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Consumer capture of regulatory institutions: The creation of public utility consumer advocates in the United States

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Abstract. We examine the conditions under which state legislatures in the United States organized public utility consumers during the 1970s and 1980s by creating independent consumer advocates with resources and authority to intervene in public utility rate-making procedures. While economic factors, notably utility fuel cost increases, were important predictors, state political conditions were estimated to have a larger impact on the probability of implementation. We find that the pattern of adoption is consistent with the hypothesis that legislatures deploy institutions as a mechanism for insulating regulatory policies against future reform: in general, Democrat-controlled governments were significantly more likely to implement consumer advocates when they were less certain about being re-elected to office during this period. We find also that the effect of political re-election expectations was particularly acute for the creation of advocates representing solely residential consumers, a relatively disorganized interest group. Our results suggest that legislatures organize and publicly fund interest groups to protect supportive but vulnerable groups against adverse future political environments.

1. Introduction

One way in which interest groups affect regulatory policies is by gaining statutory authority and resources to participate in administrative procedures. Scholars have argued that interest group participation during regulatory hearings changes the informational environment upon which agencies base their decisions (McCubbins & Schwartz, 1984). Interest groups also monitor agency behavior on behalf of the legislature in order to trigger legislative actions aimed at preventing agency drift (De Figueiredo et al., 1999; McCubbins et al., 1987, 1989).[1] While this research explains the mechanisms by which interest groups influence regulatory policy, there has been little consideration of the conditions under which interest groups obtain such organizational benefits.

In this paper, we develop and test hypotheses on this issue by analyzing the incentives and opportunities for legislatures to delegate authority to independent actors. Extant research claims that legislatures delegate authority strategically in order to insulate current policies from future reversal. Legislative coalitions are more likely to delegate authority to aligned executives (De Figueiredo, 2003), or to impose procedural complexity on agencies (De Figueiredo & Vanden Bergh, 2004; Epstein & O'Halloran, 1994, 1996; Moe,

1990), when their electoral prospects are weak. Focusing on the strategic interaction among political and administrative actors, however, these studies ignore interest group demands for institutional status (Stigler, 1971; Peltzman, 1976). Here, we contribute to the positive theory of regulation by conducting one of the first empirical studies of the influence of both interest group and political factors on the design of regulatory institutions.

Our empirical analysis explores the legislative creation of utility consumer advocates within the United States since the 1970s. Consumer advocates operate as independent institutions with authority and resources to represent utility consumers during state administrative and legal proceedings (Gormley, 1983; Holburn & Spiller, 2002). In the 25 year period since 1970, 31 states have established such consumer advocates. Since prior research has shown that consumer advocates affect a redistribution of rents between consumers and producers (i.e. utilities), this is an appropriate empirical setting to assess the impact of interest group and political environments on the design of regulatory institutions.

Our conclusions both complement and extend existing research on regulatory institutions. First, we provide some of the first empirical evidence supporting the theoretical argument that political actors, motivated by ideological concerns, design regulatory institutions that bias policy in a specific direction (McCubbins et al., 1987, 1989). Specifically, we show that when Democrats control the political process, the probability increases that the legislature will create a consumer advocacy institution. Second, our findings offer support for the claim that politicians strategically design institutions as an insulating mechanism. (Moe, 1990; De Figueiredo, 2003; De Figueiredo & Vanden Bergh, 2004). When Democrats view their power as transitory they are more likely, in general, to implement a consumer advocate in an attempt to "lock-in" pro-consumer policies.

Importantly, we find that the impact of Democrat political expectations is especially strong in the decision to create advocates representing solely *residential* consumers, a relatively disorganized interest group. The same result does not obtain for advocates representing *industrial* consumers, typically a well organized interest group. Overall, our results suggest that legislatures delegate organizational authority and public funds to protect supportive but vulnerable interest groups against adverse future political environments.

In the next section we describe the institutional context of our enquiry, paying attention to the impact of consumer advocates on regulatory policy. We then propose several hypotheses regarding the political and economic conditions under which states might implement consumer advocates given the expected policy consequences. In the section on "Empirical Methods and Analysis," we outline the data, methods and results of our empirical analysis. We conclude in the last section.

2. Consumer Advocacy in the Regulation of Public Utilities

Consumer advocates were institutionalized during the 1970s and 1980s, a period of considerable stress for the utility industries (Enholm & Malko, 1995; Joskow & Schmalensee, 1986; Joskow, 1989). After four decades of continuous technological improvement and steadily decreasing average costs and rates, the electric and gas utilities were confronted with several economic shocks that reversed this trend.[2] Beginning in the 1970s, state public utility commissions (PUCs) came under pressure from the utilities to rapidly authorize rate increase requests as continuously rising fuel and other costs eroded profits on a quarterly basis. Over a four year period the number of rate reviews doubled, and by 1980 electric utility rate increase requests had risen to a level of approximately $11 billion, more than 10 times the level in 1970.[3] While PUCs responded with various administrative reforms, for example automatic fuel adjustment clauses (Joskow, 1974), one consequence was to exacerbate consumer rate shock. As the perception of captured or corporate-dominated bureaucracies increased, political pressure mounted to give consumers a greater voice in the regulatory process (Gormley, 1981, 1983).

Between 1970 and 1995, 31 state legislatures reacted to this pressure for institutional reform by passing legislation that created *independent* utility consumer advocacy offices with the express objective of advocating on behalf of consumer interests (see Table 1). Consumer advocates were granted standing to represent consumer interests in utility proceedings before state agencies and courts.[4] That is, PUCs were required to admit consumer advocates as an independent voice in any relevant hearings.[5]

Prior to the creation of independent advocates,[6] consumers faced hurdles in accessing ratemaking procedures. First, PUCs had the authority to admit or exclude consumer representatives. Resources spent arguing for participation naturally reduced the resources available to advocate during subsequent rate hearings. Second, residential consumers in particular had to overcome collective action problems if they desired independent representation at all during smaller rate cases. Hence, by granting automatic intervenor status to advocates, and by providing financial resources, state advocacy legislation substantially improved the level of consumer representation in administrative processes.

To better understand why some states enacted consumer advocacy legislation, it is helpful to consider the impact of advocates on regulatory policy. First, by participating in rate review hearings, advocates can lead PUC commissioners to make lower rulings, *ceteris paribus*, on the allowed rate of return and also on the amount of new utility expenditures that are officially permitted. Advocates typically challenge utility or PUC staff proposals during hearings, presenting their own testimony, evidence and witnesses. In addition, they have incentives to identify imprudent expenditures and to demand their

Table 1. Consumer advocacy legislation

State	Statute code citation	Year
Alabama	37-1-16	1977
Arizona	40-461	1983
Arkansas	23-4-301	1980
Colorado	40-6.5-104	1984
Connecticut	16-2	1975
Delaware	29-8826	1978
Florida	350.061	1974
Georgia	46-10	1981
Hawaii	260-51	1976
Illinois	220 10/4; 2205/11-101	1983
Iowa	475A.1	1983
Kansas	66-1222	1989
Kentucky	367.12	1972
Maine	Chapter 17	1981
Massachusetts	12:11E	1973
Missouri	386.700	1977
Montana	69-1-201	1973
Nevada	228.300	1981
New Hampshire	363.28	1987
New Jersey	52:27E-16	1974
New York	Exec Law, Art. 20, s. 550	1970
North Carolina	62-15; 62-20	1977
Ohio	4911	1976
Oregon	Title 57, 774	1985
Pennsylvania	71 P.S. 309-1	1976
South Carolina	37-6-601	1978
Tennessee	65-4-118	1994
Texas	Title 2, Ch. 13	1983
Utah	54-10-1	1977
Vermont	Title 30, Part 1	1981
West Virginia	24-1-1	1980

exclusion from the rate base.[7] Consumer advocates thus present new information about utility costs which, as long as it is credible, will bias downwards PUC commissioner beliefs about true utility costs and the appropriate allowable rate of return.[8] In sum, by changing the informational environment of the rate review process, the participation of consumer advocates should result in lower allowed rates of return and rate bases than would otherwise obtain.

