Can Latent Groups Influence Policy Decisions? The Case of Telecommunications Policy

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Electoral constituencies recognize favorable policy outcomes in high-turnout jurisdictions. In this article I evaluate whether underlying institutions might provide a finer explanation of this relationship. To do so I formally examine variation in telecommunications policy across U.S. states. The resulting evidence is consistent with residential customers recognizing more favorable policy when institutions reduce voting's resource cost (measured by registration rules) or increase its nonpecuniary benefit (measured by Perot support). Measures of either force explain significantly more variation in the present data than does a measure of actual participation (i.e., turnout).

1. Introduction

Does the capacity for electoral constituencies to act collectively influence policy? Collective action theory in the wake of Olson (1971) suggests "no"—that is, diffuse groups (such as electoral constituencies) remain latent because their members face high costs to check free riding. Accordingly the theory predicts "*a surprising tendency for the 'exploitation' of the great by the small*" (Olson, 1971:35).

A number of authors attempt to reconcile this prediction with the observation that "unorganized" groups nevertheless appear to sway policy. For example, Denzau and Munger (1986) offer a formal model where unorganized groups recognize favorable policies when their preferences mimic those of organized interests. Globerman and Kadonaga (1994) develop what is roughly an empirical evaluation of this implication. In an application similar to that pursued here, they show that residential subscribers to telecommunications

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networks (who face theoretically high collective action costs) pay significantly less for associated services when business interests are diffuse.[1]

These treatments leave open, however, the question of whether diffuse interests can *independently* exert policy influence. Key (1984) begins to address this lacuna by arguing that electoral constituencies recognize favorable policy outcomes by exhibiting a strong propensity to vote. Hamilton (1993) and Fleck (1999) independently offer formal empirical evidence regarding this phenomenon. Hamilton reports that decisions to site and expand hazardous waste facilities favor high-turnout constituencies, while Fleck finds that redistributive policies favor constituencies that exhibit a strong voting propensity.

I take Hamilton and Fleck's results as a point of departure for the present research. Their evidence, in effect, provides an ex post identification of electoral constituencies that successfully overcame collective action problems to produce high turnout. It stops short, however, of identifying ex ante conditions that might have facilitated this production. Making this identification is important for understanding how more primitive factors contribute to electoral constituencies' capacity to influence policy. My goal here is to improve this understanding.

Telecommunications policy offers a rich laboratory in which to pursue this objective. Here, a diffuse and thus theoretically latent group (i.e., residential users of telecommunications services) competes against organized interests (e.g., local exchange carriers) to influence political agents (e.g., public utility commissioners, or PUCs). If interests compete on their abilities to produce political support (e.g., see Bernheim and Whinston, 1986), then collective action theory implies that organized groups exert disproportionate policy influence. Consequently, local exchange policy should vary across jurisdictions with these groups' concentrations.

This proposition ignores, however, the potential for institutions to enhance electoral constituencies' capacity to produce political support. I evaluate how this potential relates to telecommunications policy by formally partitioning the turnout-policy relationship into components attributable to formal and informal institutions (i.e., voter registration rules and norms that influence political participation, respectively). To identify relevant formal institutions' roles, I employ a dichotomous instrumental variable that equals one for states that permit election-day voter registration.[2] To identify relevant informal institutions' roles, I employ a continuous instrumental variable equal to the percentage of votes for Ross Perot's 1992 presidential candidacy.[3]

1. Kaserman, Mayo, and Flynn (1990) also argue that residential subscribers wield "comparative political strength," but do not identify the source of this strength.

2. Wolfinger and Rosenstone (1980) offer evidence that, within the set of registration rules, closing dates exert the greatest influence on electoral participation.

3. Perot voters exhibit a relatively large historical and contemporaneous propensity for political participation. Theoretical arguments and empirical evidence that I review in the article's body are consistent with something other than egoistic motives driving this participation. One such alternative is an informal norm of civic participation.

The resulting evidence is consistent with *institutions* that facilitate turnout, *not* turnout per se, influencing electoral constituencies' capacity to shape policy decisions.

I develop this evidence in the article as follows. In Section 2 I identify channels through which state-specific political forces can influence local exchange telecommunications policy. From this identification emerges an observable implication: residential users should recognize relatively favorable policy when voting institutions enhance their capacity to produce political support. Evidence that I report in Section 3 is consistent with this implication: residential users recognize more favorable policy in states that permit election-day registration or exhibited a high percentage of votes for Perot's candidacy. I conclude in Section 4.

2. Political Economy of Local Exchange Policy

Local exchange companies (LECs), such as the Bell Operating Companies (BOCs), transfer telephone calls between end users and the telecommunications network.[4] Because both long distance and local callers must access this network, transfer costs are "common" in producing long distance and local service. These costs also tend to be insensitive to call volume and are thus referred to as "non-traffic sensitive" (NTS) costs. Consequently, distinguishing creators of local exchange costs from associated beneficiaries is complicated. This complexity contributes to a regulatory environment where cost allocation is particularly sensitive to political influence.[5]

In the present section I review how political forces have historically acted on this allocation process. I also describe the mechanism that presently allocates local exchange costs. Like its predecessors, this mechanism is subject to political forces that vary with interested individuals' capacity to act collectively. In turn, this capacity can vary across states with the institutional structures in which groups compete over policy outcomes.[6] To the extent that such structures enhance the relative capacity for latent groups to produce political support, these groups can exert greater policy influence than collective action theory would otherwise imply.

4. Each of the seven BOCs is a U.S. holding company (also called "Baby Bells") that was formed under the 1984 AT&T breakup to own local exchange carriers (LECs). BOCs own the previously AT&T-owned telephone companies in specific geographic regions (O'Reilly and Associates, 1999).

