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Interest groups and policy volatility

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We offer a model of how interest groups affect policy stability. The relationship between interest group density and policy volatility is concave because of two forces: (a) the number and interaction of interest groups in a policy domain and (b) the effect of this interaction on policy image and attention. After laying out the logics of both processes, we identify three ideal type situations: (a) capture (low interest group density, low attention) and (b) deadlock (high interest group density, high attention) lead to low levels of policy volatility while (c) lability (medium interest group density, intermittent attention) leads to high levels of policy volatility. For our empirical evidence, we rely on all budget functions in the American states from 1984 to 2010 and employ generalized additive regression modeling. The article contributes to the literature on understanding interest group strategies, interest group influence in policy making, and broader questions of deliberative democracy.

1 | INTRODUCTION

The two basic themes of public policy in political science are stability and change. The literatures from political science, public policy, public administration, and economics expect episodic change to be the normal output from a stable political system (Baumgartner, Breunig, et al., 2009); however, frequent changes in opposing directions within a policy area are indicators of instability (Henisz, 2004). While policy change is generally an expected outcome of political processes, instability is not. Policy volatility can contribute to a crisis of confidence in governments where citizens, administrators, and businesses are unable to plan for future government actions (Crain, 2009). If government stability is a fundamental indicator of an effective democracy (see, e.g., Persson & Tabellini, 2005), policy volatility is a fundamental threat.

We understand policy volatility through the lens of subsystem politics (Baumgartner & Jones, 1993; Jones & Baumgartner, 2005; Sabatier & Jenkins-Smith, 1993; Weible & Sabatier, 2009). Incremental or erratic change can be seen as a function of rules, actors empowered or restrained by rules, and preferences for change (Baumgartner, Breunig, et al., 2009; Jones, True, & Baumgartner, 1997a); our research investigates the contributions of interest groups in these subsystem politics (Nowlin, 2016). Interactions of interest groups structure political conflict by providing alternatives to policy makers, forming coalitions, and offering competition. We ask: How does interest group competition structure policy stability and volatility?

Policy volatility occurs within specific policy areas. Interest group influence over policy making is tied to theories of individual group motivations and behavior (Heinz, 1993; Olson, 1965; Salisbury, Heinz, Laumann, & Nelson, 1987), interest group behaviors as contingent upon the presence of and interaction with other groups (Gray & Lowery, 1996a, 1996b; Gray, Lowery, Fellowes, & Anderson, 2005), and attention in the policy process (Jones & Baumgartner, 2005, 2012). We argue that the relationship between interest group presence and policy volatility is concave. We identify two mechanisms that shape this relationship: (a) the share and interaction of interest groups in a policy domain and (b) the effect of this interaction on policy image and attention.

Our argument identifies three scenarios of subsystems dynamics, two that explain stability and one that explains change. Stability results from a capture-like scenario in which low attention is marked by a small share of interested groups maintaining a policy monopoly and a deadlock-like scenario in which a large density of groups maintain consistently high issue attention. In the third scenario, lability, a moderate share of groups in a policy domain is unable to provide a stable policy image. Attention to the policy domain occurs intermittently and policy volatility dominates. In all scenarios, our starting point of inquiry is that the composition of interest groups populate across different policy domains differs from state to state.

The article is organized as follows. We first discuss the general concept of policy volatility. Second, we develop a theory of interest group density and explicate a concave relationship between interest group density and policy volatility. Third, we measure policy volatility as the standard deviation change in state budget functions over time. Fourth, we use semiparametric additive regression to test the relationship between interest group density and policy volatility using 26 years of budget data from the American states (1984–2010). Controlling for state-level institutional features and economic swings, we find that policy stability is related to very low or very high concentrations of groups in policy areas; however, volatility increases in comparatively moderate interest group density. This is a particularly dangerous scenario for government expenditure because more volatile government spending makes for difficult planning on the parts of agency heads and ultimately results in greater spending for the same services (Crain, 2009).

2 | VOLATILITY IN PUBLIC POLICY

Volatile policy domains are those that swing back and forth between alternate positions over an extended period of time with some significant magnitude (Fatás & Mihov, 2006). Policy process theories that study patterns of change such as punctuated equilibrium theory (Baumgartner, Breunig, et al., 2009; Baumgartner & Jones, 1993; Jones & Baumgartner, 2012; Jones et al., 2009), the advocacy coalition framework (Weible & Sabatier, 2009; Weible, Sabatier, & McQueen, 2009), or diffusion (Boushey, 2010) largely investigate an extant pattern of change, a disruption to this pattern, and then the end result of these disruptions. In these scenarios, disruptions to patterns of change are more or less discrete events rather than persistent issues. While formative, dominant policy theories are challenged to characterize policy volatility wherein policy domains see persistent significant changes that deviate substantially from previous changes, resulting in an erratic set of policy outputs in a policy domain.

Predominantly, the literature that discusses policy volatility is focused on political institutions, particularly rules about public budgeting (Crain, 2009; Fatás & Mihov, 2006, 2013; Henisz, 2004; Jones et al., 1997a). The causes of volatility are identified as political preferences conditioned by institutional structures. The formal agenda-setting literature finds politicians that are allowed more freedom to make policy changes are likely to do so for the purpose of short-term electoral gain. More powerful actors see policy making as a tool to make highly visible policy decisions that deviate from established patterns of policy making. Specific institutional arrangements across countries (Fatás & Mihov, 2006, 2013) or American states (Crain, 2009; Crain & Miller, 1989) enable or restrain policy makers from engaging in unfettered policy making either by the powers granted to specific actors (e.g., finance ministers; see Hallerberg, Strauch, & von Hagen, 2009) or in rules created for making particular policies (Alt, Lassen, & Wehner, 2014; Primo, 2006).