Empirical evidence lends support to these hypotheses. In an analysis of electric utility rate reviews during the 1980s, Holburn & Spiller (2002) find that, after controlling for various state characteristics, the presence of a state consumer advocate reduced allowed rates of return by approximately 0.19 to 0.37 percentage points. Electric utilities, anticipating less favorable outcomes, were also more likely to postpone rate reviews when consumer advocates had jurisdiction to intervene. In another empirical exercise, Woroch (1989) finds that nuclear plant disallowances during the same period tended to be larger when consumer advocates were heavily involved in the negotiation process.

We assume, therefore, that the legislative decision to create an independent consumer advocacy institution was driven by the desire to shift regulatory policy in the pro-consumer direction. In the next section we explore the reasons why some states chose to institutionalize consumer advocates in order to achieve this policy objective.

3. Hypotheses

3.1. *Interest group competition*

Perhaps the most straightforward explanation of a state's decision to implement a consumer advocate lies in the relative strength of consumer and producer interest groups (Stigler, 1971; Peltzman, 1976). McCubbins et al., (1989) argue that legislatures have an incentive to incorporate dominant interest groups into agency procedures since doing so reduces the cost to the legislature of continuously monitoring agency decisions. We therefore include several variables that gauge the demand from different types of consumers for increased levels of consumer representation. Consumers are likely to lobby more extensively for institutional reform in states where utility charges constitute a relatively greater proportion of income and where consumers are more concentrated. Since industrial consumers tend to expend relatively more on utility services than do residential consumers, we use the variable *INDUSTRY* which measures the industrial share of electricity consumption in each state. To proxy for the level of residential consumer lobbying, we include the percentage of the state population which is classified as urban rather than rural, *POPURBPCT*. One might expect that the problems of collective action are differentially overcome in relatively densely populated areas. In sum, we expect that states with relatively strong industrial sectors and a relatively urban population will be more likely to pressure the government to adopt rate-reducing regulatory reforms.

3.2. *Policy saliency*

The incentive for interest groups to organize and to lobby for regulatory reforms increases as policies become more salient. In this context, energy policy became an election issue in many states during the 1970s and 1980s as the

twin oil shocks led to dramatic fuel cost increases for the utilities, which in turn fed through to higher retail electricity rates, ceteris paribus (Joskow, 1974). States that experienced larger fuel cost shocks – and greater associated interest group pressure for policy reforms – would have been more likely to create consumer advocate offices than states that experienced smaller fuel cost increases. Overall utility fuel cost increases in the 1970s differed across states according to their power generation profiles. For example, states with relatively heavy coal generation bases, such as Alabama, Colorado and Kentucky, witnessed smaller overall increases than states with a greater dominance of oil or nuclear capacity, such as Connecticut, Idaho and New Jersey. Given the wide variation in fuel mixes across states, it is possible that differential exposure to oil and nuclear generation technologies could account for the observed variation in legislative activity, both over time and between states.

Increases in utility fuel costs are likely to trigger utility-initiated demands for rate increases (Joskow, 1974) and hence consumer demands for greater representation in regulatory proceedings. *COALDELTA*, *NGASDELTA*, *NUCDELTA* and *OILDELTA* measure the annual increase in state electric utilities' real fuel expenditures, on coal, natural gas, nuclear and petroleum fuel products respectively, as a fraction of total utility fuel costs. We include also a measure of the absolute cost of fuel purchased by electric utilities in a state, *FUELCOST*, since high cost states may be more sensitive to a unit increase in fuel costs than low cost states. *FUELCOST* is measured as the average real cost in dollars of a British thermal unit of energy purchased by electric utilities.[9]

3.3. *Political ideology*

While elevated consumer lobbying is likely to increase the attractiveness for political actors of institutionalizing consumer advocates through legislation, ideological preferences of governing political conditions will mitigate or enhance such pressures (Kalt & Zupan, 1984). Politicians may maintain positions on preferred public policies based on ideological reasons that are independent of interest group or broad electoral concerns. Since legislation requires the assent of both chambers in the legislature and of the governor, sufficiently large differences in ideological positions will make any change to the status quo politically infeasible. As a necessary condition, therefore, both the executive and legislature should have sufficiently strong pro-consumer ideologies to create the political opportunity for consumer advocacy legislation. We use partisan make-up of both houses of the legislature and for the governor in each year as a proxy for government ideology assuming that Democrats are pro-consumer relative to Republicans. On this basis, we identify two types of current political environment in which the likelihood of observing consumer advocacy legislation is increased: an aligned Democrat

executive and legislature (*DEMOCRAT*), and an aligned Democrat legislature with supermajority veto over a Republican executive *(DEMSUPERMAJ)*.

3.4. *Political expectations*

Political agreement on the direction of policy change, however, need not be a sufficient condition for enacting *institutional* reforms to serve that end. Legislatures are able to steer policy also by closely monitoring agency decisions, using the prospect of legislative override, committee hearings or budget cuts to induce agency compliance with their wishes. Recent scholarship suggests that political expectations of future electoral success influence the incentive to implement policy changes through reforms to institutional mechanisms rather than through ex post monitoring (De Figueiredo & Vanden Bergh, 2004; De Figueiredo, 2003). While most of this literature considers reforms to the policy-making process involving political and existing administrative institutions, similar principles apply to the role of interest group institutions. By endowing interest groups with new resources and powers, legislatures automatically create an organized opposition to future proposals that modify or reduce their institutional position (Brainard & Verdier, 1994; Coate & Morris, 1999; Rodrik, 1991). The increased resistance to change reduces the ability of legislatures to fine-tune policy in response to new economic or political conditions in the future (Rausser, 1992; Coate & Morris, 1999).

Whether the legislature regards the reduction in policy flexibility associated with interest group representation as a cost or benefit depends on the expectations of re-election: a coalition that is highly uncertain about its chances of retaining office at the next election will be less concerned about the reduction in future policy flexibility and will have relatively strong incentives to adopt consumer advocacy legislation in order to steer regulatory policy. Since legislation is not readily overturned, its replacement requiring scarce legislative resources and a voting majority, this becomes one means by which current legislatures can insulate pro-consumer policies against future modification. By contrast, a government that is relatively stable and looks forward to continued electoral support has less incentive to commit to certain policies by institutionalizing interest groups in agency procedures. A political coalition that expects to remain in power will value more highly the ability to adjust regulatory policy in the future and will value less highly the insulation benefits of interest group legislation. Legislatures with longer time horizons are thus more likely to avoid the costs of passing new statutes and delegating authority to independent consumer advocates, preferring to monitor PUCs through existing oversight mechanisms.

We measure political expectations of re-election by constructing two indices based on the premise that historical experience provides some predictive

power for the future composition of political power in a state. The first index is constructed as follows for state i at time t:

$$S_{it1}(GOV_{it}, LEG_{it}) = GOVEX_{it} \times LEGEX_{it}$$

where $GOVEX_{it}$ is the percentage of the last P years that the current executive party held office, and $LEGEX_{it}$ is the P-year average percentage of seats held in both houses of the legislature by the current legislative majority party. Thus, an executive and legislature that had been controlled by the same party for P years, and with large majorities in the legislature, would receive an expectations score of S_{it1} close to the maximum value of one. Recent changes in party control within the state government will generate lower S_{it1} scores, reflecting a higher degree of implied political uncertainty.

