as indicated in Result 2.

The most important testable hypothesis of this model is that the broader citizens' standing to sue in the process of implementing a statute that legislates the provision of a public good, the more funding we expect to go towards the public good and less towards particularistic spending. This hypothesis could be tested in a number of ways. First, at the federal level, it is possible to use the variation in the standing doctrine of the Supreme Court, interacted with the variation across statutes in the breadth and importance of citizen suits. Indeed, we expect that funding in the appropriations bills for the agencies enacting each statute should decrease in periods when the courts use a narrow standing doctrine and increase when the standing doctrine is broader, but more so for statutes that include strong citizen suits clauses. State laws also vary in their use of citizen suits, both at the constitutional level (for example granting a right to a clean environment backed by citizen suits) and for individual statutes. Thus, cross-sectional variation could shed light on the value of the hypothesis. Many states adopt the same standing test as the federal courts. The approach sketched above for the federal level (using longitudinal variation in standing interacted with the importance of the citizen suit provision in the enforcement of the statute) should therefore also work at the state level.

5 Discussion

5.1 The Minority Case

The mechanisms described carry over to the minority case, and equivalent results are proved in the Appendix. In all these equilibria, the majority uses the distributive strategy. In most of the q_m space, minority proposers use the A strategy (see Figure A.2): they invest just enough in the public good to get the support of other minority members, which results mostly in particularistic spending. The cost of building a coalition that would support more public good investment is very high so it is only when q_m is significantly larger than 1 that minority proposers switch to the opposition strategy, maximizing public good spending and using transfers to buy the support of some majority members. In all cases, public good investments are much lower in the minority case than in the majority case (for comparable valuations).

Citizen suits here again boost the public good, both directly and by increasing the bargaining power of minority members who wish for more public good investment. Thus Results 1 generalizes to all the minority equilibria. Result 3 also generalizes to the minority equilibria that feature some investment in the public good (DA and DO equilibria) (see Result 6).

5.2 Welfare implications

What are the implications of citizen suits for social welfare given the framework developed in this paper? We see here that for a large range of parameter values, citizen suits enhance the efficiency of investments and thereby improve welfare. However, neither institution is very sensitive to the relative intensities of the two groups. This is why neither institution dominates the other over the whole parameter range. The legislature generally tends to underinvest in the public good, so as soon as some public investment is efficient for the legislature as a whole, the coupled system tends to fare better. Conversely, because citizen suits allow some mobilization by proponents even when they value the good moderately and are not very numerous, the legislature alone outperforms the coupled system when efficiency requires that there be no or limited public good investment.

The following result gives the conditions under which the system with citizen suits dominates the legislature alone (for both the majority and minority cases). The definition of welfare employed is the weighted average of the expected utility of majority and minority districts, $W = \frac{n_M}{n} E(u_M) + \frac{n_m}{n} E(u_m)$. $\bar{q}$ denotes the average valuation in the legislature.

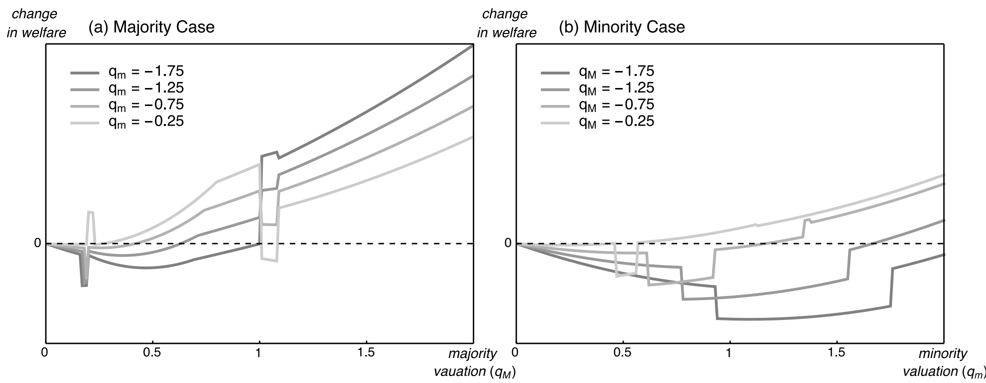
Result 4. *The decisions of the legislature coupled with citizen suits yield greater welfare than the decisions of the legislature alone only if:*

1. $\bar{q} > \frac{1}{n}$ *when* $q_M < \bar{q}_M^C$
2. $\bar{q} < \frac{3}{4} n_M q_M$ *when* $q_M \geq q_M^{C,l}$ *(CA equilibrium)*

The first part of this result indicates that litigation increases welfare only if some investment in the public good is Kaldor improving. The $1/n$ factor corresponds to the funds redirected toward the public good by citizen suits that would otherwise have benefited 1 in n districts. On the contrary, in the CA equilibrium, the condition is that the average value of the public good must not be too high, since litigation lowers it. The condition holds for a very large range of parameter values. Note that these are necessary conditions. They are also generally sufficient except in two regions: 1) in the small region $\bar{q}_M^C \leq q_M \leq \bar{q}_M^{C,l}$, in which litigation discourages the proposer from using the collective strategy which can reduce welfare even though the parametric conditions of Result 4 are satisfied, 2) in the regions where $\bar{q}_M^P \leq q_M \leq q_M^{P,l}$ or $\bar{q}_m^A \leq q_m \leq q_m^{A,l}$, in which litigation encourages the proposer to use the distributive strategy instead of investing in the public good, which reduces welfare if $\bar{q} > 0$.

Figure 3 shows the difference in welfare between the two institutional environments for a

Figure 3: Change in Expected Welfare from Citizen Suits



Changes in expected welfare for different values of the minority and majority valuations ($k = 0.1$ and $n_M = 12$). The discontinuities are due to the shifts in thresholds.

range of parameter values. For low values of q_M, citizen suits decrease welfare because they force a minimum positive level of y even though the preference of the opposition is more intense than that of proponents. In the PO equilibrium, the improvement is due to Result 1. In the CA equilibrium, the coupled institution fares better because y is not as extreme as in the legislature alone, imposing a lesser cost on the minority. In the minority case, without citizen suits, the payoffs of most non-proposers are negative because a high budget is raised and channeled in large part toward distributive spending. Citizen suits force some funds to be channeled in the public good, which minimizes this loss. But we also see that the equilibria are shifted, with a greater part of the parameter space occupied by more distributive strategies, which decreases welfare.

5.3 Endogenizing citizen suits

When and by whom can we expect citizen suits to be instituted? From an ex ante point of view, the institution is expected to be more often beneficial than not therefore legislators might support a general procedural law that promotes citizen suit. In the United States, the Administrative Procedures Act (APA) requires the courts to review agency decisions if a litigant can demonstrate that the agency's rule was "arbitrary or capricious". We can interpret the APA as coordinating legislators around procedural rules that benefit everyone in a repeated game context, or "behind a veil of ignorance".

But individual statutes vary in how much they allow citizens and courts to intervene in their implementation. Therefore, the endogeneity question should also be asked at the level of individual pieces of legislation. The legislative histories of major amendments of environmental statutes reveal that there were strong advocates for and against the institution[8]. Remark 2 shows that the only situations in which proposers would champion citizen suits is when the majority wants to promote the public good and expects that without this institution, implementation will be weak. Consider an extended action space in which each type of proposer either includes the institution in the bill or doesn't. Denote these two actions $\{L_i = 1, L_i = 0\}$ for $i \in (m, M)$.

Remark 2. *If implementation is expected to be unbiased,* $(L_M = 0, L_m = 0)$ *is an equilibrium, while* $(L_M = 1, L_m = 1)$ *is not.*
If implementation is expected to be biased towards weak implementation, $(L_M = 1, L_m = 1)$ *is an equilibrium while* $(L_M = 0, L_m = 0)$ *is not in the* MAJ *case when the majority values highly the public good* $q_M \geq 1$*.*

Remark 2 implies that the vigorous support for citizen suits found in the congressional record for a number of environmental statutes, for example, cannot be explained if legislators expect laws to be implemented without bias in the absence of citizen suits. In the bills in which citizen suits was proposed and defended, legislators favoring the public good feared that implementation would be dominated by the influence of firms, consistent with findings that business groups dominate both administrative and legislative lobbying (e.g. Boehmke, Gailmard, and Patty 2013). Citizen suits are seen as a way of equalizing access to the policy process.

5.4 Robustness of the Model

By modeling courts as a decentralized process of citizen participation, this paper departs from models of inter-branch interaction which focus on the Supreme Court. Being at the apex of the judiciary, the Supreme Court is seen as the source of policy innovation in the court system. This paper ignores judicial hierarchy and assumes that a large number of diverse decisions. This assumption was justified by reference to 1) the large number of courts handing down decisions with diverse ideologies amongst judges, 2) the geographical distribution of litigants, and 3) the number of legal issues included in a statute.

[8]These quotes from the legislative history of the Clean Air Act Amendments of 1990 demonstrate it: "If we are taking action for strong clean air legislation, then we must also ensure that the resulting legislation is fully enforceable. Clean citizen suit provisions are the key to that," said a proponent, while opponents complained that "since the bill expressly provides for citizen suits [...] the real driving force behind this bill will be the National Environmental lobbies with their army of attorneys."

The reader may object to the assumed independence between judicial decisions, which ignores the ability of higher courts to influence large classes of subsequent cases. Despite the authority of precedent, there still are a large number of unrelated cases (or lines of precedent) emanating from different parts of the judicial system. Additionally, the results are robust if we instead consider a low-litigation environment featuring only one or a few impactful cases. Indeed, with the same assumptions about the distribution of litigants and judge preferences, the ex-ante expected outcomes of these cases would be similar to the model with many decentralized suits. Therefore, the low-litigation environment would have the same effect on the legislators' decisions. The main difference would be that the effective value of the public good (ex-post) would be stochastic and dependent on the outcome of those few high-profile lawsuits.