Political actors concentrate their policy making efforts in a particular domain, rather than the aggregate of these domains. The literature on policy volatility views policy change through the lens of individual institutions and partisanship. Importantly, interest group competition shapes subsystem dynamics by constraining and providing opportunities for policy makers. Interest groups, in general, strive to produce stability but also, as we argue, are key components in understanding volatility when they compete with one another to draw policy makers' attention to issues.

3 | BEHAVIORAL ASSUMPTIONS OF INTEREST GROUP INTERACTIONS IN THE POLICY PROCESS

Extant scholarship investigates interest group influence over policy making by focusing on tactics, strategy, resources, and other political activities (Baumgartner, Berry, Hojnacki, Kimball, & Leech, 2009). The literature fundamentally agrees that interest groups influence policy; however, findings that systematically relate interest groups to policy outputs are thin at best (Baumgartner & Leech, 1998; Burstein & Linton, 2002). Studies focus on particular policies, particular time periods, or visible strategies in a political environment where much of interest group activity occurs outside traditional political channels (see Lowery, 2013, for a thorough review).

Group motivations and strategies are well articulated in political science, beginning with Olson's (1965) basic assumption that groups form to pursue rents from governments and Mayhew's (1974) argument that politicians are inclined to listen to what they say if assists in policy makers' reelection goals. Insofar as groups are useful to reelection-minded politicians, they exchange information with policy makers regarding issues related to policy and offer financial resources to candidates (Nownes & Freeman, 1998). Interest groups can be active in one venue of the policy process, many, or all depending which offers the greatest possibility of success (Baumgartner & Leech, 1998; Boehmke, Gailmard, & Patty, 2013; Holyoke, 2003). Groups are active in problem definition (Kingdon, 1995), agenda setting (Austen-Smith, 1993; Cobb & Elder, 1972), law making (Baumgartner, Berry, et al., 2009), rule making (Furlong & Kerwin, 2005; Yackee, 2006), implementation (Koski & May, 2006), and learning (Koski, 2010).

The interest group literature also considers interactions with other groups in setting the policy making agenda (Baumgartner, Berry, et al., 2009; Baumgartner & Jones, 1993; Gilens & Page, 2014; LaPira, 2015). Membership motivates much of individual groups' behaviors in shaping and responding to policy (Holyoke, 2009), but this behavior is conditioned by the presence of other groups with which groups may choose to cooperate or compete (Heinz, 1993). Group decisions to cooperate or compete with other groups is often dependent on a desire to lobby for change (Leifeld & Schneider, 2012). At the same time, motivations to lobby for change are influenced greatly by the number and positions of groups active in the same policy domain. Interest groups compete and collaborate based the opportunities they see to deliver rents (Holyoke, 2003). Often, the safest strategy for groups to consistently deliver rents is to maintain the status quo (Baumgartner & Leech, 1998).

It is politically risky for a group to oppose the status quo if there is little hope of policy change. Ultimately, groups that fail in their efforts to change policy have trouble demonstrating their value to the members that empower them, although there are cases where groups make decisions based less on the likelihood of success and more on the strategic desires of members (Pralle, 2003). Interest group competition occurs (Axelrod, 1967; Salisbury, 1992) but less often than cooperation (Holyoke, 2009), depending on the constellation of other groups in the subsystem. Moreover, competition does not necessarily lead to policy change; rather, competition can stem from a desire to defend the status quo. The end result is an interest group system that favors policy stability; however, the role interest groups play in determining volatility is as yet undiscovered.

4 | INTEREST GROUP DYNAMICS AND POLICY VOLATILITY

Different dynamics between interest groups can emerge depending upon the individual capacity of a group to influence policy, the institutional characteristics of the policy making environment, and the presence of other groups. Status quo groups generally prefer low-conflict scenarios to maintain their position; challenger groups seek to expand conflict (Schattschneider, 1960). Economic theories of interest group mobilization suggest that more groups will flock to policy areas that produce greater rewards (Mitchell & Munger, 1991; Moe, 1980; Olson, 1965). Neopluralism (McFarland, 2004, 2010) and interest group ecology (Gray & Lowery, 1996a, 1996b, 2001; Lowery & Gray, 1995) inform our expectations of group behaviors in influencing public policy. This literature suggests that memberships of interest groups and their relations (competition and cooperation) to other groups within a policy domain influence policy outcomes.

The policy process literature contends that the relationship between interest groups and policy outcomes is determined by two features: policy image and attention (Baumgartner & Jones, 1993; Jones & Baumgartner, 2005). Policy entrepreneurs wanting to change the status quo direct attention to stable policy images to expand the number of actors involved in a policy domain. Policy images offer factual information and emotional appeals (Robinson, 2016); this information focuses attention on particular policy problems. Issue expansion destroys the existing policy image, introduces new participants, and unlocks the policy monopoly. This breakdown results in policy change. Thus, in addition to characteristics of the interest group population, the policy process literature argues interest groups compete for attention and contest policy images. These battles affect policy outcomes.

We assume that, in general, interest groups are concerned with maintaining or increasing their share of resources from governments. We argue that policy outcomes are related to the dynamism of the interest group context and of the policy process. We hypothesize three scenarios—capture, deadlock, lability—that map onto a curvilinear relationship between interest group density and policy volatility.

4.1 | Capture

The capture scenario is characterized by two features: comparatively few interest groups and a stable policy image resulting from low attention to the policy domain. Some policy domains are populated by a small number of groups that have long-lasting, stable memberships that interact in an environment of mutual understanding and trust. Legislators can more easily create coalitions of smaller groups or allow one or more to dominate policy making (Olson, 1965). Long-term stability of in-group dominance dissuades rival groups, contributing to a political environment similar to Culpepper's (2011) "quiet politics." The same conditions that contribute to low levels of participation from rival groups also contribute to less attention to the policy domain itself. A stable policy image in this scenario is as much a function of in-group dominance as a lack of attention.