There are two potential drawbacks associated with this particular measure. First, it weighs each of the previous P years equally in the calculation of political expectations, though it is possible that more recent years are better predictors of the future. Secondly, using the percentage of seats for the level of analysis may be too fine-grained an approach since legislative power depends on a voting majority, which can be measured with a binary variable. We therefore construct an alternative measure of political expectations that addresses these shortcomings; S_{it2} (GOV_{it}, LEG_{it}) is calculated as the percentage of the last P years since the current legislative and executive coalition was originally voted into office. Under this measure, political expectations are gauged by the percentage of the last P years that the current political parties have remained together in power since originally being voted into office. Hence, a Democrat executive and Republican legislature that have remained continuously in office for P years up to the year in question would score 1.0 on the S_{it2} scale. A change in the gubernatorial party, from Democrat to Republican, leaving the legislature still under Republican control, would create a new party configuration, generating an S_{it2} score of $1/P$ in the first year of office. Like S_{it1}, S_{it2} is bounded between zero and one. Higher S_{it2} scores suggest greater political confidence that the current legislature and executive will remain in office in the future. We interact S_{it1} and S_{it2} with the *DEMOCRAT* and *DEMSUPERMAJ* as defined above to create two new variables, *S*DEMOCRAT* and *S*DEMSUPERMAJ*, the expectations that Democrat-controlled governments will be re-elected.

Table 2 provides some summary information on political expectations, as measured by S_{it1} and S_{it2}, for all states during the 1970s and 1980s. One of the first things to note is the wide variation in stability between the states. During the 1980s, the average S_{it1} score was 0.52, while the most and least politically secure states (Georgia, Maryland, Mississippi & Washington, Montana, Wisconsin) had scores close to the theoretical maximum and minimum (one and zero). There is also substantial inter-temporal variation in political

Table 2. State political expectations indices

	Average 1970–1979		Average 1980–1989	
State	S_1	S_2	S_1	S_2
Alabama	0.981	1.000	0.754	0.800
Alaska	0.150	0.317	0.412	0.383
Arizona	0.387	0.633	0.549	0.600
Arkansas	0.715	0.717	0.651	0.600
California	0.284	0.383	0.467	0.750
Colorado	0.423	0.600	0.736	0.950
Connecticut	0.299	0.417	0.622	1.000
Delaware	0.245	0.317	0.521	0.450
Florida	0.512	0.717	0.569	0.800
Georgia	0.874	1.000	0.871	1.000
Hawaii	0.703	1.000	0.784	1.000
Idaho	0.467	1.000	0.699	1.000
Illinois	0.175	0.283	0.511	0.567
Indiana	0.459	0.450	0.520	0.750
Iowa	0.447	0.517	0.525	0.600
Kansas	0.589	0.567	0.360	0.633
Kentucky	0.491	0.667	0.756	1.000
Louisiana	0.980	1.000	0.485	0.517
Maine	0.270	0.633	0.361	0.417
Maryland	0.744	0.833	0.877	1.000
Massachusetts	0.558	0.750	0.803	1.000
Michigan	0.337	0.450	0.365	0.600
Mississippi	0.983	1.000	0.947	1.000
Missouri	0.393	0.567	0.281	0.717
Montana	0.341	0.383	0.265	0.250
Nevada	0.409	0.450	0.363	0.350
New Hampshire	0.209	0.517	0.355	0.533
New Jersey	0.256	0.450	0.436	0.533
New Mexico	0.508	0.717	0.355	0.617
New York	0.397	0.583	0.591	1.000
North Carolina	0.477	0.567	0.585	0.700
North Dakota	0.874	0.717	0.365	0.283
Ohio	0.255	0.417	0.358	0.450
Oklahoma	0.582	0.750	0.561	0.800
Oregon	0.395	0.533	0.393	0.633

(*Continued on next page.*)

Table 2. (*Continued*).

	Average 1970–1979		Average 1980–1989	
State	S_1	S_2	S_1	S_2
Pennsylvania	0.292	0.317	0.293	0.350
Rhode Island	0.649	0.833	0.578	0.750
South Carolina	0.639	0.683	0.538	0.633
South Dakota	0.323	0.317	0.599	0.833
Tennessee	0.222	0.383	0.391	0.633
Texas	0.850	0.917	0.349	0.417
Utah	0.603	0.283	0.781	0.583
Vermont	0.169	0.383	0.317	0.583
Virginia	0.589	0.750	0.543	0.750
Washington	0.415	0.483	0.232	0.317
West Virginia	0.437	0.633	0.533	0.633
Wisconsin	0.397	0.417	0.268	0.417
Wyoming	0.432	0.600	0.628	0.950
Mean	0.483	0.602	0.523	0.669
Standard Deviation	0.224	0.218	0.182	0.225

expectations within states during the 1970s and 1980s. This suggests that empirical analyses utilizing panel data, including annual observations on states' political environments, will yield more explanatory power than analyses utilizing cross-section data with summary statistics on political expectations for each state.

3.5. *Geographic diffusion*

Finally, a state's decision to enact legislation may also be influenced by implementation in neighboring states. Enactment in one state may increase the political pressure to adopt similar legislation in surrounding states if social, political, cultural and business linkages – which facilitate interstate learning processes – are stronger between neighboring than non-neighboring states. In this case, we would expect to observe a geographic diffusion effect, whereby the presence of consumer advocacy statutes in neighboring states increases the probability of adoption, ceteris paribus. We therefore include an annual variable, *REGLEG*, that measures the cumulative percentage of states that have already passed consumer advocacy legislation in a state's geographic region by that year (using the Bureau of Economic Analysis's regional classification scheme).

3.6. *Controls*

In addition to these main hypotheses, we include several control variables that are expected to affect the probability of consumer advocacy legislation. Institutional differences between state PUCs may affect legislature's incentives to enact consumer advocacy legislation. First, well-resourced PUCs are likely to resist the imposition of new procedural legislation since additional intervenor participation increases the costs of making policy. We capture the ability of the PUC to lobby the legislature with *PUCSIZE*, a variable measuring the number of PUC staff per thousand capita in the state population. Secondly, we include a dummy variable, *ELECT*, set equal to one if the PUC commissioners are elected and zero if appointed. It is plausible that elected commissioners will be more responsive to consumer rather than utility demands for regulatory favors, although the empirical evidence that finds such an effect on final rates is mixed.[10] Finally, we include year and regional dummies to control for unobserved temporal and geographic fixed effects. Tables 3 and 4 provide summary descriptions and descriptive statistics for all the above variables.

In summary, the discussion in this section suggests the following testable hypotheses: The probability that a state will institutionalize a consumer advocate during a given year is increasing in the assessed political strength of industrial and residential utility consumers; increasing in the magnitude of utility fuel cost increases; increasing in the degree of pro-consumer government ideology; decreasing in future re-election expectations of a relatively pro-consumer government; and increasing in the extent of regional adoption of consumer advocacy legislation.