Another assumption of the model is that litigation is costless and that consequently, all citizens – whether holding large or small grievances and large or small wallets – can bring suit. What happens with a cost of access to the courts? With a cost, litigants only go to court if the expected outcome yields a sufficiently large policy payoff relative to the cost. This could yield additional welfare increases by virtue of being more sensitive to differences in the intensity of preferences of the two groups. However, these improvements are highly sensitive on the cost being in a "productive" range. A low cost offers no improvement over the costless version, while a cost that is too high relative to the valuations and the scope of the disputed policy entirely crowds out litigation. Of course, high costs can also have perverse effects if they apply differentially across the two groups.

Although the model developed here focused on a legislative model with very specific institutional characteristics, the mechanisms by which citizen suits were found to modify outcomes are more general. In the legislative game, some decision-makers benefited from and were able to obtain extreme values of the collective good. By reducing the bargaining power of those decision-makers, the suits pulled towards more compromise. Thus, any collective decision process with these tendencies will be similarly impacted by citizen suits. In particular, changing features of the legislative game will not substantially affect the conclusions, as long as there is a minimum-winning coalition in which some members are able to obtain particularistic goods at the expense of the collective good (as in the PO equilibrium), or a coalition who is able to completely ignore the preferences of non-coalition members (as in the CA equilibrium). A non-random recognition rule would not substantially affect the results unless it implies that only majority members can propose legislation. Open-rule would reduce but not eliminate the proposer advantage that we see in the current model (Volden and Wiseman 2007) and which is the basis of the welfare improvements from citizen suits in the PO equilibrium. With an open-rule, the majority would still impose its preference when $q_M > 1$ and leave room for citizens to forge a compromise in courts.

6 Conclusion

This paper has presented a model of legislative bargaining in a situation of conflict over the provision of a public good, in an institutional context in which citizens can subsequently influence the policy in courts of law. Citizen suits are found to strike a compromise between the formal legislation and the diverse preferences of citizens. I showed that in some circumstances, when the majority stands to benefit from the public good, the proposers of the majority and the minority groups in the legislature synergistically undermine the representation of the majority's interest, diverting a large proportion of funds towards particularistic spending. Citizen suits were shown to alleviate this problem by enabling some minimum degree of public policy investments, thereby strengthening the majority's voice. In other circumstances, the legislative process is found to be very weakly responsive to the minority's interests. Citizen suits can, though imperfectly, help temper this characteristic of majority institutions. They do so by forcing all legislators to take some account of the full spectrum of citizen preferences rather than singly reflect that of their own constituency.

Court action following legislation is often criticized for not faithfully representing legislative intent, and the internal bargains struck by legislators (Rodriguez and Weingast 2007). The diversity in court rulings is brandished as evidence that judges are policy motivated and not disciplined by the law, and are therefore usurping legislative powers. Others consider it natural that the courts take on legislative roles, if a certain policy question calls for a deliberative justification other than a majority justification, such as a moral justification (Ferejohn 2002). The analysis I provide here suggests instead that courts may be able to productively tackle the same policy disputes as the legislature, and in doing so help the legislative process. Citizen suits are of course not the only formal means citizens have of shaping the implementation of laws. This analysis is only a first step in more systematically understanding how the social processes by which laws are implemented affect a law's original content as well as its ultimate effect on society.

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A Appendix

A.1 The Reshaping of Legislation by Citizen Suits

To obtain $l : y \mapsto \tilde{y}$, we integrate Eq. 2:

$$\tilde{y} = \begin{cases} \frac{1}{b-a}\left(r(\int_a^y y_i^*\ dy_i^* + \int_y^b y\ dy_i^* + (1-r)(\int_a^y y\ dy_i^* + \int_y^b\ \ dy_i^*)\right) & \text{if } a < y \text{ and } b > y \\ ry + \left((1-r)\frac{1}{b-a}\int_a^b y_i^*\ dy_i^*\right) & \text{if } a > y \text{ and } b > y \\ \left(r\frac{1}{b-a}\int_a^b y_i^*\ dy_i^*\right) + (1-r)l & \text{if } a < y \text{ and } b < y \end{cases}$$

The last two cases reflect the fact that when the legislation lies outside of the range of judicial preferences, one of the two types of litigants will not propose claims. This may occur if the judiciary is not fully diversified. When $a > 0$, the judiciary on average has a tendency to expand legislation, whereas $b < y_{\mathbf{1}}^*$ captures a conservative tendency (the courts tend to curb legislation). The relationship I obtain between the legislation y and the effective policy $\tilde{y}$:

$$\tilde{y} = \begin{cases} \frac{a^2r-2ay(r-1)+b^2(r-1)-2byr+y^2(2r-1)}{2(a-b)} & \text{if } a < y \text{ and } b > y \\ ry + (1-r)\frac{b^2-a^2}{2(b-a)} & \text{if } a > y \text{ and } b > y \\ r\frac{b^2-a^2}{2(b-a)} + (1-r)y & \text{if } a < y \text{ and } b < y \end{cases}$$

In the analysis, the mapping of the extreme values plays an important role. When $a = 0$ and $b = \frac{q_{\mathbf{1}}}{2k}$ and $r = \frac{n_{\mathbf{0}}}{n}$, we find that $y = 0$ maps into $l(0) = \frac{n_{\mathbf{1}}q_{\mathbf{1}}}{4nk}$, while $y_{\mathbf{1}}^*$ maps into $l(y_{\mathbf{1}}^*) = \frac{(n_{\mathbf{0}}/2+n_{\mathbf{1}})q_{\mathbf{1}}}{2nk}$.

A.1.1 Litigants are uncertain about judge preferences

I now relax the assumption that citizens can anticipate judges' preferences. Therefore citizens will form expectations regarding the outcome of suit with claim c. Opponents will choose the claim c that minimizes this outcome and proponents will choose the claim c that maximizes it. Figure A.1 presents the original model in which citizens are perfectly informed and the results from two models in which citizens are imperfectly informed and described below.

First assume that citizens know nothing about judges, only that $y_i^* \sim U(a,b)$. Proponents will only present claims $c > y$, which will be accepted iff $y < c < y_i^*$. Hence $\tilde{y}|c = cPr(c \leq y_i^*) + y(1 - Pr(c \leq y_i^*)) = c(1 - \frac{1}{b-a}\int_a^c dy_i^*) + y\frac{1}{b-a}\int_a^c dy_i^* = c(1 - \frac{c-a}{b-a}) + y\frac{c-a}{b-a}$. Proponents thus choose c to maximize this function. They thus present claims $c_{\mathbf{1}}^* = \frac{b-a+y}{2}$. On the contrary, opponents present claims $c < y$ which are accepted by a judge i as long as $y_i^* < c < y$. Thus

$\tilde{y}|c = cPr(y_i^* \leq c) + y(1 - Pr(y_i^* \leq c)) = c\frac{c-a}{b-a} + y(1 - \frac{c-a}{b-a})$. Opponents choose claims that minimize this function, so $c_{\mathbf{0}}^* = \frac{y-a}{2}$. If r is the proportion of opponents, we have $\tilde{y} = (1-r)(\frac{a^2+4ay-(b+y)^2}{4(a-b)}) + r(\frac{-3a^2+2ay+y(y-4b)}{4(a-b)})$. Thus, if $a = 0$ and $b = \frac{q_{\mathbf{1}}}{2k}$ and $r = \frac{n_{\mathbf{0}}}{n}$, we get $\tilde{0} = \frac{n_{\mathbf{1}} q_{\mathbf{1}}}{8k}$ and $\tilde{\frac{q_{\mathbf{1}}}{2k}} = \frac{q_{\mathbf{1}}}{2k}(1 - \frac{n_{\mathbf{0}}}{4n})$. Thus we see that when litigants are less uncertain, proponents are not as effective at moving $y = 0$ up and opponents are not as effective at moving $y = \frac{q_{\mathbf{1}}}{2k}$ down, but still wee see that litigants can modify policy in a way that levels policy.

Now assume that citizens are able to estimate y_i^* with some error. Specifically, they get a signal a distributed as a truncated normal with mean the actual judge's preference, variance σ^2 and bounds a and b: $a \sim f_a(y_i^*, \sigma^2, a, b)$. Thus, the posterior distribution of the judge's preference after having observed a is a also a truncated normal with mean a, variance σ^2 and bounds a and b: $y_i^* \sim f_{y_i^*}(a, \sigma^2, a, b)$. As before, proponents will only present claims $c > y$, which will be accepted only if $y < c < y_i^*$. Given the posterior of y_i^*, we have $E(\tilde{y}|c, a) = cPr(c \leq y_i^*) + y(1 - Pr(c \leq y_i^*)) = c(1 - \frac{1}{b-a}\int_a^c f_{y_i^*} dy_i^*) + y\frac{1}{b-a}\int_a^c f_{y_i^*} dy_i^*$. Proponents then choose $c_{\mathbf{1}}^*(0)$ to maximize $E(\tilde{y}|c, a)$. Similarly, opponents will only present claims $c < y$, which will be accepted only if $y_i^* < c <$. Given the posterior of y_i^*, we have $E(\tilde{y}|c, a) = cPr(c \geq y_i^*) + y(1 - Pr(c \geq y_i^*)) = c\frac{1}{b-a}\int_a^c f_{y_i^*} dy_i^* + y(1 - \frac{1}{b-a}\int_a^c f_{y_i^*} dy_i^*$. Opponents then choose $c_{\mathbf{0}}^*(a)$ to minimize $E(\tilde{y}|c, a)$. In expectation, the legal actions citizens leads to $E(\tilde{y}|c_{\mathbf{0}}^*(a), c_{\mathbf{1}}^*(a)) = \frac{1}{b-1}\int_a^b rE(\tilde{y}|c_{\mathbf{0}}^*(a), a) + (1-r)E(\tilde{y}|c_{\mathbf{1}}^*(a), a) f_a da$. This is computed numerically and shown in Figure A.1.