5. "Cost allocation problems are historically recognized to be both critical and controversial when common infrastructure assets are used to provide services across multiple consumer categories with prices varying for each category" (Majumdar, 2000:448).

6. For North (1993), institutions include formal rules and informal constraints. Extended to the present application, formal rules (e.g., voter registration laws) influence the resource cost of producing political support. Informal constraints (e.g., codes of behavior) influence the nonpecuniary reward structure associated with participating in collective actions. I adopt North's definition here to facilitate an efficient reference to the resource costs and nonpecuniary benefits of contributing to political support production.

2.1 Channels for State-Level Political Influence

In 1930 the Supreme Court decided (*Smith v. Illinois Bell*) that station-to-station accounting creates a more sensible apportionment of local exchange costs than does board-to-board accounting.[7] While this decision informed the Bell System that local exchange costs are attributable to long distance service, it said nothing about how to "separate" those costs into local and long distance jurisdictions. Lacking explicit regulatory guidance, AT&T adopted subscriber line use (SLU) as a basis for separations (Temin, 1987:22).[8]

Under SLU, however, the local sector's cost allocations grew relative to those of the long distance sector. This divergence is associated with increased political pressure to allocate local exchange costs to long distance users.[9] Consequently the interstate jurisdiction's allocation percentage grew from less than 5% in 1950 to more than 25% in 1980 (Temin, 1987:22). In 1982 the interstate jurisdiction recognized 26% of allocatable costs but accounted for only 8% of total calling minutes (Kaserman et al., 1990:233).

Presently the separations process begins at the state level where, according to the Federal Communications Commission's (FCC's) Joint Cost Order (adopted in 1987), LECs file individual cost allocation manuals with their respective public utility commissions (PUCs). Through these manuals, LECs propose allocations of joint and common costs to intra- and interstate jurisdictions (Majumdar, 2000:453). PUCs, in turn, propose cost allocations to the Federal-State Joint Board, which intermediates between the states and FCC. The Joint Board, composed of three FCC members and four state public utility commissioners,[10] plays a key role "in deciding crucial public policy issues regarding common carriers" (FCC, 1998a).

While this filing and approval process represents a formal mechanism for allocating local exchange costs, "actual allocations between local and long-distance jurisdictions are often economically arbitrary" (Majumdar, 2000:449). Contributing to this "arbitrariness" is the high cost of defining

7. In the station-to-station model, toll calls commence at the calling telephone (i.e., station) and terminate at the receiving phone. Implicit in this conceptualization is that connecting to the long distance network contributes to the cost of providing toll service. The board-to-board conceptualization, on the other hand, treats as toll costs only that part of a call carried between switches that connect local telephone exchanges and the toll network (i.e., only that part of a call carried between two boards) (Temin, 1987:20–21).

8. "Historically, separations results have provided the basis for 'rate-of-return' ratemaking at both the state and federal levels. Within the state jurisdiction, utility commissions attempt to set intrastate rates that, in the aggregate, allow ILECs [Incumbent Local Exchange Carriers] to earn revenues equal to their intrastate costs, plus a reasonable profit on their property. Federal regulators engage in a parallel process for interstate costs and property" (FCC, 1998b).

9. For example, in 1950, Senator Ernest W. McFarland expressed "dismay at the [Federal Communications] Commission's willingness to shift the load from the big user to the little user; from the large national corporations which are heavy users of long distance to the average housewife and business or professional man who do not indulge in a great deal of long distance." Senator McFarland, an Arizona Republican, chaired the subcommittee overseeing the Federal Communications Commission (FCC) (Temin, 1987:22).

10. The National Association of Regulatory Utilities Commissioners (NARUC) nominates public utility commissioners to the board and the FCC approves them (FCC, 1998a).

where local services end and long distance services begin. As a result, "the allocation of costs between local and long-distance segments, or between state and federal regulatory domains, is carried out via a politically negotiated process" (Majumdar, 2000:449).

This process is susceptible to forces that vary across states. For example, interested constituencies may engage in informational lobbying to influence PUC-decisions regarding cost allocation manuals.[11] To the extent that such constituencies' political capabilities vary across states, and to the extent that PUCs influence the Joint Board's decisions, separations for each state reflect political forces that are peculiar to that state.[12]

Noll (1986:196) identifies an additional channel through which state-specific political forces can influence separations decisions:

> The principal source of challengers to incumbent federal legislators is state and local government. Governors and big-city mayors run for the Senate, and state legislators and other local officials run for the House. To the extent that the basic exchange rate [which is constrained by separations decisions] becomes a salient political issue at the state and local level, incumbent legislators could become vulnerable to challenges based in part on their association with the big increases in telephone prices.

In this light, federal legislators have an incentive to influence separations.[13] If these agents' political fitness depends on state-specific political forces, then so does legislators' incentive to exert this influence. Hence, whether the FCC receives pressure from "below" (i.e., from PUCs and their constituencies) or "above" (i.e., from federal legislators), channels exist through which state-specific political forces can influence local exchange cost allocations between the long distance and local sectors.

State-specific political forces can also influence a related policy outcome, namely, local exchange service prices. Following the allocation of local exchange costs, each state's PUC determines the end-user price for local exchange services.[14] Several channels exist through which interested groups

11. For a formal treatment of informational lobbying, see Austen-Smith and Wright (1992).

12. Susceptibility to state-specific political forces through this channel appears to be increasing, as the FCC is currently considering reforms that would further enhance the ability of "appropriate persons from individual states" to "communicate informally with the Joint Board and the Commission [FCC]" (FCC, 1998a).

13. Legislators might exercise this influence, for example, by attempting to sway relevant appointment and budgetary decisions. Brock (1994:57) cites such channels as allowing individual senators or representatives (or their senior staff members) to function as "independent telecommunication policy makers."