The stable policy image has three proximate consequences. First, the groups in the policy monopoly are linked to a clearly defined constituency and serve that constituency's interest. Second, because of stable membership, groups are better able to maintain a strong link to the bureaucracy that serves the policy domain. Third, this stability affords groups the opportunity to think about long-term interests. Long-term thinking results in groups lobbying less for larger immediate change, and lobbying more for steady changes that build toward broader group goals (Hojnacki, Kimball, Baumgartner, Berry, & Leech, 2012). There is little demand for open interest group pressure; instead a “quiet politics” prevails (Baumgartner & Leech, 1998; Culpepper, 2011).

Policy making under these conditions strongly favors the status quo. Interest groups aim at maximizing rents to a degree that allows them to keep a low profile. Low profile groups pursue enough government resources to satisfy constituents, but not so much that rivals are attracted to the policy domain. Additionally, low-profile groups seek to avoid attention beyond the subsystem. In the long run, this adherence to the status quo produces low policy volatility. We label this relationship “capture” in which the politics of low attention and few interest groups produce reliable stable outputs for the policy domain.

> *Capture Hypothesis: Low densities of interest groups in policy domains lead to less policy volatility.*

4.2 | Deadlock

The deadlock scenario is characterized by two features: many interest groups competing for resources and sustained attention to a policy domain. The energy stability area model suggests some policy domains are populated by many groups because of large potential constituency, presence of available resources, and great policy uncertainty. A high level of interest group competition prevents the formation of a cozy policy monopoly. In contrast to less crowded policy domains, groups may be hypercompetitive in these established fields because gridlock creates conditions for lobbyists to push positions closer to groups’ ideal points (Holyoke, 2011). Legislators are likely to be punished as much as rewarded for change (Bowling & Ferguson, 2001; Gray & Lowery, 1995). However, the lack of a policy monopoly does not mean that the domain is unstable; rather, stability results from sustained competition across dominant rival groups.

If interest group density is an indicator of attention, as neopluralist logic would suggest, then policy domains with many groups ought to be macropolitically “important”—or at least worthy of many policy makers’ attentions. At the same time, issue areas that are served by many interest groups are likely to be contentious. In their review of the interest group literature, Baumgartner and Leech (1998) refer to issues for which there are many interests at the “noisy end” of the spectrum in which groups often take positions for the sake of their own members or in opposition to other groups. Policy domains that experience constant interest group competition are unable to remain independent from the broader political agenda (Baumgartner & Jones, 1993, p. 175).

In this scenario, the macropolitical environment, rather than subsystem politics, induces stability in a policy domain. The result of a diverse set of interests can be “deadlock” where groups have a hard time establishing dominance. Consistent attention to these issues results in a policy process more heavily monitored by groups and constituents such that major deviations are likely to be politically controversial. Moreover, in the case of budgets, issues that enjoy a high agenda position are also likely to occupy significant portions of the overall distribution of dollars within a budget. Similar to the findings of Jones, Zalányi, and Érdi (2014), even incremental changes can be large in real terms if the base is large, too. Thus, incremental changes can be major victories. To the extent that groups are participating actively in attempting to create policy, it is likely that the net result of significant conflict between advocacy coalitions is incremental updating of previous policy rather than major change—particularly given that groups are often repeat players in this conflict. Indeed, this is the hope of the original conception of pluralism: loud groups representing multiple interests, which offset each other and allow for consistent updating by relevant policy makers. Interest group fecundity leads to policy stability.

Deadlock Hypothesis: High densities of interest groups in policy domains lead to less policy volatility.

4.3 | Lability

In the lability scenario, the number of interest groups operating in a policy domain is too many for an issue to stay low profile but too few to generate constant attention from outside the subsystem. In addition to a medium-sized presence of interest groups, over time different interest groups populate these policy domains. Given this type of interest group interaction, the development of a policy monopoly is challenging. Variegated interest group presence stunts the growth of linkages both among interest groups and between the bureaucracies that serve the domain.

In this scenario, the interaction among interest groups and legislators is complex. Group preferences are diverse enough to discourage a large coalition of actors and strong enough to prevent a small dominant coalition from dominating the entire issue. Interest group density is small enough that groups still have some opportunity to form coalitions with other groups that lead to compromise. Additionally, issues may not be as polarizing or legislators' positions may be flexible so that compromise is a legitimate possibility. Under these conditions, lobbyists do not have the cover of gridlock to assume interest group ideal points without some real risk of being left out of a winning coalition. However, group density is large enough to produce variation in preferences that prevents capture-induced stability.

Groups' abilities to influence the policy that emerges in these moderate cases is heightened by the fact that they can offer information to policy makers and that policy makers are rewarded for making changes to these areas by rival groups (Austen-Smith, 1993). The institutions in which the conflict occurs are more responsive to demand and are not locked into a particular pattern of lobbying—that is, subtle agenda control (capture) or open tactical battles (deadlock). This membership profile hinders the generation and maintenance of a stable policy image. With no stable policy image, groups are challenged to provide factual and emotive information to current and potential constituents. Instead, groups in this position must rely on shifts in attention to achieve their policy goals in a given domain. Interest groups attempting to pursue policy goals in the lability scenario must be strategically flexible. Groups must be able to focus attention when pursuing gains; however, they must also shift tactics to suppress attention from rivals once those gains are achieved. The types of issues that attract a moderate range of interest groups rise and fall with cascades of attention (Halpin, 2011; Jones & Baumgartner, 2005) rather than stay consistently off (capture) or on (deadlock) the policy radar.