A.2 Legislators' strategies

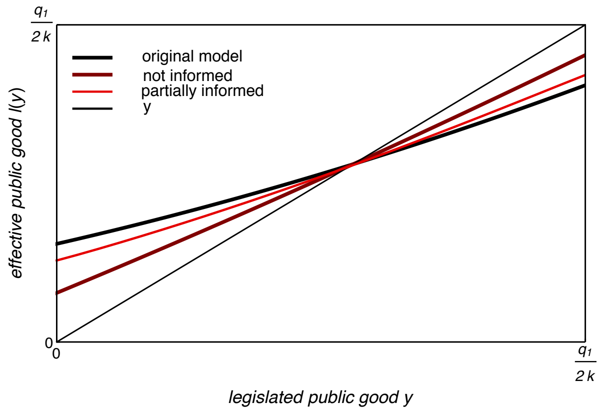
Legislators' decision problem Legislators pursuing the distributive strategy:

$$\underset{x}{\text{maximize}} \quad u = B - \frac{n-1}{2}x - kB^2 \tag{A.1}$$

$$\tag{A.2}$$

with $x = \frac{1}{n}B$.

Figure A.1: Alternative Litigation Models



The effective level of the public good as a function of the legislation for different assumptions about the knowledge that citizens have regarding the preference of the judge they encounter in court.

Majority proposers if they invest in the public policy:

$$\underset{y_M}{\text{maximize}} \quad u_M = q_M y_M + B_M - y_M - kB_M^2 \tag{A.3}$$

$$\text{subject to} \quad q_M y_M - kB_M^2 \geq v_M \tag{A.4}$$

$$y_M \geq 0, x_{MM} \geq= 0, B_M \geq y_M$$

where v_M is given by Equation 3.

Minority proposers if they invest in the public policy:

$$\underset{y_m, \{x_{mM}\}, B_m}{\text{maximize}} \quad u_m = q_m y_m + B_m - y_m - n_M p_c x_{mM} - kB_m^2 \tag{A.5}$$

$$\text{subject to} \quad q_M y_m + x_{mM} - kB_m^2 \geq v_M \tag{A.6}$$

$$q_m y_m - kB_m^2 \geq v_m \tag{A.7}$$

$$y_m \geq 0, x_{mM} \geq= 0, B_m \geq y_m + n_M p_c x_{mM}$$

where v_m is given by Equation 4. In all decision problems, I have re-expressed the benefits $x_{i,p}$ of the proposer as $B_i - y_i - \sum_{j \in \mathcal{C}_i} x_{ij}$, i.e. what remains of the budget once the public good and the transfers are accounted for.

Remark A.1 below clarifies why we are justified to define coalition building strategies either based on distributive transfers or on the public good. It states that there is no complementarity between the two coalition building tools: one dominates the other for a given set of exogenous parameters. Which is preferred depends on the exogenous parameters of the model. Below $\frac{D^2 u_i}{Dy_i Dx_{ij}}$ is the total second derivative of the utility of proposer of group i with respect to the two coalition building tools (y_i: i invests in y; x_{ij}: i provides transfers to coalition members of group j), where this utility is out of equilibrium. It captures the full costs and benefits for the proposer of using transfers and the public good to build a coalition, including the variation running through changes in the participation constraints. This Remark also establishes that the equilibria defined in the main text are unique, since one strategy is dominant given a set of exogenous parameters.

Remark A.1. *For all parameters,* $\frac{D^2 u_i}{Dy_i Dx_{ij}} = 0$*. This implies that* $\frac{Du_i}{Dx_{ij}}$ *is a constant uniquely defined by the set of parameters* (q_M, q_m, k, n, n_M)*. If* $\frac{Du_i}{Dx_{ij}}$ *is negative, then the proposer minimizes* x_{ij}*.*

Proof. We proceed by studying the total derivative of u_m with respect to one of the two types of investments, here y_m:

$$\frac{Du_m}{Dx_{mM}} = \frac{\partial u_m}{\partial x_{mM}} + \frac{\partial u_m}{\partial y_m}\frac{dy_m}{dx_{mM}} + \frac{\partial u_m}{\partial B_m}\frac{dB_m}{dx_{mM}}$$

When the budget constraint given by Eq. A.6 does not bind, we can consider B_m a free variable and thus, the last term of $\frac{Du_m}{Dy_m}$ can be dropped. Thus: $\frac{Du_m}{Dx_{mM}} = -n_M p_c + (q_m - 1)\frac{dy_m}{dx_{mM}}$. To obtain $\frac{dy_m}{dx_{mM}}$, we proceed by implicit differentiation of Eq. A.4 and Eq. A.6. First note that $q_M \frac{\partial y_m}{\partial x_{mM}} + 1 = \frac{Dv_M}{Dx_{mM}}$ and that when y_M is set by the participation constraint Eq. A.4, then $q_M \frac{\partial y_M}{\partial x_{mM}} = q_M \frac{\partial dy_m}{\partial x_{mM}} + 1$ (case 1). If y_M is invariant, then of course $\frac{\partial y_M}{\partial x_{mM}} = 0$ (case 2).

Case 1: $q_M \dfrac{\partial y_m}{\partial x_{mM}} + 1 = p_M(q_M \dfrac{\partial y_m}{\partial x_{mM}} + 1) - \dfrac{1}{n}(q_M \dfrac{\partial y_m}{\partial x_{mM}} + 1) + p_m(q_M \dfrac{\partial y_m}{\partial x_{mM}} + p_c)$

Case 2: $q_M \dfrac{\partial y_m}{\partial x_{mM}} + 1 = p_m(q_M \dfrac{\partial y_m}{\partial x_{mM}} + p_c)$

In both cases, we see that $\frac{\partial y_m}{\partial x_{mM}}$ is a constant. Thus, all terms in $\frac{Du_m}{Dx_{mM}}$ are constants. u_m is a monotonic function of x_{mM}, either increasing or decreasing depending on q_M, q_m, k and (n, n_M). Since an increase in x_{mM} allows a decrease in y_m, u_m is reciprocally monotonically increasing or decreasing in y_m.

When $B_m \geq y_m + n_M p_c x_{mM}$ does bind, x_{mM} enters the budget term. We must consider the variation of B_m with respect to x_{mM} to ascertain montonicity of u_m. In this situation we have that $y_m + x_{mM} - k(n_M p_c x_{mM} + y_m)^2 = p_M(q_M y_M - kB_M^2) + \frac{1}{n}(B_M - y_M) + p_m(q_M y_m - (n_M p_c x_{mM} + y_m)^2 + p_c x_{mM})$. This is a quadratic function of y_m and x_{mM} so y_m can be expressed as a nonlinear function of x_{mM}. We thus obtain a formulation for u_m that is entirely a function of x_{mM}, the derivative of which is thus a constant at $x_{mM} = 0$ that depends on the exogenous parameters. □

The same analysis applied to $\frac{Du_M}{Dx_{MM}}$ proceeds exactly in the same way, to show that $\frac{Du_M}{Dx_{MM}}|_{x_{MM}=0} =$ constant, allowing us to define strategies in terms of whether they minimize transfers to specific members or not.

A.2.1 Remark 1: Equilibria

Majority case The optimality condition is $q_M \frac{dy_M}{dB_M} + 1 - \frac{dy_M}{dB_M} - 2kB_M = 0$. The majority proposer seeks to maximize constituency benefits $(B_M - y_M)$, so $1 - \frac{dy_M}{dB_M} = 0$. Hence $B_M^* = \frac{q_M}{2k}$, as in the collective strategy and the homogeneous baseline.

PO equilibrium without citizen suits In the *PO* equilibrium, the minority minimizes y_m. In fact $y_m = 0$ is feasible as long as $n_M \leq \frac{\sqrt{2n^2q_M^2 - 2nq_M^2 + 1} + 1}{2q_M}$. This condition holds for all parameter values as long as the minority is no smaller than 30% of the legislature, and this is the equilibrium we characterize here. Feasible means that there exists a budget such that the transfers needed for $\frac{n-1}{2} - n_m$ majority members to acquiesce are affordable. The equilibrium values y_M and x_{mM} of *PO* are obtained by solving the participation constraints of the majority occurring under a majority member proposal (Eq. A.4) and under a minority member proposal (Eq. A.6):

$$y_M^{PO} = \frac{\frac{n_M q_M}{k} + (n-1)n_m(kB_M^2 - kB_m^2)}{q_M(n-1)n + 2n_M}$$
$$x_{mM}^{PO} = \frac{2n_M\left(kB_m^2 + kB_M^2\right)}{q_M(n-1)n + 2n_M}$$

B_m is chosen to maximize the utility of the minority proposer subject to the minority's participation constraint. As a result B_m is the minimum of $(B_m^{\text{interior}}, B_m^{\max})$, where B_m^{interior} maximizes the unconstrainted utility of the minority proposer (solving $1 - n_M p_c \frac{dx_{mM}}{dB_m} = 2kB_m$), whereas $B^{\max}$ is the maximum value the budget can take without violating the minority members' participation constraint (solving $-kp_M B_m^2 = p_M(q_m y_M^{PO} - kB_M^2) + \frac{1}{n}(B_m - n_M p_c x_{mM}^{PO})$). The solution is $B_m^{\max}$ at low values of q_M because y_M^{PO} is low and therefore v_m comparatively harder to satisfy.

PA equilibrium Under PA, $q_m y_m - kB_m^2 = v_M$ and $q_M y_M - \frac{q_M^2}{4k} = v_M$. Under PA, we have $v_M = p_M v_M + \frac{1}{n}(B_M - y_M) + p_m v_M$, indicating that $y_M = y_m = B_M = \frac{q_M}{2k}$ as in the homogeneous baseline and the CA equilibrium (see below). We do not consider this equilibrium in the main text because it is equivalent to the CA equilibrium.