14. Regulatory jurisdiction over telecommunications policy is split between the FCC and state public utility or public corporation commissions. States have authority over most rates charged to customers for local exchange services. Jurisdiction over long distance services is split, with the FCC regulating interstate service and state regulatory or public utilities commissions regulating intrastate service (Harris and Kraft, 1997:95).

might influence this determination. For example, groups might offer elected commissioners votes or campaign contributions that are contingent on local exchange prices. They might also offer contingent support to governors and legislators who, in turn, can influence local exchange prices via the appointment process.[15] Finally, whether commissioners are elected or appointed, interested groups might influence local exchange prices by contingently supporting governors and legislators who, in turn, can sway commissioners by altering a commission's budget or regulatory authority.[16] These channels offer ample opportunity for interested players to "adjust rates in order to achieve political goals" (Brock, 1994:66).

2.2 Interested Groups' Preferences

This overview of the local exchange policy process suggests that several channels exist through which interested groups can influence two related political processes:[17] "separations" that allocate costs between long distance and local service providers; and "local exchange pricing" that determines end-user prices for local exchange service. Collective action theory implies that organized interests should be relatively productive at exploiting these channels. These interests include LECs that supply local exchange services and thus have an incentive to *increase* the proportion of costs allocated to the long distance sector and *increase* the price for supplying local exchange service.[18]

Interexchange carriers (IXCs) (e.g., AT&T) represent another relevant organized interest. As suppliers of long distance services, they have an incentive to *decrease* the proportion of costs allocated to the long distance sector. Also, since local exchange and long distance services are complements, IXCs have an incentive to *decrease* the price that end users face for local exchange service.

Business users of telecommunications services represent yet another relevant organized interest. Because members of this group are heavy users of long distance services (Globerman and Kadonaga, 1994), their preferences over local exchange policy are close to those of IXCs. In particular, they have an incentive to *decrease* costs allocated to the long distance sector

15. Nationwide, 13 states elect their public utility commissioners. In other states, governors nominate and legislatures approve commissioners (Arizona Corporation Commission).

16. Since 1989, legislatures in several states have placed statutory constraints on utility commissions' authority over telecommunications rates and revenues (Zearfoss, 1998:13).

17. Following my presentation of formal empirical results in Section 3, I review empirical episodes where interested groups may have exploited these channels.

18. The incentive to raise prices follows from the inelastic demand for local exchange services. "Empirical estimates of the demand elasticity of residential local subscriber access at current prices and penetration rates are virtually always below −0.1, and generally below −0.05" (Parsons, 1996:245). "In a survey of the empirical literature on telephone demand, Taylor (1980) concluded that the best point estimates of the price elasticities of demand for access, local use, and intrastate long distance use are −0.03, −0.20, and −0.65, respectively" (Kaserman et al., 1990:232).

Table 1. Interest Group Preferences

Interested group	Do group members prefer a high or low allocation of local exchange costs to the long distance sector?	Do group members prefer a high or low price for local exchange services?
LECs	High	High
IXCs	Low	Low
Business users	Low	Low
Residential users	High	Low

(since these costs are potentially passed through to end users) and *decrease* the price that end users face for local exchange service.

In addition to these players, members of a theoretically unorganized group appear interested in local exchange policy—that is, residential users of telecommunications services. As heavy users of local services (Globerman and Kadonaga, 1994), these individuals have an incentive to *reduce* local-sector cost allocations (since this reduction is potentially passed through to end users) and *decrease* end-user prices for local exchange service. I summarize these preferences in Table 1.

2.3 Interested Groups' Ability to Exert Policy Influence

While members of these groups have well-defined preferences over local exchange policy, their abilities to exert a corresponding policy influence can vary. To see this, consider a "menu-auction game" where a political agent fully allocates a fixed cost between competing interests. These interests, in turn, attempt to influence the agent by offering political support "menus" (i.e., a list of support that a group will supply in return for each of the agent's feasible actions). Bernheim and Whinston (1986) show that, in this setting, interested players influence an agent's decision according to their capacity to produce support.[19]

The problem a political agent faces in the menu auction game parallels that which the Federal-State Joint Board and PUCs face in devising local exchange policy. Like the game's political agent, board members and PUCs must distribute a fixed (i.e., non-traffic sensitive) cost among competing interests. Competing interests, in turn, can exert influence through several channels. The menu auction game thus implies that, because interest groups compete on their capacity to produce political support, and because residential users appear to be high-cost producers, individuals in this group should receive relatively unfavorable allocations.

Implicit in this characterization, however, is that institutions are neutral (i.e., institutions don't influence the relative capacities of competing interests

19. It is important to recognize that Bernheim and Whinston identify the productivity with which interests can produce support, *not* the actual support produced, as being influential.

to produce support). If, instead, institutions enhance otherwise latent group members' capacity to produce support, then the political agent would rationally allocate a smaller cost share to these members (holding the capacity of other interests constant). Incorporating this logic into the menu-auction framework thus produces the following observable implication that motivates my formal empirical analysis.

Proposition 1. If residential users of telecommunications services supply political support in terms of votes, then they should receive relatively favorable policy treatment in jurisdictions where formal and informal institutions facilitate turnout.

Quite simply, if the capacity for residential users to influence policy depends on their capacity to produce political support, and if residential users' unit of support is a vote, then political agents (e.g., PUCs, Joint Boards, legislators) should be more sensitive to this otherwise latent group in jurisdictions where institutions facilitate voting.

3. Empirical Analysis

Evidence that I report in the present section is consistent with this proposition. In short, I show that variation in electoral institutions explains a significant proportion of changes in local exchange policy across states. I also show that, except for its dependence on electoral institutions, variation in turnout has insignificant explanatory capability. In this light, electoral constituencies' *capacity* to produce support, not the *actual* support that they produce, appears influential.