This is a scenario that most groups would like to avoid. All groups are in a similarly unstable position: Policy gains and losses alternate regularly, and often not of their own volition. Groups are uncertain about the interest group composition over time, making it difficult to identify potential rivals and allies when lobbying for policy change. Actors in this scenario can rely upon neither the stability of a dominant policy image nor constant attention to their cause. Thus, swings in political attention in a moderately populated policy domain drive policy outcomes. Attention is temporary and unstable; thus, policy making alternates between overreaction and underreaction (Jones & Baumgartner, 2005). In other words, policy outcomes are volatile.

Lability Hypothesis: Moderate densities of interest groups in policy domains lead to more policy volatility.

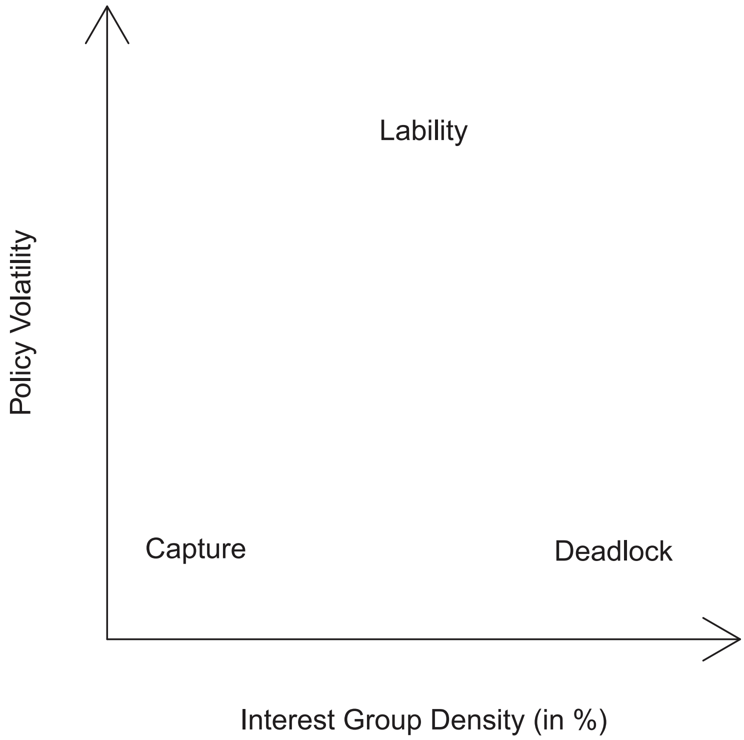

FIGURE 1 Visual display of the argument

The argument we construct conceives of the interaction of interest group densities and policy volatility as a continuum of outcomes rather than a discrete set. Interest group density is a relative concept such that characterizing "few" groups means understanding "many"; similarly, volatility is also relative. The range of hypotheses we offer is inherently nonlinear: We argue that both high and low interest group density scenarios produce the same level of volatility (low), but that the density between these two groups will produce high volatility. We summarize our argument in Figure 1.

5 | SETTING AND CASE: BUDGETING IN THE AMERICAN STATES

Public budgeting is often used as a proxy for the policy making process (Barrilleaux & Bernick, 2003; Breunig & Koski, 2012; Jacoby & Schneider, 2001; Jones et al., 2009). Fiscal resources are the lifeblood of programs, the agencies responsible for their implementation, and the citizens and businesses they serve. With so much at stake for existing and new programs, it makes sense, then, that the conflict over budgeting is the workhorse of policy outcomes rather than the "show horse" of agenda setting and law making.

Budgeting in the American states provides the opportunity to test how concentrations of interest groups influence policy making and offers strong guidelines about potential covariates. The interest group literature, particularly Gray and Lowery, describes significant variation across states and time. The public budgeting literature—covering public administration, public policy, economics, and political science (for an overview on the literature, see Rubin, 2005)—points to other factors that influence the budgeting process, such as the powers given to policy makers and the budgetary rules designed to guide them.

The budget process at the state level involves a host of actors who are variably empowered across states and have various rules to follow regarding the point at which they are influential in the process (Alt & Lowry, 1994, 2003; Bowling & Ferguson, 2001; Crain, 2009; Kousser & Phillips, 2012; Lowry, Alt, & Ferree, 1998). Most studies identify the governor as the focal point in state budgeting, particularly if a governor has both agenda-setting and veto powers. Similar to Congress, state legislatures do not simply kowtow to gubernatorial action. Studies particularly focus on the role of divided government in influence budgetary outcomes.

The budgetary process at the state level is also limited by formal rules that are not present at the federal level (Alt & Lowry, 1994), although the extent to which these rules are "hard" is debatable as often states find creative ways of getting around them (Primo, 2006). Most states have some form of balanced budget requirement and a carryover restriction; outside of this structure, it can also be slightly more difficult for states to borrow than the federal government, although by most investment standards states are a safe bet. In addition to these constitutional or statutory balanced budget requirements, a few states (Arkansas, California, and Illinois) require supermajorities to pass budget bills.[1]

6 | DATA AND MEASURES: SOURCES OF BUDGET VOLATILITY IN THE AMERICAN STATES

6.1 | Conceptualizing and measuring budgetary changes

Our choice of dependent variable speaks to the same general goals of budgeting research: We seek to understand factors that affect how policy is made. Budgeting does not occur in a vacuum. Interest groups are concerned with getting their share of a budget in a specific policy domain, while policy makers have to operate within institutional and economic bounds across spending items. It is in this context that we investigate volatility in American state budgets.

For this article, annual state expenditures data are from *State Government Finances* (United States Government Census Bureau) and available for all 50 states from 1984 to 2010. The data can be classified according to 10 functional categories: corrections, education, health, highways, hospitals, natural resources, parks and recreation, police and law enforcement, welfare, and government administration (which also contain some other minor spending). Borrowing the definition from finance (see Black & Scholes, 1973), we define policy volatility as variation of budget expenditures over time. Our operationalization of volatility in this article is simply the standard deviation of growth rates multiplied by a constant. Specifically, we assemble the annual growth rate (i.e., annual change in the log of spending) of each budget function in each state first. Then, we compute the standard deviation of the growth rate and multiply it by the square root of 27 (i.e., the total time horizon that is the number of year for which we have data). The resulting dependent variable consists of a volatility measure for each budget function in each state and comprises 500 observations.