CA equilibrium Under CA, $(q_m y_m - kB_m^2)(1-p_m) = p_M(q_M B_M - kB_M^2) \Rightarrow q_m y_m - kB_m^2 = q_M B_M - kB_M^2$. The minority must offer the same payoff to the majority as the majority can obtain on its own terms, so $y_m = B_m = B_M = \frac{q_M}{2k}$ as in the homogeneous baseline.

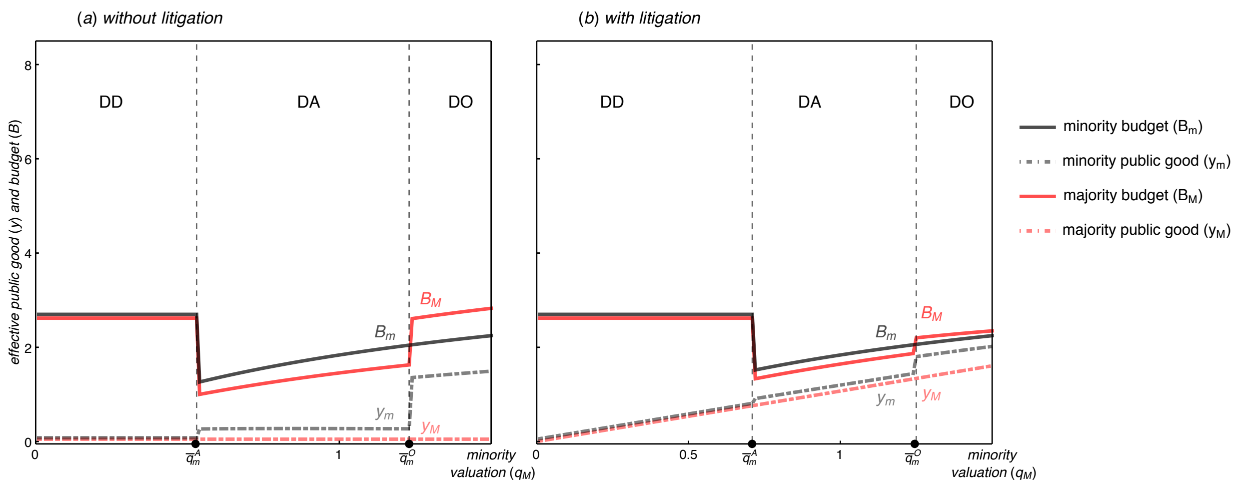
Minority case The budget is $B_m^{DA} = B_m^{DO} = \frac{q_m\left(n^2 - n(n_M+1) + n_M(2n_M+1)\right)}{2k\left(n^2 + n\left(n_M^2(q_m - q_M) + n_M + 1\right) + n_M(2n_M+1)(n_M(q_m - q_M)+1)\right)}$.

DA equilibrium Simultaneously solving Equations A.6 and A.7, we get:

$$y_m^{DA} = \frac{1}{n^2(-(n_M q_m + 1)) + n\left(n_M^2(q_m - q_M) + n_M(q_m + 1) + 1\right) + n_M(2n_M + 1)(n_M(q_M - q_m) - 1)} \times$$
$$\Bigg(B_M n_M (B_M(n-1)np - n + 2n_M + 1) +$$
$$\frac{nq_m^2(n_M - nn_M)\left(n^2 - n(n_M+1) + n_M(2n_M+1)\right)^2}{4k\left(-n^2 + n\left(n_M^2(q_m - q_M) + n_M + 1\right) + n_M(2n_M+1)(n_M(q_M - q_m) - 1)\right)^2}$$
$$+ \frac{q_m\left(n^2 - n(n_M+1) + n_M(2n_M+1)\right)^2}{2k\left(-n^2 + n\left(n_M^2(q_m - q_M) + n_M + 1\right) + n_M(2n_M+1)(n_M(q_M - q_m) - 1)\right)} \Bigg)$$

B_M is the maximum of ($B_M^{\min}$, B_M^{interior}), where $B_M^{\min}$ solves $x_{MM}(B_M) = 0$ (when B_M falls under that level, majority members support the bill with 0 transfers), and B_M^{interior} solves $1 - \frac{n-1}{2}\frac{dx_{MM}}{dB_M} = 2kB_M$.

Figure A.2: Equilibrium Values of the Budget and the Public Good for the Minority Case



The x-axis shows the valuation q_m of the minority and the threshold values at which the equilibria change. Panel b) shows how these equilibrium values change with citizen suits. In both panels, $n = 21$, $n_M = 12$, $k = 0.1$ and $q_M = -.5$.

DO equilibrium Simultaneously solving $y_m = B_m - n_M p_c x_{mM}$ and Equation A.6, we get:

$$y_m^{DO} = \frac{1}{-n^2 + n\left(n_M^2(-q_M) + n_M + 1\right) + n_M(2n_M+1)(n_M q_M - 1)} \times \Bigg(B_M n_M (n-2n_M-1)(B_M n_M p - 1) - \frac{n_M^2 q_m^2 (n-2n_M-1)\left(n^2 - n(n_M+1) + n_M(2n_M+1)\right)^2}{4k\left(-n^2 + n\left(n_M^2(q_m - q_M) + n_M + 1\right) + n_M(2n_M+1)(n_M(q_M - q_m) - 1)\right)^2} + \frac{q_m\left(n^2 - n(n_M+1) + n_M(2n_M+1)\right)^2}{2k\left(-n^2 + n\left(n_M^2(q_m - q_M) + n_M + 1\right) + n_M(2n_M+1)(n_M(q_M - q_m) - 1)\right)} \Bigg)$$

Here again, B_M is the maximum of $(B_M^{\min}, B_M^{\text{interior}})$, where $B_M^{\min}$ solves $x_{MM}(B_M) = 0$ (when B_M falls under that level, majority members support the bill with 0 transfers), and B_M^{interior} solves $1 - \frac{n-1}{2}\frac{dx_{MM}}{dB_M} = 2kB_M$.

A.2.2 Modification of the equilibria with citizen suits

As we have seen, citizen suits restrict the range of $\tilde{y}$ that legislators can bring about. This is the main way in which the decision problems given by Equations A.1-A.7 are changed. Thus, citizen suits do not change Remark 1: the types of strategies and equilibria that emerge from their combination remain the same.

Here we show that in all equilibria, the effective budget $\tilde{B}$ for a given player type and equilibrium stays the same under litigation as in the baseline, when the solution is an interior solution. Section A.3 provides proofs for how the other quantities and the thresholds change. To show that effective budgets stay the same, note that proposers maximize $q\tilde{y}+B-y-n_c x_j-k\tilde{B}^2$. Here n_c is the number of coalition members that receive transfers x_j. Under litigation $\tilde{y}=l(y)$ and $\tilde{B}=B+\tilde{y}-y$, and under the baseline $\tilde{y}=y$ and $\tilde{B}=B$. At the equilibrium, for both institutional environments, we have $(q-1)\frac{d\tilde{y}}{d\tilde{B}}+1-n_c\frac{dx_j}{d\tilde{B}}=2k\tilde{B}$. To conclude that the effective budgets stay the same, all we need is to check that $\frac{d\tilde{y}}{d\tilde{B}}$ and $\frac{dx_j}{d\tilde{B}}$ follow the same functional form under both institutions. In the DD equilibrium, by definition $\frac{d\tilde{y}}{d\tilde{B}}=0$ and the participation constraint of legislators becomes $x=\frac{1}{n}(\tilde{B}-l(0))$ hence $\frac{dx_j}{d\tilde{B}}=1/n$ as without litigation. Hence $\tilde{B}=\frac{n+1}{4nk}$ as in the absence of litigation. In the PO equilibrium, as before, the majority proposer maximizes surplus. Since the surplus is $x_{M,p}=\tilde{B}_M-\tilde{y}_M$, we have that $\frac{d\tilde{y}_M}{d\tilde{B}_M}=1$. In the baseline case, we had $\frac{dy_M}{dB_M}=1$. So the effective budgets are equivalent. For the minority proposer's budget we need to check $\frac{dx^l_{mM}}{d\tilde{B}_{m,l}}=\frac{dx_{mM}}{dB_m}$, the condition that guarantees that $\tilde{B}_m=B_m$. In either institutional environments, this derivative is $\frac{2p_M k\tilde{B}_m}{1+(p_M q_M-\frac{1}{n})n_m(1-p_c)-p_m p_c}$ (see Equations A.14 and A.15 below).

In the DA and DO equilibria, the minority proposer maximizes surplus so $1-\frac{d\tilde{y}_m}{d\tilde{B}_m}-n_M p_c\frac{dx^l_{mM}}{d\tilde{B}_m}=0$. This means that $\frac{2k}{q_m}\tilde{B}_m=\frac{d\tilde{y}_m}{d\tilde{B}_m}=1-n_M p_c\frac{dx^l_{mM}}{d\tilde{B}_m}$. All we need to check is that $\frac{dx^l_{mM}}{d\tilde{B}_m}$ is equivalent under both institutions.

The following checks the needed equality:

$$
\begin{aligned}
&x^l_{mM}(1-p_m p_c)=(-q_M\tilde{y}_m+k\tilde{B}^2_m)(1-p_m)+(p_M(l(0)-k\tilde{B}^2_M)+\frac{1}{n}B_M\\
\Rightarrow&\frac{dx^l_{mM}}{d\tilde{B}_m}(1-p_m p_c)=-q_M\frac{d\tilde{y}_m}{d\tilde{B}_m}+2k\tilde{B}_m=-q_M\frac{2k\tilde{B}_m}{q_m}+2k\tilde{B}_m
\end{aligned}
$$

In the absence of litigation:

$$
\begin{aligned}
&x_{mM}(1-p_m p_c)=(-q_M y_m+kB^2_m)(1-p_m)+p_M(-kB^2_M)+\frac{1}{n}B_M\\
\Rightarrow&\frac{dx_{mM}}{dB_m}(1-p_m p_c)=-q_M\frac{dy_m}{dB_m}+2kB_m=-q_M\frac{2kB_m}{q_m}+2kB_m
\end{aligned}
$$

Turning to the majority's budget, we must check how $\frac{dx_{MM}}{d\tilde{B}_M}$ is affected by litigation. The transfers are set according to: $x^l_{MM}=(-q_M l(0)+k\tilde{B}^2_M)(1-p_M)+\frac{1}{n}B_M+p_m(q_M\tilde{y}_m-k\tilde{B}^2_m)$. Thus, $\frac{dx^l_{MM}}{d\tilde{B}_M}=2k\tilde{B}_M(1-p_M)+\frac{1}{n}$. Here we have made use of the fact that $\tilde{B}_M=B_M+l(0)$, so $\frac{dB_M}{d\tilde{B}_M} = 1$. In the absence of litiation, we similarly obtain $\frac{dx^l_{MM}}{dB_M} = 2kB_M(1 - p_M) + \frac{1}{n}$, so $\tilde{B}_M = B_M$.