3.1 Model Specification

To develop this evidence I estimate the following system of equations:

$$y_1 = f(x_1, x_2, u_1) \tag{1}$$

$$y_2 = g(y_1, x_1, x_2, u_2) \tag{2}$$

where

- $y_1 \equiv$ a vector of variables that measure the proportion of local exchange costs allocated to each state's long distance sector in 1997;
- $y_2 \equiv$ a vector of variables that measure the average monthly price charged to each state's local exchange customers in 1997;
- $x_1 \equiv$ a vector of variables that measure the capacity for residential users to act collectively;
- $x_2 \equiv$ a matrix whose elements characterize the concentration of relevant organized interests; and
- $u_i \equiv$ a vector of error terms $(i = 1, 2)$.

Table 2. Dependent Variables: *Separate* and *Local Exchange*

Variable	Description	Mean	SD	Maximum	Minimum	Source
Separate	Percent of LEC investments allocated to the interstate sector	27.50%	2.65%	34.29%	20.95%	FCC
Local Exchange	Monthly end-user local exchange expenditure	$28.52	$4.46	$38.35	$20.95	FCC

3.2 Dependent Variables: Separations and Local Exchange Prices

As reported in Table 1, members of interested groups have well-defined preferences over two policy outcomes of present interest—separations and local exchange prices. Measures of these outcomes constitute the dependent variables of Equations (1) and (2). I summarize their distributions in Table 2.[20]

Separate equals the percentage of investments that a state's LECs allocated to the long distance sector in 1997. These investments constitute costs that are common to local and long distance users for producing local exchange service (Majumdar, 2000:448). The political mechanisms that I describe in Section 2 allocate these costs between the local and long distance sectors.

Local Exchange equals the average monthly expenditure that a state's end users paid for local exchange service in 1997 (i.e., the "price" for local exchange services). As described in Section 2, PUCs set these prices subject to direct political influence and indirect influence that acts through separations. I thus specify *Local Exchange* as a function not only of the political forces described in Section 2, but also of those acting indirectly through separations decisions (i.e., *Separate* is a regressor in Equation (2)).

3.3 Independent Variables: Political Capabilities of Theoretically Latent Groups

Members of interested groups have well-defined preferences over separations and local exchange prices.[21] For example, residential subscribers to the telecommunications network prefer high LEC cost allocations to the long distance sector and low prices for associated services. In related settings, Hamilton (1993) and Fleck (1999) employ voter turnout as a proxy for similarly situated individuals' ability to influence policy. I follow these authors here by specifying x_1 in Equations (1) and (2) as a vector whose components are the percentages of each state's voting age population that voted in the 1996 presidential election.

20. My sample includes the proportion of LEC investments allocated to the long distance sector and monthly end-user local exchange expenditures for each of the contiguous United States in 1997 (i.e., $N = 48$).

21. A summary of these preferences appears in Table 1.

Table 3. Proxies for Theoretically Latent Groups' Political Capabilities

Variable	Description	Mean	SD	Maximum	Minimum	Source
Turnout	Percent of eligible voters who voted in the 1996 presidential election	51.7%	6.7%	71.9%	38.3%	FEC
Same Day	Equals one for states that permit election-day voter registration	14.6%	n/a	1	0	FEC
Perot	Percent of voters who cast ballots for Ross Perot in the 1992 presidential campaign	19.8%	5.3%	30.0%	9.0%	FEC

I also make an important departure, however, by attempting to identify components of voter turnout that are associated with more primitive factors in swaying policy. These factors include formal institutions that reduce the resource cost of voting and informal institutions that enhance the nonpecuniary reward of voting. I thus employ the instrument *Same Day* to identify how formal institutions might influence policy by facilitating electoral constituencies' capacity to produce political support. In a like manner, I employ the instrument *Perot* to identify informal institutions' influence. Summaries of these variables' distributions appear in Table 3.

To the extent that formally reducing voting costs enhances otherwise latent groups' capacity to produce political support, the component of *Turnout* associated with *Same Day* should exhibit a positive relationship with *Separate* and negative relationship with *Local Exchange*. In other words, if electoral laws significantly reduce residential users' cost to produce support,[22] then the local sector's cost allocation and end-user's price for local exchange services should be relatively low in states that maintain those institutions.[23]

Informal institutions can also enhance otherwise latent groups' capacity to exert policy influence. For example, suppose that an ideology enhances psychic benefits from supplying political support.[24] Such an ideology would

22. Wolfinger and Rosenstone's (1980) seminal work on "who votes?" suggests that, among registration rules, the closing date before which one must register has the greatest impact on the probability of voting (e.g., see page 71).

23. In the present sample, these states are Idaho, Maine, Minnesota, New Hampshire, Wisconsin, and Wyoming. Because North Dakota has no registration, I also treat it as being a member of this group.

24. Rational choice models formally highlight the significant role that nonpecuniary considerations such as ideology can play in deciding whether to vote. Indeed, it is difficult to rationalize voting without incorporating some such argument in the prospective voter's utility function.

increase the demand for voting and thus, given the implications of the menu auction game described in Section 2, enhance otherwise latent groups' ability to obtain favorable policy outcomes. If such an ideology exists, and if its strength varies systematically across states, then local exchange policy should vary accordingly.

To identify this source of variation, I employ the instrument *Perot*. If *Perot* is positively associated with an ideology that facilitates political support, then the component of *Turnout* associated with *Perot* should exhibit a positive relationship with *Separate* and a negative relationship with *Local Exchange*. In other words, if *Perot* reflects an informal institution that facilitates electoral participation, then the local sector's cost allocation and end-user's price for local exchange services should be low in states where such an institution is significant.