In the sample, budget volatility ranges between 0.13 and 4.33 with a mean of .80. Figure 2 visualizes the variation in budget volatility across three examples over 26 years. The left frame of Figure 2 displays an erratic growth rate of health care spending in Alabama characteristic of high volatility (volatility of 1.6), the center frame shows a fairly stable growth rate of welfare spending in Massachusetts (volatility of 0.4), and the right frame shows an incremental rate of growth (volatility of 0.2) consistent with high stability.

6.2 | Operationalization of covariates

We consider the following institutional, political, and economic covariates to be systemically related to budget volatility. The data for the covariates come from a variety of studies and government reports (see Table 1 for the descriptive statistics). First, as outlined above, we expect a curvilinear relationship between interest group density and policy volatility. Interest group density is based on three surveys by

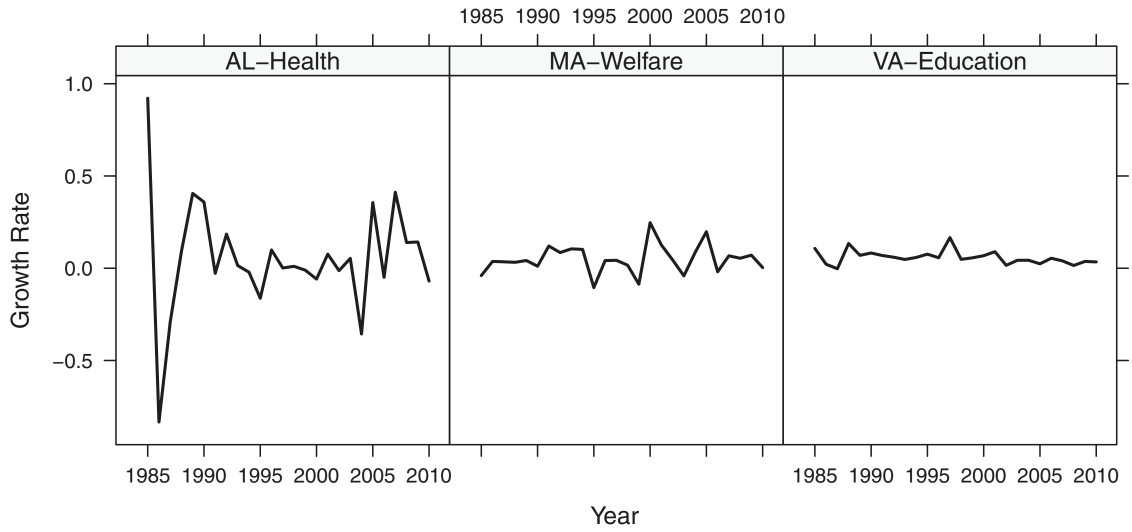

FIGURE 2 Growth rates in three states for three budget functions, 1985–2010

Lowery and Gray (2005). We assign interest groups into specific budget functions and then compute their share of all interest groups for each functional area across the three surveys.

Second, from the literature on budgeting, we know that governors are a central actor in making state budgets. The previous literature identifies two institutional tools that governors employ during the budget battle—veto power and agenda-setting powers. Governors with a greater the institutional ability to propose and defend their budget are able to reorganize individual spending commitments easily and thereby induce volatility in a state budget over time. Gubernatorial powers are based on two indices developed by Beyle (1996, 2003, 2005) to assess and budget agenda-setting powers. The combined scores are each state average and can range from 0 to 10 with gubernatorial budget powers increase with score.[2]

Third, budget volatility is likely to be higher when there is regular partisan turnover of the governor because each turnover enables the legislation a different preference set. Government turnover counts how many times the partisan affiliation of the governor changes over time. We also suspect that the longer a state is ruled by divided government with its ongoing conflict over the budget, the more volatile its budget will be. Divided government is operationalized as the percent of years that a state has elected a governor who is of a different party than at least one legislative chamber. The possibility to

TABLE 1 Descriptive statistics of all variables

Variable	Minimum	First quartile	Median	Mean	Third quartile	Maximum
Volatility (*SD*)	0.13	0.40	0.58	0.80	0.93	4.33
Interest group density	0.84	5.98	10.50	11.70	15.26	33.45
Governor power	4.52	7.68	8.68	8.09	8.68	10.00
Governor turnover	0.00	1.00	2.00	2.26	3.00	6.00
Divided government	0.05	0.41	0.64	0.58	0.77	1.00
Referendum	0.00	0.00	0.00	0.47	1.00	1.00
Budget stringency	0.00	6.00	10.00	8.08	10.00	10.00
Supermajority req.	0.00	0.00	0.00	0.10	0.00	1.00
Business cycle	2.14	3.44	4.29	4.64	5.53	9.60

Note. $N = 500$.

instill policy change outside of the typical legislative process via referenda is another potential source of high budget volatility. A simple dummy variable indicates whether a state has a referendum process in place.

Fourth, we account for two institutional features of the budgeting process. States vary in their propensity to submit a balanced budget. We expect that increasing budget stringency will lead to less volatile budgeting because these institutional rules will limit the budgeter's room to make large-scale changes. A budget stringency measure is provided by the American Council on Intergovernmental Relations' (ACIR) score of budget carryover rules (ACIR, 1987).[3] On a 0 to 10 scale, states with more stringent requirements score higher. Similarly, supermajority requirements in the legislative area also stymie budgetary change and thereby reduce volatility within a budget. To test the effect of supermajorities on budget bills, we use a dichotomous classification where states with supermajority requirements are scored as a 1.