A.2.3 Changes in equilibrium regions

The following remark summarizes how the thresholds that demarcate the equilibria change as a function of the legislature's composition.

Remark A.2. *1. In the MAJ case,*

- $\frac{d\bar{q}^P_M}{dn_m} < 0$*: the larger the minority opposition, the lower the threshold at which the majority proposer switches from building a coalition with a purely distributive strategy to building a coalition by providing the public good.*

2. In the MIN case,

- $\frac{d\bar{q}^A_m}{dn_M} > 0$ *and* $\frac{d\bar{q}^A_m}{d|q_M|} > 0$*: the stronger the majority opposition, the higher the threshold at which the minority proposer switches from building a coalition with a purely distributive strategy to building a coalition by providing the public good.*
- $\frac{d\bar{q}^O_m}{dn_M} > 0$ *and* $\frac{d\bar{q}^O_m}{d|q_M|} > 0$*: the stronger the majority opposition, the higher the threshold at which the minority proposer chooses to maximize the amount of funds dedicated to the public good.*

In the majority case, a stronger opposition selects for the equilibrium in which the public good is provided (PO equilibrium) for a much broader range of q_M, which is welfare enhancing. But in the minority case, a stronger opposition simply makes it more expensive to provide the public good, which favors purely distributive spending.

To prove any of the comparative statics, we use the following relation, which results from the envelope theorem:

$$\frac{du_i(y_i^*, B_i^*, \{x_{ij}^*\}, \boldsymbol{\theta})}{d\theta_k} = \frac{\partial u_i(y_i^*, B_i^*, \{x_{ij}^*\}, \boldsymbol{\theta})}{\partial \theta_k} + \sum_i \lambda_i \frac{\partial g_i(y_i^*, B_i^*, \{x_{ij}^*\}, \boldsymbol{\theta})}{\partial \theta_j} \tag{A.8}$$

where $\boldsymbol{\theta}$ is the vector of parameters $\{n, n_M, q_M, q_m, k\}$. The participation constraint of legislator of type j is expressed as $g_j(y_i, B_i, \{x_{ij}\}, \boldsymbol{\theta}) = 0$ where $j \in (m, M)$. λ_j are the lagrangian multipliers.

The functions u and g and the lagrangian multipliers change for the different equilibria, so we will label the equilibrium by a superscript. To simplify notation, we will omit the optimal values of the choice variables and thus u and g are to be understood as taking their equilibrium value.

Proof. First consider the majority case relation $\frac{d\bar{q}_M^P}{dn_m} < 0$. The threshold is between the DD equilibrium and the PO equilibrium. The proposer's payoff from the D strategy depends only on the size of the legislature, but not on the size of the opposition. So we only need to look at how the payoffs of the proposer change in the PO equilibrium as n_m changes. In the PO equilibrium, the proposer's payoff function is $u^{PO} = q_M y_M + B_M - y_M - kB_M^2$ and the constraint is $g^{PO} = p_m(q_M y_M - kB_M^2) - \frac{1}{n}(B_M - y_M) - p_m(p_c x_{mM} - kB_m^2) = 0$. Applying equation A.8, and doing some algebra, we get:

$$\frac{du^{PO}}{dn_m} = \lambda_M^{PO} \frac{(n-1)}{2nn_M} x_{mM}(\frac{n_m}{n_M} + 1) > 0 \tag{A.9}$$

The shadow price λ_M^{PO} is positive, because the constraint reduces the profit of the proposer, so the overall expression is positive. Since the profit from the PO strategy increases with the size of the opposition but the profit from the DD strategy is fixed, the threshold value of q_M at which PO is attractive relative to the DD strategy decreases.

We seek to show next that in the minority case, $\frac{d\bar{q}_m^A}{dn_M} > 0$ and $\frac{d\bar{q}_m^A}{d|q_M|} > 0$. The threshold is between the DD equilibrium and the DA equilibrium. The minority proposer's payoff from the D strategy is insensitive to n_M or q_M. So we only need to look at how the payoffs of the proposer change in the DA equilibrium as n_M and q_M change. In the DA equilibrium, the minority proposer's payoff function is $u^{DA} = q_m y_m + B_m - y_M - n_M p_c x_{mM} - kB_m^2$ and the constraints are $g_M^{DA} = q_M y_m + x_{mM} - kB_m^2 - p_m(q_M y_m + p_c x_{mM} - kB_m^2) - \frac{1}{n} B_M - p_M(-kB_M^2) = 0$ and $g_m^{DA} = p_M(q_m y_m - kB_m^2) - \frac{1}{n}(B_m - y_m - n_M p_c x_{mM}) - p_M(-kB_M^2)$. Applying equation A.8, we get:

$$\frac{du^{DA}}{dn_M} = -x_{mM} + \lambda_m^{DA} \frac{x_{mM}}{n} + \lambda_M^{DA} \frac{1}{2nn_M^2} x_{mM}(1-n) < 0 \tag{A.10}$$

The overall expression is dominated by the term $-x_{mM}$, the increase in distributive transfers for each increase in the size of the majority, and which subtracts from the proposer's rent. Since the profit from the DA strategy decreases with the size of the opposition but the profit from the DD strategy is fixed, the threshold value of q_m at which DA is attractive relative to the

DD strategy increases with n_M. Using the same logic, we find:

$$\frac{du^{DA}}{dq_M} = \lambda_M^{DA} p_M y_m > 0 \tag{A.11}$$
$$\Rightarrow \frac{du^{DA}}{d|q_M|} < 0$$

Thus, the threshold value of q_m at which DA is attractive relative to the DD strategy increases with $|q_M|$.

We next seek to show that $\frac{d\bar{q}_m^O}{dn_M} > 0$ and $\frac{d\bar{q}_m^O}{d|q_M|} > 0$. The threshold is between the DA equilibrium and the DO equilibrium. We thus compare the derivative of the A strategy's payoff above to the derivative of the O strategy's payoff. In the DO equilibrium, the minority proposer's payoff function is $u^{DO} = q_m(B_m - n_M p_c x_{mM}) - kB_m^2$ and the constraints are $g_M^{DO} = q_M y_m + x_{mM} - kB_m^2 - p_m(q_M y_m + p_c x_{mM} - kB_m^2) - p_M(-kB_M^2) = 0$ and $g_m^{DO} = p_M(q_m y_m - kB_m^2) - \frac{1}{n}(B_m - y_m - n_M p_c x_{mM}) - p_M(-kB_M^2)$. Applying equation A.8, and doing some algebra, we get:

$$\frac{du^{DO}}{dn_M} = -q_m x_{mM} + \lambda_M^{PO} \frac{1}{2nn_M^2} x_{mM}(1-n) < 0 \tag{A.12}$$

The comparison between the DA and DO equilibria is only relevant when $q_m > 1$, so comparing equations A.10 and A.12, we see that the change in profit from an increase in the size of the majority is larger for the DO equilibrium. The reason is that the opportunity cost of the transfers to the majority are larger, since they take away from what can be invested in the public good, which is more highly valued than distributive spending. Since the DO equilibrium's payoff declines more in response to a rise in the size of the majority, the threshold value of q_m at which DO is attractive relative to the DA strategy increases with n_M.

Lastly, we look at the way q_M changes the DO strategy profit:

$$\frac{du^{DO}}{dq_M} = \lambda_M^{PO} p_M y_m > 0 \tag{A.13}$$
$$\Rightarrow \frac{du^{DO}}{d|q_M|} < 0$$

y_m^* under the DO equilibrium is higher than under the DA equilibrium (for the same parameter values). Additionally, $\lambda_M^{DA} < \lambda_M^{DO}$ because the majority constraint in the DA equilibrium is less strong (given that less of the funds are invested in the public good, which the majority opposes).

Thus, comparing equations A.11 and A.13, we see that the change in profit from an increase in the intensity of preferences of the majority is larger for the DO equilibrium. Again, this implies that the threshold value of q_m at which DO is attractive relative to the DA strategy increases with $|q_M|$. □

A.3 Main Results

In this section, I compare the litigation model (L) with the baseline model (B). For the purpose of following the proofs, transfers in the litigation model are superscripted by l, while the baseline has no superscript. I do not add a superscript l to the variables y and B because under litigation they are expressed as $\tilde{y}$ and $\tilde{B}$, indicating their effective value after litigation. This notation already distinguishes them from the baseline.

A.3.1 Result 1

Proof. We seek to show that $\tilde{y}_M^{PO} > y_M^{PO}$. Result 1 also states that $\tilde{y}_m^{PO} > y_m^{PO}$, which requires no proof since it arises directly from the way I conceptualized the institution of citizen suits. Indeed, $y_m^{PO} = 0$, while $\tilde{y}_m^{PO} = l(0) > 0$.