This inference's validity rests, in large part, on whether *Perot* identifies a component of *Turnout* attributable to underlying informal institutions. Both theory and empirical evidence suggest that it does. For example, Perot had little chance of winning the 1992 presidential election. Consequently voters who cast ballots in his favor should have expected an even smaller pecuniary gain from their actions than did voters who supported one of the two major party candidates. On this dimension, Perot voters seem to recognize large nonpecuniary gains from political participation. Interpreted within the calculus of voting's context, they thus appear to be relatively productive suppliers of political support and, coupled with the menu auction game's implications, capable of exerting significant political influence.[25]

In addition to this theoretical conjecture, empirical evidence appears consistent with Perot voters being productive suppliers of political support. For example, individuals who had previously participated in political campaigns make up a disproportionate share of Perot supporters. Moreover, these experienced participants tended to be Perot's staunchest advocates and thus the most likely to cast ballots in his favor (McCann et al., 1999). If, as rational choice models of voting highlight, nonpecuniary considerations largely drive political participation, then the heavy concentration of politically active individuals among Perot's supporters is consistent with *Perot* measuring an ideological dimension of the voting calculus.

Furthermore, holding other forces constant, states in which Perot received a relatively large share of support tended to exhibit a relatively high voter turnout (Thorson and Stambough, 1995).[26] This evidence is consistent with *Perot* having a negative association with the costs political entrepreneurs

25. Interpreted within the calculus of voting's context, Perot voters appear to maintain a relatively large *D*-term. Hamilton (1993) employs "voter turnout" to measure this term's (i.e., "ideological satisfaction from political participation") variation and formally attributes changes in policy outcomes to it. Evidence that I develop here is consistent with *Perot* being a finer measure of the *D*-term than is turnout itself.

26. This relationship also appears in my first-stage regressions. Please see the appendix for an example.

face to mobilize otherwise latent groups.[27] Again, an ideology that facilitates supplying political support would produce such an association.

Vigdor (2002) offers additional formal evidence in this spirit. In particular, he shows that Perot voting exhibits a positive, significant, and robust relationship to participation in the 2000 census. Like supplying political support in the present telecommunications application, participating in the census is individually costly but produces external benefits. Vigdor thus interprets the incidence of Perot voting as a proxy for "civic responsibility." My characterization of *Perot* as reflecting an informal norm of participation appears consistent with both Vigdor's independent interpretation and the evidence from which it emerges.

Finally, it is important to emphasize that this evidence is consistent with *Perot* measuring preferences over political participation, *not* over policy. Interpreting *Perot* as a measure of policy preferences would be difficult since Perot, while proposing "severe and identifiable changes in fiscal policy. . . was unclear and unknown on many other issues" (Alvarez and Nagler, 1995:716). Evidence on the political orientation of Perot voters is consistent with this statement—for example, 20% were liberal compared to 20% of all 1992 voters, 49% were moderate compared to 53% of all 1992 voters, and 30% were conservative compared to 27% of all 1992 voters. "In demographic terms, Perot supporters look like a random grab from the voting population at large, with the conspicuous exception of racial minorities" (Lewis et al., 1994:23).

3.4 Independent Variables: Organized Groups' Political Capabilities

While forces associated with the individual's voting calculus may significantly influence local exchange policy, so might forces identified by collective action theory. To control for this potential, I employ regressors that measure the political capabilities of relevant organized groups. These proxies constitute the matrix x_2 and are summarized in Table 4.

Given LECs' theoretically low cost of producing support, and absent mitigating forces, the menu auction game implies that they can "capture" relevant regulatory processes. If the concentration of LECs reflects this capacity, then cost allocations to the long distance sector, as well as local exchange prices, should increase with this concentration—that is, *LEC HHI* should exhibit a positive association with both *Separate* and *Local Exchange*.

AT&T represents an organized group whose interests oppose those of LECs. First, because it supplies long distance services, it has an incentive to oppose cost allocations to the long distance sector. Second, because local exchange and interexchange services are complements, it has an incentive to reduce local exchange prices. Hence, to the extent that AT&T's political power increases with its market share, *ATT* should relate negatively to both *Separate* and *Local Exchange*.

27. Arnold (1991) identifies such costs as significantly constraining the policy decisions of associated political agents.

Table 4. Proxies for Theoretically Organized Groups' Political Capabilities

Variable	Description	Mean	SD	Maximum	Minimum	Source
LEC HHI	Herfindahl–Hirschman Index of LEC market concentration	79.26%	21.44%	100.00%	37.04%	FCC
ATT	Percentage of presubscribed lines served by AT&T on December 31, 1996	63.47%	5.43%	72.11%	38.80%	FCC
Fortune 500	Number of Fortune 500 headquarters in 1999	9.85	13.63	58	0	Savageau and D'Agostino (1999)

Business subscribers constitute another organized interest with well-defined preferences over local exchange policy. Because they are relatively heavy users of long distance services, businesses have an incentive to mitigate local exchange cost allocations to that sector. In addition, business subscribers have an incentive to reduce the price they pay for local exchange services. To evaluate the ability to act on these incentives, I employ the regressor *Fortune 500*.[28] If the efficiency with which business subscribers provide political support increases with the concentration of "large" firms, then *Fortune 500* should have a negative relationship with both *Separate* and *Local Exchange*.

3.5 Independent Variables: Local Exchange Service Cost

Finally, in addition to forces associated with institutional settings and collective action theory, relevant costs might also influence local exchange policy. Hence I employ the regressor *Loop Cost* to control for differences across states in the cost of supplying local exchange service (see Table 5).[29] A priori, the cost of producing local exchange services and the proportion of these costs that are allocated to the long distance sector appear unrelated. Hence I exclude *Loop Cost* from Equation (1)'s regressors.[30] On the other hand, *Loop Cost* enters Equation (2)'s regressors since, to the extent that competitive forces influence local exchange prices, prices should reflect the cost

28. Teske (1991) employs a similar variable to control for the political capabilities of business subscribers to the telecommunications network. Results that I report are robust to finer regressors such as those that control for the size distribution of business users.