Finally, we account for the economic fortunes of a state by including a measure of the business cycle. Wider swings in the business cycle induce budget volatility. The business cycle measure is based on the Federal Reserve Bank of Philadelphia, which produces a monthly coincident index (Crone & Clayton-Matthews, 2005). Following out budget volatility measure, we constructed a business cycle volatility measure by computing the standard deviation of the growth rates of monthly coincident indices multiplied by the square root of the total time period.

6.3 | Model estimation and specification

Our theoretical expectations suggest the use of flexible nonlinear modeling. We rely on additive regression modeling (Beck & Simon, 1998; Hastie & Tibshirani, 1990; Keele, 2008) as a compromise between the extreme flexibility of a purely nonparametric approach and the simplicity of the linear model. Specifically, we use the following semiparametric additive regression model to examine specific political factors of policy volatility.

$$y=\alpha+\sum_{j=1}^{m}\beta_j X_j+\sum_{k=1}^{p}s_k(Z_k)+\epsilon,$$

where y is a vector for policy volatility in each state and budget function, s is the function of a penalized regression spline, and X and Z are vectors of covariates. This model is solved by penalized iteratively reweighted least squares while $s()$ is numerically optimized using the generalized cross-validation criterion (see Wood, 2011). X_j contains institutional and economic variables specific to states; Z is our interest group density measure. Note that Z does not possess a to-be-estimated coefficient. Instead, it is easiest to interpret the estimated smoothing spline by plotting Z_k versus $s_k(Z_k)$ and thereby showing the estimated nonlinearities and the accompanying confidence bands in the relationship between Z_k and the dependent variable.

In our analysis, we examine three model specifications to ensure the robustness of the results. First, we only smooth interest group density and estimate linear effects for the business cycle. The second model adds the following covariates: governor power, government turnover, divided government, referendum, ACIR, and supermajority. The third specification estimates all of these covariates plus state fixed effects.[4]

7 | RESULTS

Table 2 displays the results of the four estimated models. Our primary interest in this article is the relationship between interest group density and policy volatility. Our three hypotheses understand this relationship to be nonlinear and the results presented in Table 2 do not allow us to reject this argument. To

TABLE 2 Semiparametric additive regression estimates of policy volatility

Independent variable	Model 1	Model 2	Model 3
Governor power		0.00 (0.03)	0.03* (0.02)
Governor turnover		0.03 (0.03)	0.05 (0.04)
Divided government		−0.07 (0.13)	0.11 (0.15)
Referendum		0.00 (0.07)	−0.07 (0.08)
Budget stringency		−0.01 (0.01)	0.01 (0.02)
Supermajority requirement		−0.04 (0.11)	−0.03 (0.09)
Business cycle	0.03 (0.02)	0.02 (0.02)	0.01 (0.04)
Intercept	0.65*** (0.09)	0.77** (0.30)	0.28** (0.10)
State fixed effects			Yes
S (Interest group density)	3.87*** (4.81)	3.91*** (4.86)	3.99*** (4.94)
Adj R^2	.07	.06	.04
Akaike information criterion	978	969	1,020
Deviance explained	0.08	0.08	0.14
N	500	490	490

*$p < .10$. **$p < .05$. ***$p < .001$.

assess our individual hypotheses, we present the estimates for interest group density graphically in Figure 3. The plots present the local marginal relationship between interest group density and budget volatility and the 95% confidence band. While keeping all other covariates constant, the graph indicates that the estimated effect of interest groups is curvilinear and not constant. At low *and* at high levels of interest group density, we find a reduction of budget volatility. However, a medium (in relative terms) level of interest group density contributes to an increase in budget volatility. An F-test ($F = 11.04$ and $p < .001$) shows the generalized additive model is a more appropriate estimator than ordinary least squares regression. While the confidence bands cross zero in the transition between low, medium, and high levels of interest group density, most of the nonlinear estimates are statistically significant at 95%. Substantively, the size of these local effects is quite large, too, covering nearly 20% of the range of budget volatility. Overall, the nonlinear influence of interest group density on policy volatility is therefore considerable and statistically significant.

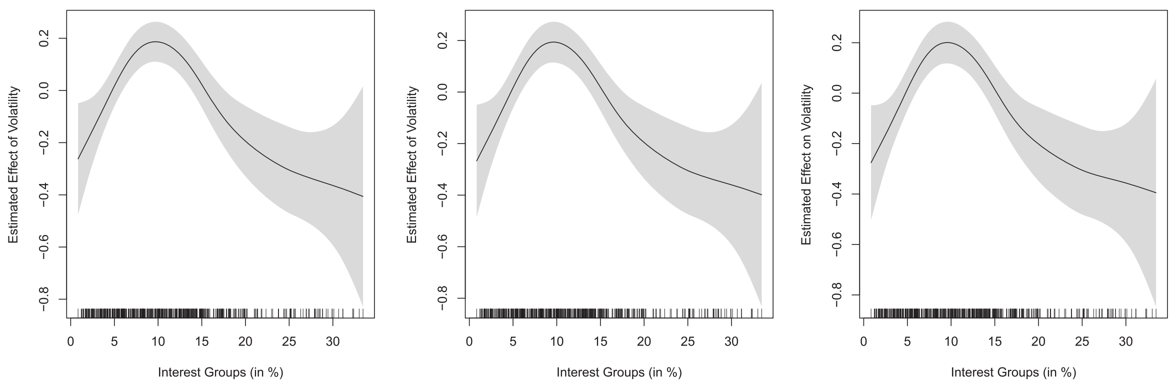

FIGURE 3 Spline fit for interest group density. The solid black line is the fitted spline function and the shaded region is the 95% pointwise confidence band. The rug at the *x*-axis represents the individual observations of interest group density. Models 1–3 are ordered from left to right

There are few notable results from other covariates included in the models, indicating the power of interest group density in understanding policy volatility. The estimates suggest that states with institutionally strong governors are beset by more volatile budgets. The estimated coefficient for governor power is always positive. This relationship is close to conventional levels of significance (i.e., 95%) once we control for state fixed effects (Model 3). There is a positive association between two covariates—governor turnover and business cycle—and budget volatility; however, these results fail to reach conventional levels of statistical significance. All other covariates—divided government, referendum, budget stringency, and supermajority—have changing coefficients and wide confidence bands.