In the PO equilibrium, $\tilde{y}_M > y_M$ iff $x^l_{M,p} < x_{M,p}$. In equilibrium, the participation constraint of the majority requires that:

B: $\frac{1}{n} x_{M,p} = p_m(1 - p_c)x_{mM}$

L: $\frac{1}{n} x^l_{M,p} = p_m(1 - p_c)x^l_{mM}$

These equations tell us that $x^l_{M,p} < x_{M,p}$ iff $x^l_{mM} < x_{mM}$. Turning to the minority proposer's choice, he maximizes $q_m l(0) + \tilde{B}_m - l(0) - n_M p_c x^l_{mM} - k\tilde{B}_m^2$, such that $q_M l(0) + x^l_{mM} - k\tilde{B}_m^2 = p_M(q_M(\tilde{B}_M - x^l_{M,p}) - k\tilde{B}_M^2) + frac1nx^p_{M,l} + p_m(q_M l(0) - k\tilde{B}_m^2 + p_c x_{mM,l})$. Using this equation and $x_{M,p} = n_m(1 - p_c)x_{mM}$, we can re-express x_{mM} as:

$$\text{B: } x_{mM}(1 + (p_M q_M - \frac{1}{n})n_m(1 - p_c) - p_m p_c) = p_M k B_m^2 + p_M(q_M B_M - kB_M^2) \tag{A.14}$$

$$\text{L: } x^l_{mM}(1 + (p_M q_M - \frac{1}{n})n_m(1 - p_c) - p_m p_c) = p_M(-q_M l(0) + k\tilde{B}_m^2) + p_M(q_M \tilde{B}_M - k\tilde{B}_M^2) \tag{A.15}$$

Since $\tilde{B}_m = B_m$, we see that:

$$x^l_{mM} - x_{mM} = -\frac{p_M q_M l(0)}{D} > 0 \tag{A.16}$$

where $D = \frac{q_M(n-1)n_m}{2n} + p_M > 0$. Therefore $x^l_{mM} < x_{mM}$ and thus $\tilde{y}_M > y_M$. The exact difference between the level of provision of the public good between the two institutional environments is :

$$\begin{aligned}\tilde{y}_M - y_M &= x_{M,p} - x^l_{M,p} \\ &= n_m(1-p_c)(x_{mM} - x^l_{mM}) \\ &= n_m(1-p_c)\frac{p_M q_M l(0)}{D} = \frac{(n-1)q_M n_m}{2n_M + (n-1)q_M n_m} l(0)\end{aligned} \tag{A.17}$$

□

We extend Result 1 to the minority case:

Result 5. *In the DA and DO equilibria, citizen suits increase public good provision by both types of legislators:* $\tilde{y}^l_M > y_M$ *and* $\tilde{y}^l_m > y_m$.

Proof. We first show that $\tilde{y}^{DA}_m > y^{DA}_m$. Result 1 also states that $\tilde{y}_M > y_M$ (for both the DA and DO equilibria), but this requires no proof since $y^{DA}_M = y^{DO}_M = 0$ while $\tilde{y}^{DO}_M = \tilde{y}^{DA}_M = l(0) > 0$.

First, consider the participation constraint of the minority in the litigation and baseline cases:

$$\begin{aligned}&\text{B: } p_M(q_m y_m - kB^2_m) = p_M(-kB^2_M) + \frac{1}{n}x_{m,p} \\ &\text{L: } p_M(q_m \tilde{y}_m - k\tilde{B}^2_m) = p_M(q_m l(0) - k\tilde{B}^2_M) + \frac{1}{n}x^l_{m,p} \\ &\Rightarrow p_M q_m(\tilde{y}_m - y_m) = p_M q_m l(0) + \frac{1}{n}(x^l_{m,p} - x_{m,p})\end{aligned} \tag{A.18}$$

Suppose that $\tilde{y}_m < y_m$. From the above, we see that it would imply $x_{m,p} > x^l_{m,p}$. Let us now consider the participation condition of the majority:

$$
\begin{aligned}
&\text{B: } x_{mM} = p_M(-q_M y_m + kB_m^2) + \frac{1}{n}B_M + p_M(-kB_M^2) \\
&\text{L: } x^l_{mM} = p_M(-q_M \tilde{y}_m + k\tilde{B}_m^2) + \frac{1}{n}(B_M - l(0)) + p_M(q_M l(0) - k\tilde{B}_M^2) \\
&\Rightarrow x^l_{mM} - x_{mM} = p_M q_M(y_m - \tilde{y}_m) + (p_M q_M - \frac{1}{n})l(0) \qquad \text{(A.19)}
\end{aligned}
$$

If $\tilde{y}_m < y_m$, then the last line is negative, which implies $x_{mM} > x^l_{mM}$. However, it is impossible that all three inequalities hold: $x_{m,p} > x^l_{m,p}$, $y_m > \tilde{y}_m$ and $x_{mM} > x^l_{mM}$ while the budget is constant in both cases. This shows that it is impossible that $\tilde{y}_m < y_m$.

We now turn to showing that $\tilde{y}^{DO}_m > y^{DO}_m$: In the *DO* equilibrium, $\tilde{B}_m = \tilde{y}_m + n_M p_c x^l_{mM}$. So $\tilde{y}_m > y_m \Leftrightarrow x^l_{mM} < x_{mM}$.

$$
\begin{aligned}
&\text{B: } x_{mM} = (-q_M y_m + kB_m^2)(1 - p_m) + \frac{1}{n}B_M + p_M(-kB_M^2) \\
&\text{L: } x^l_{mM} = (-q_M \tilde{y}_m + k\tilde{B}_m^2)(1 - p_m) + \frac{1}{n}(\tilde{B}_M - l(0)) + p_M(q_M l(0) - k\tilde{B}_M^2) \\
&\Rightarrow (x^l_{mM} - x_{mM})(1 - q_M p_M n_m p_c) = (p_M q_M - \frac{1}{n})l(0) < 0 \qquad \text{(A.20)}
\end{aligned}
$$

Where we have made use of the fact that $\tilde{y}_m - y_m = n_M p_c(x_{mM} - x^l_{mM})$ and that $\tilde{B}_M = B_M$. Since $1 - q_M p_M n_m p_c > 0$, we get that $x^l_{mM} < x_{mM}$ and therefore that $\tilde{y}_m > y_m$. The exact difference is

$$
\tilde{y}_m - y_m = n_M p_c \frac{(-p_M q_M + \frac{1}{n})l(0)}{1 - q_M p_M n_m p_c} \qquad \text{(A.21)}
$$

□

A.3.2 Result 2

Proof. In the *CA* equilibrium, we have $B_M = y_M = \frac{q_M}{2k}$ and consequently $\tilde{B}_M = \tilde{y}_M = l(\frac{q_M}{2k})$. The minority sets $\tilde{y}_m$ and $\tilde{B}_m$ to satisfy:

$$q_M\tilde{y}_m - k\tilde{B}_m^2 = p_M(q_M l(\frac{q_M}{2k}) - kl(\frac{q_M}{2k})^2) + p_m(q_M\tilde{y}_m - k\tilde{B}_m^2)$$

$$\Rightarrow (1-p_m)(q_M\tilde{y}_m - k\tilde{B}_m^2) = p_M(q_M l(\frac{q_M}{2k}) - kl(\frac{q_M}{2k})^2)$$

$$\Rightarrow \tilde{y}_m = l(\frac{q_M}{2k}) = \tilde{B}_m$$

Similarly to when the legislature acted alone, the minority is constrained to set the public policy to the same level as the majority and invest all funds into it. However the maximum value of the policy is now $l(\frac{q_M}{2k}) < \frac{q_M}{2k}$. □

A.3.3 Result 3

Result 3 extends to the minority case as follows

Result 6. *In the DA and DO equilibria, the share of the public good relative to the budget decreases as the size and strength of opposition ($|q_M|$) of the majority opposition increases. In the DA equilibrium, the share of the public good relative to the budget decreases as the minority's valuation of the public good increases:*

- $\frac{d(B_m - y_m)}{dn_M} < 0$ *and* $\frac{d(B_m - y_m)}{d|q_M|} < 0$*, in the DO and DA equlibria and*
- $\frac{d(B_m - y^m)}{dq_m} > 0$ *in the DA equilibrium.*

Both effects are dampened by citizen suits:

- $\frac{d(B_m - y_m)}{dn_M} < \frac{d(\tilde{B}^l_m - \tilde{B}^l_m)}{dn_M}$ *and* $\frac{d(B_m - y_m)}{d|q_M|} < \frac{d(\tilde{B}^l_m - \tilde{B}^l_m)}{d|q_M|}$ *in the DO and DA equilibria, and*
- $\frac{d(B_m - y_m)}{dq_m} > \frac{d(\tilde{B}^l_m - \tilde{y}^l_m)}{dq_m}$ *in the DA equilibrium.*

Both 3 and 6 are proved together below.

Proof. We start with the effect of $\mathbf{q_1}$ on the PG share of the budget in proponents' proposal, i.e. seek to show that $\frac{d(B_\mathbf{1} - y_\mathbf{1})}{dq_\mathbf{1}} > 0$ in the PO and DA equilibria. In these equilibria, where $\mathbf{q_1} < 1$, if the change in the optimal value of the proposer's objective function increases with $\mathbf{q_1}$, it means that the proposer's rent is increasing with $\mathbf{q_1}$ (since that is what he is trying to maximize). In the PO equilibrium, the change is $\frac{du^{PO}}{dq_M} = (q_M - 1)y_M + \lambda_M^{PO} p_m y_M > 0$, which is positive because $\lambda_M^{PO} = \frac{n(1-q_M)}{1+n_m q_M}$.
In the DA equilibrium, the situation is analogous, with $\frac{du^{DA}}{dq_m} = (q_m - 1)y_m + \lambda_m^{DA} p_M y_m > 0$, and $\lambda_m^{DA} =$ which leads to the same conclusion.