29. A "loop" connects end users to local exchange plants. It is "generally a pair of twisted copper wires and a portion of the capacity of the infrastructure necessary for the loop, such as conduit, trench, and telephone pole space" (Parsons, 1996:230). An LEC incurs both initial and recurring costs for supplying loops. These costs are attributable to the subscriber access component of basic local exchange service (Parsons, 1996:231).

30. In unreported regressions, I include *Loop Cost* as a regressor in Equation (1). Associated parameter estimates are statistically insignificant and inferences that can be drawn from these regressions do not differ markedly from those which I report.

Table 5. Proxy for Local Exchange Service Cost

Variable	Description	Mean	SD	Maximum	Minimum	Source
Loop Cost	Monthly cost of maintaining a loop in 1996	$22.88	$4.93	$36.30	$15.40	FCC

of producing related services. *Loop Cost* and *Local Exchange* should thus exhibit a positive relationship.

3.6 Empirical Results

To gain confidence that my choice of methods and data have not created spurious relationships, I begin my empirical analysis in Regressions (1.1) and (2.1) of Table 6 by re-creating important results from the literature.[31]

Estimates presented in Regressions (1.1) and (2.1) are consistent with relevant costs and theoretically organized interests significantly influencing local exchange policy. In particular, they are consistent with LECs and business users significantly influencing separations, LECs and loop costs directly influencing local exchange prices, and separations constraining local exchange prices. In addition, *Turnout* in Regressions (1.1) and (2.1) "explains" a significant proportion of variation in *Separations* and *Local Exchange*, respectively. These results are consistent with received evidence (e.g., Hamilton, 1993; Fleck, 1999) that high-turnout constituencies recognize favorable policy outcomes.

Results reported in Regressions (1.2)–(2.3), however, suggest that a significant proportion of the turnout-policy relationship is attributable to coincident variation in institutional structures.[32] For example, in Regressions (1.2) and (2.2), I use *Same Day* to identify the component of the turnout-policy relationship attributable to formal voting costs. Variation in *Turnout* coincident with that in *Same Day* explains a significant share of variation in both *Separate* and *Local Exchange*. This pattern of significance also appears in Regressions (1.3) and (2.3). Here I use *Perot* to identify the component of the turnout-policy relationship attributable to informal influences on the capacity to produce political support (e.g., norms for political participation). Taken together, these results are consistent with formal and informal institutions, as opposed to their consequences (i.e., turnout), significantly enhancing the

31. If the errors u_1 and u_2 are correlated, then the estimated variance-covariance matrix is not diagonal. This type of correlation can occur if unmodeled forces act simultaneously on both dependent variables (i.e., *Separate* and *Local Exchange*). To increase efficiency in the face of this possibility, I employ the seemingly unrelated regression (SUR) model. Because ordinary least squares (OLS) standard errors emerge from the SUR model when the variance-covariance matrix is diagonal, I report only the SUR standard errors. Available inferences from the unreported OLS errors do not differ significantly from those reported here.

32. Results from unreported generalized methods of moments and two-stage least squares estimators also exhibit this consistency.

Table 6. Identifying Fundamental Components of *Turnout*

Panel A: Parameter estimates for Equation (1)
Dependent variable = *Separate*

		(1.1)		(1.2)		(1.3)	
Estimation method		SUR		3SLS		3SLS	
Instrument		N/A		*Same Day*		*Perot*	
Variable	Predicted sign	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant		21.4701	4.8370***	14.8860	6.8385**	13.4188	6.6841**
Turnout	Positive	0.0795	0.0531+	0.2175	0.1097**	0.2483	0.1030**
LEC HHI	Positive	0.0258	0.0166+	0.0161	0.0189	0.0139	0.0192
ATT	Negative	0.0064	0.0618	0.0080	0.0661	0.0083	0.0680
Fortune 500	Negative	−0.0530	0.0259**	−0.0409	0.0288+	−0.0382	0.0294+
N		48		48		48	
R^2		0.2356		0.1281		0.0748	
Adjusted R^2		0.1645		0.0470		−0.0112	
$\bar{y}$		27.5046		27.5046		27.5046	
σ_y		2.6540		2.6540		2.6540	
p-value (Hausman)				0.1393		0.0366	

Panel B: Parameter estimates for Equation (2)
Dependent variable = *Local Exchange*

		(2.1)		(2.2)		(2.3)	
Estimation method		SUR		3SLS		3SLS	
Instrument		N/A		*Same Day*		*Perot*	
Variable	Predicted sign	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant		40.8020	10.1772	44.1306	12.1330***	48.7346	13.8092***
Turnout	Negative	−0.1626	0.0876*	−0.4031	0.1803**	−0.7454	0.1992***
LEC HHI	Positive	0.0557	0.0275**	0.0621	0.0300**	0.0711	0.0349**
ATT	Negative	−0.0505	0.0995	−0.0563	0.1041	−0.0644	0.1219
Fortune 500	Negative	0.0161	0.0493	0.0116	0.0529	0.0059	0.0609
Loop Cost	Positive	0.3238	0.1264***	0.2994	0.1323**	0.2675	0.1469*
Separate	Negative	−0.4572	0.2330**	−0.1096	0.2541	0.3875	0.3239
N		48		48		48	
R^2		0.3008		0.1776		−0.4234	
Adjusted R^2		0.1985		0.0573		−0.6318	
$\bar{y}$		28.603		28.6033		28.6033	
σ_y		4.456		4.4560		4.4560	
p-value (Hausman)				0.2517		0.0030	