4. Empirical Methods and Analysis

We use a one-way transition, discrete-time event history analysis to estimate the probability that a state enacts legislation during a particular year, given that it has not already done so.[11] We consider states to be "at risk" from 1970, the beginning of the period when energy costs were escalating and when the first state, New York, implemented such legislation. The period of analysis ends in 1995, the last year for which detailed state-level energy data are available. During this period, 31 states passed consumer advocacy legislation. In doing so, we use the date of the original legislation as our unit of analysis, leaving aside any subsequent legislative amendments.[12] We assume that the error structure can be represented by a standard normal cumulative distribution function. This allows us to represent the event history in a discrete-time model as a standard probit (Yamaguchi, 1991). The reduced form representation of this model for a vector of covariates x_i is hence

$$\Pr(y_{it} = 1 \,|x_{it}, y_{it} = 0 \ \text{ for } \ s < t) = \Phi(\beta' x_{it})$$

Table 3. Variable descriptions

Variable	Description
FUELCOST	Average cost of fuel purchased by state electric utilities, measured in dollars per Btu
COALDELTA	Annual change in cost of coal fuel purchased by electric utilities as a percentage of total fuel costs
NGASDELTA	Annual change in cost of natural gas fuel purchased by electric utilities as a percentage of total fuel costs
NUCDELTA	Annual change in cost of nuclear fuel purchased by electric utilities as a percentage of total fuel costs
OILDELTA	Annual change in cost of oil fuel purchased by electric utilities as a percentage of total fuel costs
RATERATIO	Ratio of average residential and commercial electricity rate per kWh to industrial rate
DEMOCRAT	Aligned Democrat governor and legislature dummy variable
REPUBLICAN	Aligned Republican governor and legislature dummy variable
REPSUPERMAJ	Democrat governor, Republican supermajority legislature dummy variable
DEMSUPERMAJ	Republican governor, Democrat supermajority legislature dummy variable
S*DEMOCRAT	Political expectations measure interacted with aligned Democrat governor and legislature
S*REPUBLICAN	Political expectations measure interacted with aligned Republican governor and legislature
S*REPSUPERMAJ	Political expectations measure interacted with Democrat governor, supermajority Republican legislature
S*DEMSUPERMAJ	Political expectations measure interacted with Republican governor, supermajority Democrat legislature
INDUSTRY	Proportion of state electricity consumption by industrial consumers
POPURBPCT	Proportion of state population living in urban areas
PUCSIZE	Number of PUC staff per thousand state capita
ELECT	PUC commissioner selection method dummy variable (equals one if elected, zero if appointed)
REGLEG	Percentage of states in same geographic region having passed consumer advocacy legislation

where y_{it} is equal to one if a consumer advocacy statute is passed by state i at time t and zero otherwise. β coefficients are estimated using the standard maximum likelihood methodology.

We construct a panel data set covering 46 states between 1970 and 1995.[13] Data on consumer advocacy legislation were collected primarily from the *National Association of State Utility Consumer Advocates* (NASUCA)

Table 4. Descriptive statistics

Variable	Mean	Standard deviation	Minimum	Maximum
Policy saliency				
FUELCOST	2.1037	1.2418	.4624	10.0680
COALDELTA	0.0333	0.1493	−0.5698	1.6440
NGASDELTA	0.0079	0.1611	−0.8733	3.4554
NUCDELTA	0.0048	0.0666	−0.4818	0.9922
OILDELTA	0.0121	0.1715	−0.7873	1.4351
RATERATIO	1.6515	.04081	0.9404	4.9701
Political ideology				
DEMOCRAT	0.3877	0.4875	0	1
REPUBLICAN	0.0738	0.2617	0	1
DEMSUPERMAJ	0.0810	0.2730	0	1
REPSUPERMAJ	0.0123	0.1103	0	1
Political expectations				
S_1*DEMOCRAT	0.2434	0.3336	0	0.9896
S_1*REPUBLICAN	0.0347	0.1350	0	0.7492
S_1*DEMSUPERMAJ	0.0361	0.1356	0	0.8143
S_1* REPSUPERMAJ	0.0076	0.0697	0	0.7724
S_2*DEMOCRAT	0.2957	0.4192	0	1
S_2*REPUBLICAN	0.0491	0.1967	0	1
S_2*DEMSUPERMAJ	0.0479	0.1811	0	1
S_2* REPSUPERMAJ	0.0082	0.0823	0	1
Interest group competition				
INDUSTRY	0.3624	0.1071	0.0765	0.7023
POPURBPCT	0.6744	0.1489	0.3220	0.9260
PUCSIZE	0.0470	0.0285	0.0036	0.1588
ELECT	0.2205	0.4148	0	1
Geographic diffusion				
REGLEG	0.4499	0.2561	0	1

compendium. We double checked information on dates of legislative enactment by referring to the relevant statutory codes for that state and then the actual legislative acts (see Table 1 for a full list of code citations). Among the 46 states, 31 created statutory-based independent consumer advocacy offices between 1970 and 1995.[14]

The results of the empirical analysis are presented in Tables 5–7.[15] Each table contains parallel columns with results estimated using the S_1 and S_2 political expectations indices.[16] The results, in terms of coefficient magnitudes and significance levels, are not sensitive to the choice of political expectations

Table 5. Probit model

	$S = S_1$		$S = S_2$	
Policy saliency				
FUELCOST	−0.30 (0.022)	−0.30 (0.027)	−0.30 (0.024)	−0.30 (0.026)
COALDELTA	−0.13 (0.835)	0.14 (0.813)	0.11 (0.836)	0.13 (0.819)
NGASDELTA	0.87 (0.011)	0.89 (0.008)	0.86 (0.008)	0.89 (0.004)
NUCDELTA	2.67 (0.006)	2.98 (0.003)	2.78 (0.005)	3.11 (0.002)
OILDELTA	1.37 (0.030)	1.36 (0.026)	1.40 (0.020)	1.40 (017)
Political ideology				
DEMOCRAT	1.11 (0.045)	1.17 (0.041)	1.09 (0.023)	1.16 (0.021)
DEMSUPERMAJ	−1.10 (0.348)	−1.04 (0.369)	−1.20 (0.248)	−1.20 (0.263)
REPUBLICAN	–	0.44 (0.475)	–	0.15 (0.791)
REPSUPERMAJ [a]	–	[a]	–	[a]
Political expectations				
S* DEMOCRAT	−1.61 (0.050)	−1.60 (0.056)	−1.34 (0.026)	−1.34 (0.028)
S* DEMSUPERMAJ	1.69 (0.428)	1.75 (0.404)	1.44 (0.314)	1.49 (0.294)
S*REPUBLICAN	–	0.19 (0.874)	–	0.71 (0.349)
S* REPSUPERMAJ [a]				[a]
Interest group competition				
INDUSTRY	4.64 (.008)	4.89 (.006)	4.54 (0.009)	4.87 (0.009)
POPURBPCT	3.54 (0.036)	3.94 (0.023)	3.69 (0.021)	4.24 (0.010)
PUCSIZE	−13.08 (0.093)	−12.06 (0.135)	−12.3 (0.104)	−11.04 (0.149)
ELECT	0.12 (0.843)	0.11 (0.856)	0.09 (0.868)	0.05 (0.931)
Geographic diffusion				
REGLEG	3.32 (0.020)	3.33 (0.020)	3.30 (0.023)	3.27 (0.022)
INTERCEPT	−6.30 (0.000)	−6.86 (0.000)	−6.35 (0.000)	−7.01 (0.000)
YEAR DUMMIES	Yes	Yes	Yes	Yes
REGIONAL DUMMIES	Yes	Yes	Yes	Yes
N [b]	526	526	526	526
Positive observations	31	31	31	31
Log-likelihood	−81.40	−80.60	−80.76	−80.01
Pseudo R-squared	0.293	0.299	0.298	0.305

Dependent Variable = 1 if consumer advocacy legislation passed, 0 otherwise. *P*-values, calculated using standard errors corrected for autocorrelation and heteroskedasticity (Newey & West, 1987), are in parentheses after the estimated coefficients.

[a]The coefficient cannot be estimated due to insufficient variation in the dependent variable (no consumer advocacy legislation was passed during the state-years between 1970 and 1995 when a Republican legislature held a voting supermajority over a Democrat governor).