To show that the first of these relationships is dampened by citizen suits, we compare the contribution of $\frac{\partial g_M^{PO}}{\partial q_M}$ to changes in the optimal value of the objective function under both institutional environments. If it is lower in the litigation case, then this means the participation constraint of the majority doesn't decrease as fast with q_M. We have $\frac{\partial g_M^{PO,l}}{\partial q_M} - \frac{\partial g_M^{PO}}{\partial q_M} = p_m(\tilde{y}_M^{PO} - 2l(0) - y_M^{PO})$. Equation A.17 gives us $\tilde{y}_M^{PO} - y_M^{PO} < l(0)$. Hence, $\frac{\partial g_M^{PO,l}}{\partial q_M} - \frac{\partial g_M^{PO}}{\partial q_M} < 0$, which proves our claim. The reasoning is similar for the second relationship. We consider $\frac{\partial g_m^{DA,l}}{\partial q_m} - \frac{\partial g_m^{DA}}{\partial q_m} = p_m(\tilde{y}_m^{DA} - 2l(0) - y_m^{DA})$. Equation A.18 gives us $\tilde{y}_m^{DA} - y_m < (0)$. Hence $\frac{\partial g_m^{DA,l}}{\partial q_m} - \frac{\partial g_m^{DA}}{\partial q_m} < 0$.

We now show that $\frac{dB_{\mathbf{1}} - y_{\mathbf{1}}}{dn_{\mathbf{0}}} < 0$ and $\frac{dB_{\mathbf{1}} - y_{\mathbf{1}}}{d|q_{\mathbf{0}}|} < 0$ in the PO, DA and DO equilibria. This can be readily seen from the changes in the optimal value of the objective function derived in Section A.2.3.

In the PO equilibrium, $\frac{du^{PO}}{dn_m} = \lambda_M^{PO} \frac{\partial g_M^{PO}}{dn_m}$: the optimal value of the objective function increases with n_m if g_M^{PO} increases, i.e. if the participation constraint of other majority members decreases thereby contributing to the optimal value of the objective function. Indeed, Equation A.12 gives us $\frac{\partial g_M^{PO}}{dn_m} = \lambda_M^{PO} \frac{(n-1)}{2nn_M} x_{mM}(\frac{n_m}{n_M} + 1) > 0$.

In the DA equilibrium, $\frac{du^{DA}}{dn_M} = -x_{mM}^{DA} + \lambda_m^{DA} \frac{\partial g_m^{DA}}{dn_M} + \lambda_M^{DA} \frac{\partial g_M^{DA}}{dn_M}$. An increase in n_M can decrease the share of the public good either through a relaxation of the constraint of the minority or a strengthening of the constraint of the majority. We have a decrease in the provision of the public good relative to the budget due to a lesser participation constraint of the minority members iff $\frac{\partial g_m^{DA}}{dn_M} > 0$. Equation A.10 shows that $\frac{\partial g_m^{DA}}{dn_M} = \frac{1}{n} x_{mM}$, so this is indeed the case. On the contrary, we can have a decrease in the provision of the public good relative to the budget due to the majority's participation constraint iff this constraint is higher and requires more transfers to the majority, i.e. iff $\frac{\partial g_M^{DA}}{dn_M} < 0$. Equation A.10 gives us $\frac{\partial g_M^{DA}}{dn_M} = \frac{1}{2nn_M^2} x_{mM}(1-n)$ which is indeed negative.

Turning to the effect of $|q_M|$ in the DA equilibrium, we follow the same reasoning: $\frac{\partial g_m^{DA}}{d|q_M|} = -p_M y_M^{DA} < 0$ hence an increase in $|q_M|$ causes more of the funds to go to transfers to the majority.

In the DO equilibrium, the proposer wants to maximize spending on the public good, but the participation constraint of majority members limits the ability to fund the public good. Equation A.12 gives $\frac{\partial g_M^{DO}}{dn_M} = \frac{1}{2nn_M^2} x_{mM}(n-1) < 0$ and Equation A.13 gives $\frac{\partial g_M^{DO}}{d|q_M|} = -\lambda_M p_M y_M^{DO} < 0$. Both parameters reduce the proportion of funds that can go to the public good.

We now want to show that these trends are dampened by citizen suits.

In the PO equilibrium, $\frac{dy_M^{PO}/B_M}{dn_m} < 0$ is dampened by citizen suits iff $\frac{\partial g_M^{PO,l}}{dn_m} < \frac{\partial g_M^{PO}}{dn_m}$. Taking into account the change in participation constraint of the majority due to citizen suits, we have $\frac{\partial g_M^{PO,l}}{dn_m} = \frac{(n-1)}{2nn_M}(\frac{n_m}{n_M}+1)x_{mM}^{PO,l} - p_m q_M \frac{dl(0)}{dn_m}$. Thus, $\frac{\partial g_M^{PO,l}}{dn_m} - \frac{\partial g_M^{PO}}{dn_m} = \frac{(n-1)}{2nn_M}(\frac{n_m}{n_M}+1)(x_{mM}^{PO,l} - x_{mM}^{PO}) - p_m q_M \frac{dl(0)}{dn_m}$. Equation A.16 gives us $x_{mM}^{PO,l} - x_{mM}^{PO} = -\frac{p_M q_M l(0)}{D}$. After some algebra, we find that $\frac{\partial g_M^{PO,l}}{dn_m} - \frac{\partial g_M^{PO}}{dn_m}$ simplifies to $-\frac{(n-1)n_m}{(n-1)q_M n_m + 2n_M} + \frac{q_M}{n}$ This is dominated by the first term, which is negative, showing that indeed the citizens suits dampen the effect of the opposition on public good provision.

In the DA equilibrium, the relationship $\frac{dy_m^{DA}/B_m}{dn_M} < 0$ is dampened if $\frac{\partial g_m^{DA,l}}{dn_M} < \frac{\partial g_m^{DA}}{dn_M}$ and $\frac{\partial g_M^{DA,l}}{dn_M} > \frac{\partial g_M^{DA}}{dn_M}$. We check each in turn. We have $\frac{\partial g_m^{DA,l}}{dn_M} - \frac{\partial g_m^{DA}}{dn_M} = \frac{x_{mM}^{DA,l} - x_{mM}^{DA}}{n} - p_M q_m \frac{dl(0)}{dn_M}$. Equation A.19 gives $x_{mM}^{DA,l} - x_{mM}^{DA} = p_M q_M(y_m^{DA} - \tilde{y}_m^{DA}) + (p_M q_M - \frac{1}{n})l(0)$. Since $\tilde{y}_m^{DA} - y_m^{DA} \sim l(0)$ (Equation A.18), we have $x_{mM}^{DA,l} - x_{mM}^{DA} - p_M q_m \frac{dl(0)}{dn_M} \sim (2p_M q_M - \frac{1}{n})l(0) + p_M \frac{q_m}{n_m} l(0)$. This is dominated by the first term which is negative.

We have $\frac{\partial g_M^{DA,l}}{dn_M} - \frac{\partial g_M^{DA}}{dn_M} = \frac{1}{2nn_M^2}(1-n))(x_{mM}^{DA,l} - x_{mM}^{DA,l}) - p_M q_M \frac{dl(0)}{dn_M}$. Since $x_{mM}^{DA,l} - x_{mM}^{DA} < 0$, it is clear that this difference is positive, and so less of the funds need to be dedicated to distributive spending to the majority.

Similarly, the relationship $\frac{dy_m^{DA}/B_m}{d|q_M|} < 0$ is dampened iff $\frac{\partial g_M^{DA,l}}{d|q_M|} > \frac{\partial g_M^{DA}}{d|q_M|}$. We have $\frac{\partial g_M^{DA,l}}{d|q_M|} - \frac{\partial g_M^{DA}}{d|q_M|} = p_M(-\tilde{y}_m^{DA} + l(0) + y_m^{DA})$. We have seen that $y_m^{DA} - \tilde{y}_m^{DA} \sim -p_M l(0)$ hence $p_M(-\tilde{y}_m^{DA} + l(0) + y_m^{DA}) \sim p_M p_m l(0) > 0$, which proves our claim.

In the DO equilibrium, the relationship $\frac{dy_m^{DO}/B_m}{dn_M} < 0$ and $\frac{dy_m^{DO}/B_m}{d|q_M|} < 0$ are dampened iff $\frac{\partial g_M^{DO,l}}{dn_M} > \frac{\partial g_M^{DO}}{dn_M}$ and $\frac{\partial g_M^{DO,l}}{d|q_M|} > \frac{\partial g_M^{DO}}{d|q_M|}$. Here we have $\frac{\partial g_M^{DO,l}}{dn_M} - \frac{\partial g_M^{DO}}{dn_M} = \frac{1}{2nn_M^2}(1-n))(x_{mM}^{DO,l} - x_{mM}^{DO,l}) - p_M q_M \frac{dl(0)}{dn_M}$. Equation A.20 gives $x_{mM}^{DO,l} - x_{mM}^{DO} = \frac{p_M q_M - \frac{1}{n}}{1 - q_M p_M n_m p_c} l(0)$, which is a negative quantity. This term dominates relative to $-p_M q_m \frac{dl(0)}{dn_M} = p_M \frac{q_m^2}{4nk}$. Thus, $\frac{\partial g_m^{DO,l}}{dn_M} - \frac{\partial g_m^{DO}}{dn_M} > 0$, proving our claim. Finally, $\frac{\partial g_M^{DO,l}}{d|q_M|} - \frac{\partial g_M^{DO}}{d|q_M|} = p_M(y_m^{DO} - \tilde{y}_m^{DO} + l(0))$. Equation A.21 gives us $y_m^{DO} - \tilde{y}_m^{DO} = n_M p_c \frac{(p_M q_M - \frac{1}{n})}{1 - q_M p_M n_m p_c} l(0) > -l(0)$, hence our claim holds.

□

A.3.4 Changes in equilibrium regions due to litigation

We wish to show that $\bar{q}_M^{l,P} > \bar{q}_M^P$, $\bar{q}_M^{l,C} > \bar{q}_M^C$, $\bar{q}_m^{l,A} > \bar{q}_m^A$ and $\bar{q}_m^{l,O} > \bar{q}_m^O$: the threshold functions get shifted upward under litigation.