*** $p < .01$ (two-tailed test),
** $p < .05$ (two-tailed test),
* $p < .10$ (two-tailed test).
+++ $p < .01$ (one-tailed test),
++ $p < .05$ (one-tailed test),
+ $p < .10$ (one-tailed test).

capacity for otherwise latent groups to produce political support and, in turn, influence policy decisions.[33]

3.7 Robustness Checks

Results reported in Table 6 are consistent with institutional components of voter turnout, as opposed to turnout per se, significantly influencing policy decisions. An important issue to address in evaluating these results' robustness is the well-known potential for instrumental variable (IV) estimates to be biased toward their ordinary least squares (OLS) estimates in small samples. At least two immediate pieces of evidence suggest that such a bias does not drive the present inference. First, the first-stage relationship between the instruments (i.e., *Same Day* and *Perot*) and the endogenous regressor (i.e., *Turnout*) is strong.[34] The potential for small sample bias, on the other hand, is especially acute for weak first stages. Second, the magnitude of the IV estimates on *Turnout* reported in Regressions (1.2)–(2.3) is markedly greater than that of the corresponding OLS estimates in Regressions (1.1) and (2.1). For example, magnitudes of the estimated *Perot* IV coefficients are significantly greater than those of their corresponding OLS estimates, as evidenced by the *p*-values for Hausman's test in Regressions (1.3) and (2.3).

Magnitudes of the estimated *Same Day* IV coefficients are also greater than those of their OLS counterparts, but not significantly so, as evidenced by the *p*-values for Hausman's test in Regressions (1.2) and (2.2). A further evaluation of whether results reported in Regressions (1.2)–(2.3) identify fundamental components of *Turnout* may thus be valuable. I offer such an evaluation by redeploying the instruments (i.e., *Same Day* and *Perot*) as regressors and thus obviating the potential for bias to emerge from these instruments' correlation with my errors (see Table 7).[35]

In each regression (1.4–2.7), estimated coefficients on *Same Day* and *Perot* exhibit their predicted signs. Moreover, in almost all of these cases, they are significant. These estimates are consistent with separations to the long distance sector being 1.18–2.05% greater in states that permit election day registration and 0.74–0.92% greater for a one standard deviation increase in *Perot*. They are also consistent with local exchange prices being $1.30–$3.32 lower in states that permit election day registration and $2.01–$2.17 lower for a one standard deviation increase in *Perot*. Finally, as evidenced by

33. Overidentifying the model by employing both *Same Day* and *Perot* as instruments also appears valid in light of an unreported Hausman test.

34. Evidence of this relationship appears in the appendix.

35. Recall that two conditions are necessary for the IV estimator's validity: a strong partial correlation with the endogenous regressor and independence from the regression's error. Evidence reported in the appendix is consistent with the first condition being satisfied. Formally evaluating the second condition is, however, impossible (e.g., see Wooldridge, 2002). In this light, treating *Turnout*'s potential endogeneity via proxy variables (in addition to instrumental variables) appears valuable.

Table 7. Treating Instruments as Regressors

Panel A: Parameter estimates for Equation (1)
Dependent variable = *Separate*
Estimation method = SUR

Variable	Predicted sign	(1.4) Coefficient	(1.4) SE	(1.5) Coefficient	(1.5) SE	(1.6) Coefficient	(1.6) SE	(1.7) Coefficient	(1.7) SE
Constant		25.6634	4.0269***	19.4531	4.4269***	20.8031	4.5098***	21.8015	4.9373***
Same Day	Positive	2.0464	0.9437**			1.1797	0.9953	1.3760	1.0704+
Perot	Positive			0.1740	0.0622***	0.1405	0.0676**	0.1572	0.0755**
Turnout	Insignificant							−0.0318	0.0649
LEC HHI	Positive	0.0265	0.0160*	0.0286	0.0154*	0.0263	0.0153*	0.0278	0.0155*
ATT	Negative	−0.0006	0.0604	0.0451	0.0604	0.0340	0.0602	0.0368	0.0604
Fortune 500	Negative	−0.0523	0.0251**	−0.0530	0.0243**	−0.0499	0.0241**	−0.0513	0.0242**
N		48		48		48		48	
R^2		0.2713		0.3119		0.3315		0.3348	
Adjusted R^2		0.2035		0.2479		0.2519		0.2375	
$\bar{y}$		27.5046		27.5046		27.5046		27.5046	
σ_y		2.6540		2.6540		2.6540		2.6540	

Continued

Table 7. *Continued*

Panel B: Parameter estimates for Equation (2)
Dependent variable = *Local Exchange*
Estimation method = SUR

Variable	Predicted sign	(2.4) Coefficient	(2.4) SE	(2.5) Coefficient	(2.5) SE	(2.6) Coefficient	(2.6) SE	(2.7) Coefficient	(2.7) SE
Constant		29.1460	9.9382***	41.8826	8.7956***	39.1444	9.3461***	37.3308	10.1373***
Same Day	Negative	−3.3242	1.6332**			−1.2956	1.5738	−1.6026	1.7084
Perot	Negative			−0.4132	0.1024***	−0.3796	0.1096***	−0.4035	0.1212***
Turnout	Insignificant							0.0456	0.1000
LEC HHI	Positive	0.0494	0.0269*	0.0442	0.0242*	0.0454	0.0241*	0.0430	0.0246*
ATT	Negative	−0.0365	0.0989	−0.1456	0.0923+	−0.1334	0.0928+	−0.1372	0.0930+
Fortune 500	Negative	0.0319	0.0485	0.0217	0.0437	0.0234	0.0435	0.0269	0.0440
Loop Cost	Positive	0.3831	0.1265***	0.2881	0.1135***	0.3075	0.1152***	0.3137	0.1157***
Separate	Negative	−0.3902	0.2390+	−0.2240	0.2191	−0.1901	0.2214	−0.1817	0.2217
N		48		48		48		48	
R^2		0.3102		0.4403		0.4481		0.4505	
Adjusted R^2		0.2092		0.3584		0.3516		0.3378	
$\bar{y}$		28.603		28.6033		28.6033		28.6033	
σ_y		4.456		4.4560		4.4560		4.4560	

*** $p < .01$ (two-tailed test),
** $p < .05$ (two-tailed test),
* $p < .10$ (two-tailed test).
+++ $p < .01$ (one-tailed test),
++ $p < .05$ (one-tailed test),
+ $p < .10$ (one-tailed test).