[b]The number of observations is not equal to 1196 (=46 states times 26 years) since state-year observations that occur after a state has enacted consumer advocacy legislation are removed from the sample. We would expect 709 observations if we had all of the data for each of the explanatory variables. Fifteen of the forty-six states in our sample do not adopt the legislation. These states contribute 390 observations. The 31 states that adopt the legislation contribute an additional 319 observations. The number of observations is equal to 526 for two reasons. Missing fuel cost data accounts for a reduction of 77 observations. The remaining 106 observations are attributed to missing data to calculate PUCSIZE. It is important to note that if we eliminate PUCSIZE or the policy saliency variables (i.e., FUELCOST, COALDELTA, etc.) from our model, the qualitative results for our institutional variables of interest (DEMOCRAT & S*DEMOCRAT) do not change.

Table 6. Estimated impact of selected variables on probability of adoption of consumer advocacy legislation

Baseline probability of adoption = 2.59%[a]			
Variable	Value[b]	Probability of adoption[c]	Difference vs. baseline probability[d]
FUELCOST	Mean +1 S.D.	1.02%	× 0.39
NGASDELTA	Mean +1 S.D.	3.55%	× 1.37
NUCDELTA	Mean +1 S.D.	3.86%	× 1.49
OILDELTA	Mean +1 S.D.	4.36%	× 1.69
DEMOCRAT	=1	10.88%	× 4.21
S* DEMOCRAT	Mean +1 S.D.	3.68%	× 1.42
S* DEMOCRAT	=1	0.71%	× 0.27
S* DEMOCRAT	=0	20.03%	× 7.75
INDUSTRY	Mean +1 S.D.	7.37%	× 2.85
POPURBPCT	Mean +1 S.D.	7.81%	× 3.02
PUCSIZE	Mean +1 S.D.	1.02%	× 0.39
REGLEG	Mean +1 S.D.	13.68%	× 5.29

[a] *Baseline probability of adoption* is calculated by setting all continuous variables equal to their mean value and all dummy variables equal to zero, yielding a value of 2.59%.
[b] *Value* is new value of variable. All other variables are kept at their means (zero for dummy variables).
[c] *Probability of adoption* is calculated by changing the variable of interest by the specified amount and keeping all other variables unchanged from their value used to calculate the *Baseline probability of adoption*.
[d] *Difference vs. Baseline Probability* is estimated as multiplicative effect on baseline probability of changing each variable by the specified amount, keeping all other variables unchanged.

index. When calculating the impact of variables on the estimated probability of legislation we use the S_1 specification.

Note that the overall performance of the probit models is good, with pseudo R-squared scores of approximately 30% (Table 5, Columns 1–4).[17] To facilitate interpretation of our findings, Table 6 contains the estimated change in probability resulting from a specified increase or decrease in each covariate. Consider first the estimated effects of utility fuel cost changes. The positive and statistically significant coefficients on *NGASDELTA*, *OILDELTA* and *NUCDELTA* confirm our initial supposition that the twin oil shocks and the popular opposition to nuclear power created political pressure for stronger consumer involvement in regulatory procedures. Increasing each of these variables by one standard deviation from their means raises the probability of observing consumer advocacy legislation by 1.4, 1.7 and 1.5 times respectively (see Table 6). If we increase each fuel variable by a uniform

Table 7. Multinomial logit model

	$S = S_1$		$S = S_2$	
	Residential consumer advocates	All-consumer advocates	Residential consumer advocates	All-consumer advocates
Policy saliency				
RATERATIO	0.88 (0.607)	0.98 (0.345)	0.58 (0.705)	0.90 (0.392)
FUELCOST	−0.91 (0.162)	−0.04 (0.925)	−0.90 (0.145)	0.00 (0.983)
COALDELTA	2.31 (0.073)	−4.83 (0.223)	2.33 (0.075)	−4.60 (0.235)
NGASDELTA	4.00 (0.145)	1.44 (0.590)	3.84 (0.149)	1.58 (0.516)
NUCDELTA	5.88 (0.210)	4.12 (0.146)	5.86 (0.205)	4.26 (0.134)
OILDELTA	3.23 (0.087)	−0.96 (0.671)	3.58 (0.056)	−0.90 (0.673)
Political ideology				
DEMOCRAT	2.57 (0.092)	2.98 (0.081)	2.49 (0.078)	3.33 (0.044)
DEMSUPERMAJ	−5.93 (0.244)	3.79 (0.191)	−3.60 (0.403)	2.83 (0.333)
Political expectations				
S* DEMOCRAT	−6.31 (0.034)	1.27 (0.531)	−5.10 (0.032)	0.21 (0.893)
S* DEMSUPERMAJ	6.52 (0.387)	−0.35 (0.933)	2.25 (0.680)	0.71 (0.815)
Interest group competition				
INDUSTRY	5.98 (0.153)	21.75 (0.002)	4.72 (0.260)	21.2 (0.002)
POPURBPCT	12.58 (0.007)	−2.05 (0.615)	12.20 (0.008)	−1.70 (0.685)
PUCSIZE	−37.43 (0.031)	−25.10 (0.297)	−32.00 (0.056)	−27.00 (0.264)
ELECT	0.88 (0.382)	−1.14 (0.485)	0.78 (0.433)	−0.90 (0.562)
Geographic diffusion				
REGLEG	5.52 (0.033)	6.34 (0.016)	5.40 (0.036)	6.07 (0.020)
INTERCEPT	−14.44 (0.010)	−13.26 (0.007)	−13.00 (0.01)	−13.00 (0.008)
YEAR DUMMIES	Yes	Yes	Yes	Yes
REGIONAL DUMMIES	Yes	Yes	Yes	Yes
N	526		526	
Positive observations	31		31	
Log-likelihood	−82.764		−82.770	
Pseudo *R*-squared	0.3907		0.3907	

For simplicity, we do not present the results of the regression including *REPUBLICAN* and *REPSUPERMAJ*. First the coefficient on *REPSUPERMAJ* cannot be estimated due to insufficient variation in the dependent variable (no consumer advocacy legislation was passed during the state-years between 1970 and 95 when a Republican legislature held a voting supermajority over a Democrat governor). Second, similar to the probit results presented earlier, including *REPUBLICAN* does not change the qualitative results of the model.

Dependent Variable = 1 if residential consumer advocacy legislation passed, 2 if all-consumer advocacy legislation passed, 0 otherwise.

P-values calculated using robust standard errors, are in parentheses after the coefficient estimates.

amount, however, we observe stark differences in the impact on the estimated probabilities. Increasing each variable by one unit, for example, raises the probability of legislation by 5, 11 and 30 times respectively. The differences in the probability magnitudes, which reflect the impact of increased fuel costs after controlling for each fuel's share of total utility fuel costs, suggests that the nature of a state's fuel mix played an important role in the political decision to reform regulatory structures. In particular, a one dollar increase in overall fuel costs due to greater *nuclear* fuel expenditures had roughly three times the effect on the likelihood of consumer advocacy legislation than a one dollar increase due to greater *oil* fuel expenditures. Utilities with heavy nuclear generating bases are thus likely to encounter much stronger consumer opposition in regulatory arenas than those with coal or natural gas generation parks.

Turn now to the political ideology variables.[18] We find that aligned Democrat governments (*DEMOCRAT*) were statistically and economically, significantly more likely to enact consumer advocacy legislation than any other type of government. Compared to other governments, the probability that a Democrat legislature and executive passed a consumer advocacy bill during any given year increases more than four times. When we include additional dummy variables for Republican controlled legislatures (*REPUBLICAN* and *REPSUPERMAJ* in models 2 and 4), this pattern of statistical significance remains and the coefficients on *REPUBLICAN* and *REPSUPERMAJ* are not statistically different from zero. Thus, in accordance with conventional wisdom, this evidence suggests that Democrats indeed place greater weight on ratepayer interests in regulatory policy decisions than do Republicans and that the decision to institutionalize consumer advocates during the 1970s and 1980s was a partisan issue.