The change in the utility from the distributive strategy for a player with valuation q is:

$$\Delta u^{DD} = (q-1)l(0) + \tilde{B}^{DD,l} - \frac{n-1}{2}\frac{\tilde{B}^{DD} - l(0)}{n} - k(\tilde{B}_l^{DD})^2 - (B^{DD} - \frac{n-1}{2}\frac{B^{DD}}{n} - k(B^{DD})^2)$$

Remembering that $B^{DD} = \tilde{B}_l^{DD}$, we have:

$$\Delta u^{DD} = (q - 1 + \frac{n-1}{2n})l(0) \sim (q - \frac{1}{2})l(0) \tag{A.22}$$

To understand how $\bar{q}_M^P$ changes, we will compare Δu^{DD} to Δu^{PO} for $q = q_M$. The change in utility from the PO strategy is:

$$\Delta u^{PO} = (q_M - 1)(\tilde{y}_{M,l}^{PO} - y_M^{PO}) \tag{A.23}$$

Equation A.17 gives $\tilde{y}_{M,l}^{PO} - y_M^{PO} = \frac{(n-1)q_M n_m}{2n_M + (n-1)q_M n_m} l(0)$. For q_M in the vicinity of $\bar{q}_M^P$, $\frac{(n-1)q_M n_m}{2n_M + (n-1)q_M n_m} l(0) > \frac{1}{2}l(0)$. Hence $\Delta u^{PO} < (q_M - 1)\frac{1}{2}l(0) < (q_M - \frac{1}{2})l(0) \sim \Delta u^{DD}$. Thus, $\Delta u^{PO} < \Delta u^{DD}$ and therefore that $\bar{q}_M^{l,P} > \bar{q}_M^P$.

It is immediate that Δu^{CA} is smaller than Δu^{PO} for $q_M \geq 1$. Indeed, at $q_M = 1$, $\Delta u^{PO} = 0$ and when $q_M \geq 1$, Δu^{PO} becomes positive, whereas $\Delta u^{CA} < 0$ since citizen suits prevent the majority from getting their optimal public good funding level. Therefore $\bar{q}_M^{l,C} > \bar{q}_M^C$.

The change in the utility from the DA strategy (minority case):

$$\Delta u^{DA} = (q_m - 1)(\tilde{y}_m^{DA} - y_m^{DA}) - n_M p_c(x_{mM}^{DA,l} - x_{mM}^{DA}) \tag{A.24}$$

Using Equation A.18 and A.19, we get:

$$\Delta u^{DA} = (\frac{q_m\left(n^2 p_M(q_m - 1) + n_M p_c(1 + n p_M(1 - q_M))\right)}{n(n p_M q_m - n_M p_c p_M q_M)})l(0)$$

The factor preceding $l(0)$ is negative and smaller than $q - 1 + \frac{n-1}{2n}$ for parameter ranges that are relevant. Thus $\Delta u^{DA} < \Delta u^{DD}$. As a result, the threshold $\bar{q}_m^{A,l}$ is higher than $\bar{q}_m^A$ in the absence of litigation. To understand why this is the case, consider Eq. A.24. The first term is the utility lost to having to devote more resources to the public good, equivalent to $(q-1)l(0)$ in Eq. A.22. Both terms are on the same order. The second term is the difference in the distributive goods that need to be transfered to form a coalition. These transfers are lower under litigation. In the case of the DD equilibrium, these transfers are $\frac{l(0)}{n}$ lower than without litigation, and going to $\frac{n-1}{2}$ members. In the case of the DA equilibrium, the reduction in transfers is of the same order but only need to go to $n_M p_c$ members. Thus the gains in utility from lower transfers in the DD equilibrium are more consequential than in the DA equilibrium $\bar{q}_m^{l,A} > \bar{q}_m^A$ and $\bar{q}_m^{l,O} > \bar{q}_m^O$: the threshold functions get shifted upward under litigation.

The change in utility from the DO strategy:

$$\Delta u^{DO} = q_m(\tilde{y}_m^{DO} - y_m^{DO}) \tag{A.25}$$

Because in the DO equilibrium, $y_m = B_m - n_M p_c x_{mM}$, we can rewrite the change in proposer utility as

$$\Delta u^{DO} = q_m n_M p_c (x_{mM}^{DO} - x_{mM}^{DO,l})$$

From Equation A.20:

$$\Delta u^{DO} = q_m n_M p_c \frac{p_M q_M - \frac{1}{n}}{1 - q_M p_M n_M p_c} l(0)$$

Comparing Δu^{DO} and Δu^{DA} for $q_m > 1$, we find that $\Delta u^{DA} > \Delta u^{DO}$.

A.4 Welfare Analysis

Welfare is defined by

$$W = \frac{n_M}{n} E[u_M] + \frac{n_m}{n} E[u_m]$$

The difference in welfare between the litigation case and the baseline case is denoted $\Delta W = W^l - W$.

Since when $q_M < \bar{q}_M^C$, litigation increases investment in the public good and decreases the rent to the proposer, this is beneficial only if $\bar{q} > \frac{1}{n}$.

When $q_M \geq \bar{q}_M^{C,l}$, the relevant comparison is between the CA equilibrium with and without litigation. The differences in welfare levels between these two equilibria is:

$$W^l = (\frac{n_M}{n} q_M + \frac{n_m}{n})\tilde{y} - k\tilde{y}^2$$
$$\Delta W = \bar{q}(\tilde{y} - y) + k(y^2 - \tilde{y}^2)$$

ΔW is positive as long as $\bar{q} < \frac{(3nn_M)q_M}{4n}$, which holds iff $q_m < \frac{q_M(2n-3n_M)}{4n_m}$. In other words, the litigation outcome is always superior if the minority has a negative valuation of y.

A.5 Endogeneity of Citizen Suits

We do not present full proofs for the claims of this section, because the arguments follow fairly directly from the results presented in earlier. The action space is $L = 0, L = 1$ and the strategy profiles are vectors (L_M, L_m), giving four possible equilibrium outcomes.

- Case 1: MAJ case with a status quo that corresponds to unbiased implementation

  It is clear from earlier results that $u_m^{0,0} > u_m^{1,0}$ for all parameter values. Indeed, the minority proposer could use the institution to gain more legislative support at less cost from majority members, but we already established that the minority proposer in fact prefers to use distributive transfers to minimize the amount of the public good provided (the O strategy prevails), so it is not advantageous to promote citizen suits.When $q_M > 1$, the minority proposer would support citizen suits to obtain a better compromise, but the minority proposer cannot afford the transfers needed for majority members to join his coalition and accept the institution.

  It is also clear that $u_M^{0,0} > u_M^{0,1}$. Indeed, this would simply add more constraints to the proposers on how to balance the public and private goods to compose the coalition. At best, it makes no difference to his payoff, and at worst it decreases his payoff by forcing him to invest at least $l(0)$ in the public good instead of investing at level he finds optimal for his own political advantage.

  Now suppose $l_M = 1$ and $l_m = 1$, can one of the legislators benefit from revoking the institution? For low values of q_M, neither benefits because the public good is not valued enough by any legislators, to the point where individual transfers are in fact a cheaper way of building a coalition. For all values of $q_M < 1$, the minority proposer gains to revoke the institution (beyond the direct avoidance of the public good) because it guarantees the support of the minority at a very low or zero cost. When $q_M > 1$, the majority proposer clearly wants and can revoke the institution.

- Case 2: MAJ case with a status quo similar to $r = 1$ (a lot of resistance in the implementation of the policy in the absence of citizen suits)

  If $r = 1$, then $l(0) = 0$ but $l(y) < y$ for all $y > 0$. This means that some values of y that the majority proposer wants to implement are out of reach unless he/she institute citizen suits in the bill, even when $l_m = 0$. This implies that for some range of $q_M > \bar{q}_M^P$, $u_M^{0,0} < u_M^{0,1}$, so $(l_M = 0, l_m = 0)$ is no longer an equilibrium.

Now suppose $l_M = 1$ and $l_m = 1$, can one of the legislators benefit from revoking the institution? The reason that leads the majority proposer to institute citizen suits when $l_m = 0$ continues to hold when $l_m = 1$ since now majority proposers have a higher continuation value and are going to demand even higher values of the public good to give their support to the proposer's coalition. Thus, the stability of the $(l_M = 1, l_m = 1)$ equilibrium hinges on whether the minority proposer can afford to revoke it, which we now turn to. As we saw in the main section, the minority chooses the opposition strategy and in doing so, can afford to bring the public good to very low levels (and for most parameters, to $y = 0$). This implies that for all parameter values at which the opposition strategy is attractive, the minority proposer can use transfers to revoke the citizen suit institution. Thus the citizen suit institution is an equilibrium institution only when $q_M \geq 1$ or the majority is very large (at which point the acquiescence strategy is preferred and the minority is forced to make the same proposal as the majority).

- Case 3: MIN case with a status quo that corresponds to unbiased implementation
  It is clear that $u_M^{1,1} > u_M^{0,1}$, since the majority opposes the public good and only needs the support of other majority members who oppose the public good as well. Thus are never an equilibrium in the MIN case. Additionally $\{l_M = 0, l_m = 0\}$ is an equilibrium. Indeed, it is clear that $u_M^{0,0} > u_M^{0,1}$, and $u_m^{0,0} > u_m^{1,0}$ because the minority proposer wants the freedom to offer just enough of the public good to satisfy the participation constraint of the minority members, and no more than that.

- Case 4: MIN case with a status quo similar to $r = 1$ (a lot of resistance in the implementation of the policy in the absence of citizen suits) As above, $\{l_M = 1, l_m = 1\}$ cannot be an equilibrium for the same reason as above since the majority has all the reasons to revoke the institution in their proposals. For q_m large enough, the minority proposers could promote citizen suits if in their absence they cannot achieve the public good gains they want and can afford to propose (in the *DO* equilibrium), but it would not constitute an equilibrium.