Overall, the estimated models indicate that specific politics within a policy domain contributes to policy volatility rather than macroeconomic and political features that affect all domains equally. The density of interest groups for specific budget functions has a crucial but varied effect: Low and high levels of interest group density result in more tranquil budgeting while medium levels lead to volatility.

8 | DISCUSSION

Analyzing how interest groups "matter" in American state politics allows us to offer some provocative new insights into the power of interest groups to supersede institutional structure in determining the stability (or lack) of public policy. The main conclusions we draw from both our theoretical model and the empirical research presented in the article are that (a) policy volatility is not the result of specific state institutions and (b) interest groups have a nonlinear relationship with volatility. Two new implications follow from these conclusions. First, interest groups might not be able, and might not want, to move back to a capture-like scenario once engaged in deadlock. Second, our deadlock scenario indicates that expanded interest group conflict can produce policy stability while offering the opportunity for enhanced democratic participation.

The first conclusion speaks to the role of institutions from a collective perspective, but also to specific institutions that are shared to a varying degree by all states. Institutions specifically designed to induce policy stability have no effect in the models we test. This null finding is particularly surprising in the case of budgets because budgeting has even more rules than most other aspects of the policy process that explicitly aim to create stability. This is not to say that institutions do not influence volatility in some way, but our article adds to the mixed findings regarding institutional attempts to induce policy stability (Breunig & Koski, 2009; Crain, 2009; Crain & Miller, 1989). It is simply hard to assess the impact of institutions on all facets of policy making when considering institutional design. The findings suggest that there are no "silver bullets" to solving commonly identified problems in addressing policy instability.

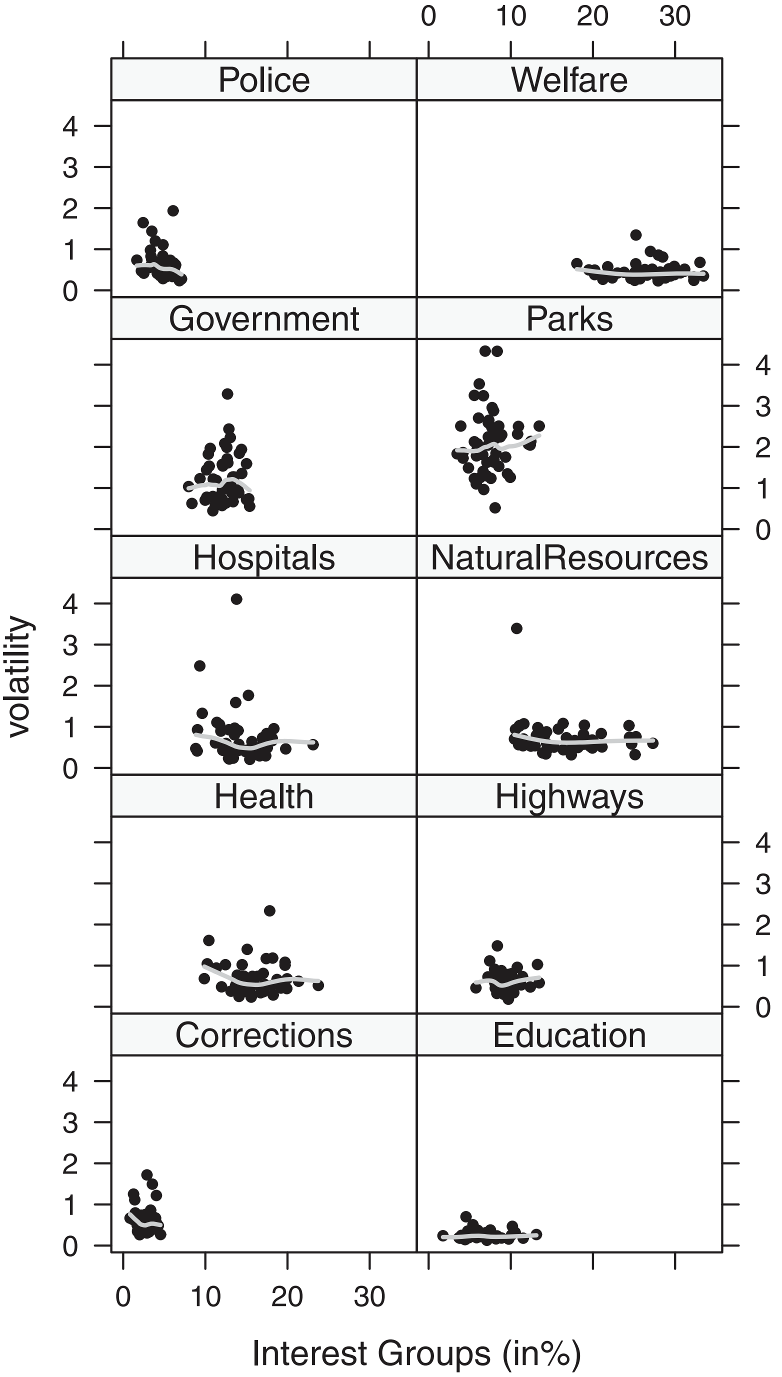

FIGURE 4 Budget volatility by interest group density for each budget function. *N* 500

Second, whereas institutions exhibit an inconclusive influence, interest groups produce a consistent and strong concave relationship with volatility. We plot the volatility of each function by interest group presence in Figure 4 to extend our pooled analysis to the categorical level. Figure 4 shows categories vary little in their volatility across states, as seen by the relative tightness of the distribution of points in each frame of the graph. However, categories vary in ways that are highly associated with state interest group presence. Police, corrections, and education have very few interest group densities across states and also, generally speaking, historically low volatility in state spending. Parks and, to a lesser extent, hospitals have a comparatively moderate amount of interest group presence, but high levels of volatility. Welfare is a relatively stable function along with natural resources, but, in contrast to education, has high levels of interest group involvement.