The negative and statistically significant coefficients on $S^{*}DEMOCRAT$ in all columns imply that political expectations have a discernible effect on the propensity for aligned Democrat governments to insulate regulatory policies. Increasing the value of $S_{it1}{}^{*}DEMOCRAT$, for example, by one standard deviation from its mean value, that is raising the implied level of political confidence of future re-election success, reduces the likelihood of observing consumer advocacy legislation in a given year by two-thirds. The contrast in estimated probabilities when setting $S_{it1}{}^{*}DEMOCRAT$ at the minimum and maximum values is also stark: when $S_{it1}{}^{*}DEMOCRAT$ equals zero (representing the lowest possible expectations of re-election), the probability of a state implementing consumer advocacy legislation is estimated to be 20%. When $S_{it1}{}^{*}DEMOCRAT$ equals one, on the other hand, the probability falls dramatically to less than 1%. We therefore find support for our hypothesis that less electorally confident governments have a greater incentive to lock-in favored policies by designing institutional structures that are difficult for future political generations to dismantle. The

interaction terms for other types of government are not significant, which again reinforces the argument that political opportunity (i.e. presence of pro-consumer legislature and executive) and political incentives (i.e. short political time horizon) are both necessary conditions for enacting partisan regulatory reforms.

In addition to political ideology and expectations, interest group competition appears to be an important factor in the determination of the institutional environment.[19] Specifically, the positive and significant coefficients on *INDUSTRY* and *POPURBPCT* imply that states with larger industrial bases and with more urban populations had a greater probability of enacting consumer advocacy legislation. Industrial and residential ratepayers would gain from enhanced representation during rate hearings, benefiting from lower rates of return allowed on utility investments and from greater scrutiny of utility cost management, both of which would result in lower consumer rates. PUC characteristics also have an association with the probability of legislation. While the method of PUC commissioner selection does not affect the probability, there is some evidence that the relative size of the PUC's budget does (marginal levels of significance in Models 1 and 3). Specifically, legislatures that oversee PUCs with relatively greater budgetary resources are less likely to establish consumer advocates, perhaps reflecting a greater ability of well resourced PUCs to lobby against such reforms, or else to monitor utility behavior and to counter utility arguments during rate hearings.

Comparing the estimated coefficient magnitudes suggests that political and interest group factors were relatively important in motivating the institutionalization of consumer advocates compared to the role of pure economic factors, even during the oil shock years. The oil price increase of 1974, which led to a one third increase in overall utility fuel costs (mean *OILDELTA* value of 0.33 in 1974), raised the probability of observing consumer advocacy legislation in that year two-and-one-half times. This is more than matched by the effect of an aligned Democrat government (four times), a relatively heavy industrial consumer base (three times) and a relatively urban residential consumer base (three times).[20] The degree to which a state's political environment favors consumer interests thus appears to have a greater impact on institutionalizing those interests than the extent of the sector-specific economic shock.

Finally, our results also suggest that geographic diffusion effects are important in explaining the adoption of consumer advocacy legislation. The positive and statistically significant coefficient on *REGLEG* provides evidence that the probability of adoption is increasing in the number of regional neighbors with consumer advocacy statutes. One interpretation for this finding is that there is a learning process or momentum effect that occurs between states as political entrepreneurs observe legislative innovations nearby and then introduce similar reform proposals into their home environment.

4.1. *Robustness check: Multinomial logit model*

We now consider the robustness of our results when we distinguish between different *types* of consumer advocates. In particular, we distinguish between the different classes of consumers that advocates represent since this offers an opportunity to test for the impact of political, interest group and institutional factors in the advocacy legislation decision at a more nuanced level. In 15 states, the originating legislation specified that the newly-created advocates represent only residential, or residential and commercial, customers, while in the remaining 16 states advocates represented all consumer classes, that is, residential, commercial and industrial. The state's decision to institute a consumer advocate may therefore be modeled as a three-way multinomial problem, with the choice of establishing either no consumer advocate, a residential and commercial consumer advocate, or an advocate for all types of consumer.

We expect to observe different political and interest group environments supporting the creation of each type of consumer advocate since consumer classes compete against each other on one aspect of regulatory policy, the rate structure. In addition to determining the utility's allowed rate of return and allowed rate base, PUCs also decide what proportion of the utility's fixed costs each consumer class should bear and hence the shape of the rate structure.[21] For any given level of utility fixed costs, a decision to reduce the proportion allocated to one consumer class necessarily implies an increased burden for another class. A residential consumer advocate therefore threatens the interests of industrial consumers by tilting the rate structure in residential consumers' favor and by devoting less effort to lobbying for a lower allowed rate of return or utility rate base, which would benefit all customer classes. Recent empirical evidence from the electric utility sector finds that residential consumer advocates are indeed associated with rate structures that dramatically favor residential consumers (Holburn & Spiller, 2002).

We predict that a relatively urban residential state (*POPURBPC*) should be more strongly associated with the creation of a residential/commercial-only advocate than with an all-consumer advocate. We predict a similar pattern of influence for Democrat controlled states (*DEMOCRAT* and *DEMSUPERMAJ*) since Democrats tend to be more allied with residential voter-consumers than industrial organizations. Equivalently, we expect that relatively industrial states (*INDUSTRY*) are more likely to be associated with the establishment of all-consumer rather than residential/commercial advocates.

We estimate a multinomial logit model which allows us to understand how each of the covariates affects the probability that a state will choose a particular type of consumer advocate, if at all, in any given year, conditional on not already having done so. The probability of a state selecting a consumer

advocate of type *j* is given by (dropping state and time subscripts for notational simplicity):

$$p_j = \exp(X'\beta_j)/D, \quad j = 1, 2$$

and

$$p_{j=0} = 1/D$$

where

$$D = 1 + \sum_{j=1}^{2} \exp(X'\beta_j),$$

(j = 0, 1, 2) are the different alternatives respectively, no consumer advocate, residential/commercial advocate, all-consumer advocate; p_j is the probability of choosing alternative j and X is a vector of state characteristics identical to that used in the probit model except with the addition of a new term, *RATERATIO*, that measures the average residential and commercial electricity rate as a proportion of the industrial rate. β_j is the vector of coefficients pertaining to alternative *j*. The multinomial model yields a probability function that is strictly concave so the vector has a unique solution that is readily estimable using standard maximum likelihood techniques.[22]

The estimated coefficients and standard errors are presented in Table 7. The choice of no consumer advocate ($j = 0$) is the reference option so the estimated multinomial logit coefficients reflect the effect of the covariates on the likelihood of choosing a particular type of consumer advocate relative to choosing no advocate at all.

Overall, the results confirm our earlier hypotheses about the impact of interest group pressures and political ideology on the establishment of consumer advocacy offices, though we now detect a differential impact of political expectations and policy saliency across residential and all-consumer advocates. First, our results strongly suggest that *inter*-consumer interest group competition is an important factor in the design of consumer advocacy institutions. While a relatively urban population (*POPURBPC*) has a positive and statistically significant effect on the probability of a state establishing a *residential* consumer advocate, the estimated impact on the probability of creating an *all-consumer* advocate is statistically insignificant. Increasing the urban proportion of the population by one standard deviation from its mean increases the likelihood of a state adopting residential advocacy legislation by one and one-half times, ceteris paribus. Similarly, while a strong industrial consumer base in a state has a positive and statistically significant impact on the likelihood of a state creating an advocate that represents *industrial*, as well as

residential and commercial consumers, it has an insignificant impact on the probability of establishing a *residential-only* advocate. The estimated effect is again strong: increasing the proportion of state electricity consumption going to industrial consumers by one standard deviation from its mean level increases the probability of a state adopting an all-consumer advocate more than five-fold, ceteris paribus. Together, these findings provide support for the prediction that relatively strong consumer groups will seek institutional arrangements that advance their interests not only over producers, but also over less organized or less represented competing consumer groups.

Second, we find that while aligned Democrat executive and legislative coalitions are more likely to institute both residential and all-consumer advocates, ceteris paribus, the effect of political expectations is uneven: increasingly politically insecure Democrat coalitions are more likely to establish residential advocates but not all-consumer advocates (coefficients on $S^{*}DEMOCRAT$ are significant and negative in Models 1 and 3 in Table 7, insignificant in Models 2 and 4). Increasing $S_{it1}{}^{*}DEMOCRAT$ by one standard deviation from its mean decreases the probability of observing a new residential advocate by more than 80%. Why do we observe differences in the estimated influence of Democrat political expectations between different types of advocate? One potential explanation lies in the inherent political strength of residential consumers as compared to industrial consumers. The former faces particularly severe collective action difficulties compared to industrial consumers who tend to be more concentrated in number. Residential consumers thus have less ability to organize and to lobby politicians of any ideological stripe for policy favors. Recognizing this inherent disadvantage, ideologically-aligned governments (i.e. Democrats) have a greater incentive to insulate residential consumer interests against future political generations by institutionalizing them in policy-making procedures. Insulation becomes less critical for industrial consumers since, being naturally more organized, they are more able to lobby and to advance their interests in any political environment.

Third, we find that utility fuel cost increases are significantly associated with the creation of residential but not of all-consumer advocates. This is consistent with the expected impact of exogenous economic shocks on interest group welfare. Industrial consumers are better able to pass on utility rate increases in the form of higher product prices (and hence to protect their profitability) whereas residential consumers witness a fall in disposable household income when utility bills rise. Certain policy issues are thus likely to be more salient for some interest groups than others leading to differential patterns of pressure on political actors for policy reform.

Finally, it is interesting to note that existing PUC institutional features, specifically the relative size of the PUCs budget, are differentially correlated with consumer advocacy reforms. Larger PUCs are negatively correlated

with the incidence of residential advocates, but not with the incidence of all-consumer advocates. PUCs, seeking to avoid the imposition of additional constraints on the conduct of rate reviews (that is, accepting more intervenors), are likely to be better able to counter the arguments before the legislature of residential consumers for institutionalization. Conversely, industrial consumers who tend to have more organized lobbying relations with political actors will be in a stronger position to press their case, and to oppose contrary positions, for an institutionalized role in rate-making procedures.

In sum, once we distinguish between different types of consumer advocate we discern a richer story about the effect of interest group characteristics on the political decision to delegate resources and procedural authority. Somewhat paradoxically, we find that *private* organizational weakness, at least on one dimension (group fragmentation), is associated with a tendency towards stronger *public* organization.

5. Conclusions and Discussion

Both theoretical arguments and empirical evidence suggest that interest group participation in administrative procedures can have a powerful effect on regulatory outcomes. Interest groups that obtain the resources to organize and the authority to represent themselves during formal hearings have an opportunity to steer policy in their favor and to gain advantage over competing interest groups by presenting new information to agency officials. Understanding the conditions under which select interest groups gain such organizational and procedural benefits is thus an important step in more broadly understanding how interest group competition operates, particularly as it affects the design of regulatory institutions.

Here we contribute to the positive literature on regulation with one of the first empirical studies to examine the relationship between interest groups, political actors and institutional design. We find that political decisions over institutional issues reflect the outcome of a complex strategic interaction between elected politicians and constituent interest groups. First, we find that the incentives and opportunities for political actors to control regulatory policy through interest group representation are more limited than conventional wisdom implies; McCubbins et al. (1987, 1989) argue that legislatures have strong incentives to shape the decision-making environment of regulatory agencies by "stacking the deck" in favor of certain interest groups since doing so shifts some of the burden of monitoring agencies from legislatures to interest groups.[23] Our results, however, suggest that inter-temporal political dynamics are a significant moderating factor. In general, our findings suggest that elected political actors are more likely to stack the deck using interest group legislation when they are less certain about remaining in office at the

next election. Politically confident coalitions, on the other hand, are much less likely to tinker with institutional reform, implying there are important costs associated with delegating procedural power to interest groups. A richer assessment of the institutional mechanisms by which legislatures control regulatory agencies would thus more fully develop the associated costs as well as the benefits of using interest groups as an oversight device.

The role of political expectations in our study is consistent with extant conclusions, stemming from the literature examining inter-temporal relations among political and administrative actors, that political actors use institutional design strategically – namely, as a mechanism for insulating regulatory policies against modification by future generations (De Figueiredo & Vanden Bergh, 2004). One of our contributions here is to show that one way in which legislatures attempt to achieve this lock-in is to also delegate powers and resources directly to the interest groups who ultimately benefit from insulated policies.

Our second main contribution in this paper lies in the analysis of the impact of interest group characteristics on the political decision to institutionalize interest groups in agency procedures. As might be expected, political actors have a tendency to shape regulatory environments in accordance with the demands of larger interest groups: all else equal, legislatures are more likely to institute residential consumer advocates in states with relatively urban populations and advocates representing industrial as well as other consumers in states with larger industrial bases. Somewhat contrary to initial expectations, however, residential consumer interests are more susceptible to insulation against adverse future political environments – through the establishment of an advocate – than are industrial consumer interests. Specifically, when Democratic political coalitions are less optimistic about their chances of re-election they are more likely to undertake institutional reforms that protect the future welfare of residential but not of industrial consumer groups. We interpret this result as evidence of far-sighted behavior by political coalitions; incumbent governments have an incentive to organize or otherwise to advantage those supporting interest groups who are organizationally weak naturally. This incentive increases when future political coalitions threaten to reverse or modify the preferred policies of the incumbents. Naturally organized interest groups, however, are better able to defend themselves against future opponents and attempts at policy reform, and thus gain less from a government-created organization. In this respect, we find that a larger but inherently more fragmented interest group actually has an advantage over a typically more concentrated and politically organized interest group in gaining institutional status.

Third, our findings have implications for the specification of empirical analyses of the relationship between interest group competition and regulatory policies. Following the theoretical work of Stigler (1971) and Peltzman (1976), a common approach in assessing the effect of interest groups on policy

has been to proxy for their political strength using measures of group size and concentration, which are then regressed directly on policy variables (Nelson, 1982; Nelson & Roberts, 1989; Ross, 1985). The assumption is that smaller, less concentrated groups are less able to overcome collective action problems when privately organizing political influence activities. While not disagreeing with the logic, we extend our understanding of the mechanisms through which interest group influence operates – one of which is by gaining a *public* form of organization that provides access to regulatory decision-making forums. However, we find that the relationship between traditional proxies of private organization (i.e. size, concentration) and public organization (e.g. consumer advocate) is not straightforward. While a positive correlation exists on one dimension (e.g. larger consumer groups are associated with a higher incidence of public advocates), it is by no means perfect; we also find instances where public organization arises in response to weak private organization (as with residential consumer advocates), implying a negative correlation. This suggests that measures of private organizational capabilities are imperfect, and potentially biased, gauges of an interest group's ability to shape regulatory policy.