Our regression results and Figure 4 speak to broad theories on interest groups and public policy. Common and empirically verified wisdom on interest groups typically stems from theories related to interest group capture and pluralism. Our findings allude to scenarios in which each of these theories is supported. When interest groups are few, as is the case in police and education, the conditions for capture are better, which means less change in existing arrangements. Captured policy domains can better defend against losses and take on little new turf necessitating significant policy gains. In addition, our findings that show crowded policy domains experience less volatility support pluralist conceptions of interest group competition. The typical arguments raised against pluralism stem from a lack of competition leading to capture (Bardhan & Mookherjee, 2000); curiously, our research shows pluralism to lead to the same level of volatility as capture. Perhaps the most interesting finding regarding interest group presence, however, is that the middle ground between capture and pluralism sees quite a bit of volatility. In a policy domain in which no one group dominates, but competition is variegated, winners and losers are subject to large losses and gains. Our research provides nuance to the vast middle ground of interest group theory between capture and competition.

9 | CONCLUSIONS

There are two implications for this research. First, our nonlinear findings suggest a subtle relationship between political competition and policy making. How groups navigate the transition phases between each of the three equilibria in our model is crucial to understanding interest group strategy and policy outcomes. If a policy domain becomes more populated, the domain moves from stable, certain gains (capture) to an uncertain policy making environment in which large gains and losses are more likely (lability). At this critical phase, the question becomes whether the policy domain reverts to capture or advances to open competition (deadlock). In a moderately dense environment, interest groups might consider two strategies: purge rival groups to move back to a stable subsystem or add allies to compete in a more open political environment.

The strategic choices of interest groups in the lability scenario provide a new dimension of agenda setting. The previous literature on issue expansion largely describes a pattern of capture, to lability, back to capture as a function of feedback mechanisms. Our article describes an alternative scenario in which groups move between lability and deadlock and may not have the opportunity to move to a capture scenario. If groups want to achieve stable policy outcomes, the extant literature on the policy process suggests pursuing a capture strategy. However, our findings indicate that groups may also achieve policy stability by engaging in ally expansion. Ally expansion allows groups in a lability scenario to move to a high-attention, stable returns, policy making environment. In a dense interest group domain, groups face a risky decision in attempting to move to a low-attention, stable returns policy environment because they must pass through a period of volatility between deadlock and capture. Contrary to conventional wisdom about policy monopolies, groups might prefer the certainty of constant competition to the treacherous voyage to capture.

Second, our research affirms advice from deliberative democracy scholars (Fishkin, 2011; Page, 2008). Greater opportunities for diverse participation might enhance policy stability and thereby reduce uncertainty in future policy making. Our conclusions reaffirm the functional utility of iron triangles to their members: Agency heads, members of legislatures, and client groups benefit from little interest group competition in the form of stable policy returns. That said, a more democratic path by which governments achieve policy stability (if this is the value they wish to maximize) could be through public and intense interest group competition rather than through cozy, quiet subsystem arrangements. This logic follows Baumgartner and Jones's (2015) recent call for more complex information sources in public policy making: Our results suggest a dynamic interest group environment can actually produce good governance.

The research we present here characterizes patterns of policy making from interest group dynamics as they exist; however, our research does not explain how these interest group dynamics came to be. The field of interest group politics identifies characteristics associated with interest group mobilization in subsystem politics as a function of government actions (Baumgartner et al., 2009; Gray & Lowery, 1996). Our research characterizes neither the causes of policy activity on the parts of interest groups nor the particular policy changes they bring. However, our work builds on this theoretical foundation in displaying the pattern of policy making that results from the three states of interest group concentration.

Interest groups might also be attracted to subsystems because of policy changes rather than the other way around. Future studies should examine the third-order effect: the feedback cycle associated with patterns of policy change that occur as the result of changes to interest group dynamics. Subsystems beset by policy volatility present opportunities and risks in ways that stable subsystems do not. Future research might show the feedback effects of labile policy areas to maintain a particular dynamic of groups that are adapted to a riskier policy environment (stable concertation of groups, but volatile policy), or future research may find that mid-range interest group density and the accompanying volatility represent a transition phase between the two poles of stability. Qualitative case studies of interest group population dynamics in policy domains over time will further this research.

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NOTES

[1] Illinois is a slightly more complicated case in which all legislation requires a three-fifths vote after June 1 of the legislative session, but budgets are usually late and passed with a supermajority.

[2] The appendix shows that an alternative operationalization with Krupnikov and Shipan's (2012) measure does not alter the results.

[3] Smith and Hou (2013) have an alternative measure budget stringency, but have not made the data publicly available.

[4] After assessing some regression diagnostics, we removed some potential outliers and influential observations from the sample and found minute differences in the results. Additional robustness tests included checking for the optimal number of splines and selecting different smoothing methods. We also checked for omitted variables by including measures of legislative professionalism, legislative and executive partisanship and their volatility, polarization, and federal block grants. As a final robustness check, we computed budget volatility using the median absolute deviation instead of the standard deviation and then reestimated the third model. These estimations are available to interested readers.

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