Finally, a natural extension to our theoretical model would be to incorporate the role of the courts. Legislatures can delegate authority to the courts to review agency decisions, thus giving courts a role in the evolution of regulatory policy. Court rulings on the rights of interest groups to obtain standing before the PUC, for example, may influence the incentives of the legislature to put such powers into statute. Recent research by Tiller and Spiller examines the strategic behavior of agencies in relation to court preferences, given the administrative procedures put in place by Congress (Tiller, 1998; Spiller & Tiller, 1997). Existing research on the design of administrative procedures has not yet considered how the legislature's decision is influenced by the formal inclusion of the courts (Bawn, 1995, 1997; Epstein & O'Halloran, 1994, 1996). We leave this avenue for future research.

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Notes

1. By drift we mean that by delegating policy-making authority to a regulatory agency, legislators introduce the risk that the policy choice of the agency is different from the policy preference of the legislative coalition that implemented the original policy.

2. The OPEC oil crises, in combination with rising inflation and interest rates, led to a dramatic increase in the utilities' operating costs: between 1970 and 1981, the average real cost of a unit of fuel purchased by electric utilities increased almost three times, with the cost of oil increasing six fold and natural gas four fold (Energy Information Administration, 1997). At the same time, the nuclear generation expansion program, committed to during the 1960s, was proving to be vastly more costly than originally expected (Campbell, 1988; Chen, 1987).
3. Source: Edison Electric Institute *Rate Actions Survey*.
4. Naturally, there is some variation in the institutional locus and the organizational structure of consumer advocate offices. Generally, the state governor or attorney general with the advice and consent of the legislature appoints the head consumer advocate. Budgets are also determined by the legislature and executive in the same way as for state agencies, and are sourced from general state funds rather than from separate appropriations on utilities. The majority are autonomous offices, operating either as freestanding institutions or else as statutory divisions of existing government departments, such as the Department of Justice. In some states, such as Massachusetts and New York, the legislature chose not to create a new office, but rather to endow an existing agency with utility consumer advocacy powers. These were typically bestowed on the Attorney General, sometimes with the requirement that he/she appoint a Deputy as the official utility consumer advocate. While differences in organizational structure may affect the ability of consumer advocates to influence regulatory policies, we regard these effects as second order to the presence or absence of an independent consumer advocate with the right of standing before state and federal agencies. We therefore concentrate here on the legislative decision to create a new consumer advocate, irrespective of its precise form, leaving this latter topic for further research.
5. Beyond these basic functional necessities, there is some heterogeneity in additional powers that consumer advocates enjoy. Many have access to PUC information and records, and some receive automatic notification of utility petitions. In 15 states advocates are able to initiate proceedings before the PUC. The typical consumer advocate office had a budget of $0.9m in 1997, with a staff of 10 personnel.
6. See Gormley (1981, 1983) for a rich description of grassroots and formal (i.e. statutory) consumer advocacy organizations, their historic development during the 1970s and their differential strategies for influencing regulatory policy.
7. The *rate base* is the value of the utility's assets on which the PUC allows the utility to earn a financial return. The PUC includes only those assets and expenditures which it deems the utility to have prudently occurred.
8. PUC commissioners may not simply ignore consumer advocates' arguments in their decision-making process: under due process requirements, as established in state administrative procedure legislation, PUC decisions must have some reasonable basis in the evidence presented. Commissioners must therefore justify why one position on any given issue is more reasonable than the alternatives. Without some substantiation, commissioners run the risk of being overturned by the courts on the basis of arbitrary or capricious behavior.
9. Data on electric utilities' fuel expenditures was obtained from the Energy Information Administration's *State Energy Price and Expenditure Report*.
10. For a review of the evidence see Costello (1984). Original studies include Harris and Navarro (1983), Primeaux and Mann (1986) and Besley and Coate (2003).
11. Since legislation can be enacted at any point in time, a continuous time, or hazard rate, model might be the best candidate for modeling the time path of policy adoption (Kiefer, 1988; Box-Steffensmeier & Jones, 1997). In this situation, however, while a continuous

time approach has several advantages, for example in dealing with censored observations and autocorrelation, it also has some disadvantages when compared to a discrete time formulation. For example, continuous time models such as the Cox proportional hazards model cannot easily handle "ties" in the dependent variable (Yamaguchi, 1991). Since our data is gathered annually there are multiple years during the 1970s and 1980s when several states enacted such statutes in the same year (creating a tie). Estimation of the Cox model on data sets containing many ties, however, can yield biased parameter estimates (Yamaguchi, 1991). Discrete-time models do not produce biased estimates and thus may be more appropriate. Since neither continuous time nor discrete time approaches are clearly superior estimation techniques in this instance, we conduct our empirical analysis using both to test for robustness across methodologies. Since we find that the results under both methodologies are very similar in terms of significance patterns and estimated magnitudes, we report here only the probit results with standard errors corrected for heteroskedasticity and autocorrelation. Hazard rate tables are available from the authors upon request. See Petersen (1991) for a discussion of this technique and its advantages over alternatives.

12. As far as we know, no state has repealed such an act once passed, though amendments have been made in some states. Consistent with Baldwin (1989), this suggests that consumer groups fight hard against the repeal of a consumer advocate office.
13. We exclude Nebraska and Minnesota from the analysis since these two states had unicameral non-partisan legislatures during all or part of the period. We also exclude Maryland and Indiana, the only states to have created consumer advocacy institutions several decades before 1970. Indiana passed legislation in 1945 authorizing the governor to appoint a Public Counsellor with authority to employ staff and to intervene in regulatory proceedings (Indiana statutes 1945 chapter 46 section 2). Maryland passed similar legislation in 1955 creating a People's Counsel (Maryland statutes 1955 chapter 441).
14. We exclude California and Michigan from the set of states institutionalizing consumer advocates since, while they enacted related legislation, they did not establish advocates with independent or substantive powers of representation. Including California and Michigan in the empirical analysis does not substantially affect the strength of our results in terms of significance or magnitude of estimated coefficients.
15. In each of the models we include dummy variables to control for year fixed effects. These dummies control for trends in factors affecting the implementation of consumer advocates that are constant across states. This assumes that the constant term varies across years. An F-test of this group of dummies suggests that the year fixed effects are statistically significant.
16. We present results in all tables for the political expectations indices calculated with a retrospective time horizon of 6 years (i.e. $P = 6$). The results are similar for time horizons of 8 and 10 years. We also experimented with *prospective* political expectations indices, implicitly assuming that political actors have perfect foresight about the party composition of future governments, though the estimated coefficients tended to be statistically indistinguishable from zero.
17. The pseudo-R^2 is defined as $1 - L_1/L_0$ where L_1 is the reported log-likelihood value and L_0 is that calculated with just the constant term in the model specification. The pseudo-R^2 is then the log-likelihood value on a scale where 0 corresponds to the constant-only model and 1 corresponds to perfect prediction, i.e. a log-likelihood value of 0.
18. We also included a control for state-level voter preferences by measuring the state electorate's vote for McGovern and/or Mondale. Including this control variable, which was not statistically significant in any specification, did not change the qualitative results of the model.

19. We also included a control for state-level real per capita income. This control variable was not statistically significant in any specification, nor did its inclusion affect the results on other variables.
20. Figures are calculated by setting $DEMOCRAT = 1$ and by evaluating impact of increasing *INDUSTRY* and *POPURBPC* by one standard deviation from their mean values (see Table 6).
21. In 1970, residential and commercial consumer classes paid on average more than twice the rate per kilowatt hour than industrial consumers, though there was significant variation between states. By 1990 this ratio had fallen to one-and-a-half times. (Energy Information Administration, *State Energy Price and Expenditure Report*).
22. See Maddalla (1983) for more details on the multinomial logit model.
23. De Figueiredo (2003) also considers the impact of political expectations on institutional design, though the focus of that research is on the allocation of procedural powers between legislatures and executives, rather than between legislatures and executives and administrative agencies.

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