Regressions (1.7) and (2.7), independent variation in *Turnout* (i.e., variation that I ignore in constructing Table 6's IV estimates) exhibits insignificant explanatory capability.

In light of their corresponding OLS estimates' magnitude (see *p*-values for Hausman's test) and first stage's strength (see appendix), Table 6's IV estimates appear robust. This appearance persists when I treat the institutional variables as proxies rather than instruments (see Table 7) and in unreported regressions where I employ the split-sample instrumental variable (SSIV) estimator.[36]

Nevertheless, one may remain curious about alternative explanations' potential to rationalize the institution-turnout-policy relationship reported here. To address this concern I evaluate several alternative specifications of the regressor matrix in unreported regressions. These specifications control for demographic characteristics, whether PUCs are elected or appointed, the competitiveness of states' political markets, whether constituencies have access to ballot initiatives, whether consumer advocate groups maintain a significant presence, residency requirements for voter registration, and campaign contribution laws. I also evaluate the potential for influential observations to bias my results. None of these alternative evaluations produces markedly different inferences.

3.8 Discussion

As reported in Section 2, electoral constituencies have available several channels through which to influence telecommunications policy. Moreover, the institutional setting in which they attempt to exert this influence appears important both theoretically and empirically. Interpreted in this light, formal and informal institutions appear capable of influencing otherwise unorganized groups' capacity to produce political support and thus sway policy decisions. In the remainder of this section, I offer anecdotal evidence that increases confidence in this interpretation.

In 1990 Massachusetts's public utilities commission decided that local service prices could not cover its LEC's costs. To remedy this situation, the commission implemented cost-based pricing that subsequently raised local rates. Confronted with a similar decision calculus in 1994, Idaho's commission found that local service costs were already being fairly allocated and that the LEC's return on investment was reasonable (Zearfoss, 1998:11).

For Massachusetts, the utility commission's decision favored a theoretically organized group (i.e., a local exchange carrier). In Idaho, however, the commission favored a theoretically latent group (i.e., residential subscribers), despite an organized interest's (i.e., U.S. West) allegations that prices for basic local residence service were below cost (Zearfoss, 1998:11).

36. Unlike its simple IV counterpart, this estimator is biased toward zero rather than the OLS estimator. Angrist and Krueger (1995) provide a more complete and formal treatment of the SSIV estimator.

While received simple collective action theory can rationalize the first case, it has difficulty doing so for the second. This difficulty may arise from the theory's implicit assumption that institutions are neutral. Institutions can, however, alter the relative capabilities of interested groups to influence political allocations. For example, institutions that reduce voting costs may enhance a latent group's (e.g., residential subscribers) ability to influence local exchange prices.

The case of Idaho versus Massachusetts is consistent with this conjecture. Idaho formally enhances latent groups' political capabilities by allowing same day registration, while Massachusetts does not. In turn, Massachusetts's local exchange prices are about average, while Idaho's are about one standard deviation below average. These states' disparate treatment of residential users illustrates that PUCs indeed vary in how they weigh competing interests preferences. It also suggests that, at least in one case, constituency treatment varies in a theoretically reasonable manner with the *formal* institutional landscape in which those constituents compete for political allocations.

Similarly Representative Timothy Wirth's (D.-CO) election fortunes illustrate how associated *informal* institutions might be influential. While telecommunications policy is complex, residential users can easily monitor its effects on local exchange prices. Consequently, potential challengers have available a salient policy issue with which to mobilize otherwise "inattentive publics." Challengers apparently invoked this strategy against Wirth, a prominent advocate of telecommunications deregulation.[37] Indeed, when deregulation increased local exchange prices, Wirth's winning margin slipped by almost 10%. For at least one of Wirth's principal assistants, this association is attributable to increased telecommunications prices (Arnold, 1991).

Of interest is that Colorado is a state in which informal institutions (as measured by *Perot*) appear relatively strong.[38] At least for this case, political agents appear sensitive to residential users' preferences over telecommunications policy and this sensitivity is associated with my proxy for relevant informal institutions. The formal and robust evidence reported elsewhere in this section is consistent with this relationship reflecting a more general phenomenon.

37. Other informal evidence from deregulation also appears consistent with political agents being sensitive to residential users' preferences over local exchange policy. For example, as part of the telephone industry deregulation and breakup of AT&T, the FCC attempted to charge residential users a $6/month access fee. This charge would have increased dollar-for-dollar separations allocated to local subscribers. While this decision was entirely within the FCC's jurisdiction, a small group of legislators introduced a bill to block it. The house voted overwhelmingly to bar the FCC from imposing the access fee. The Senate was about to do the same when the FCC announced that it would withhold imposing the fee for at least two years. Subsequently the FCC implemented a $1.00 fee, with increases phased in annually (Arnold, 1991:74).

38. Recall that the mean and standard deviation for *Perot* are 19.8% and 5.3%, respectively. Twenty-three percent of Colorado voters, on the other hand, cast ballots for Perot.

4. Conclusion

Collective action theory identifies channels through which relatively concentrated groups can benefit disproportionately from public policy decisions. In its most basic form, however, the theory ignores how institutional landscapes can influence relative bargaining capacities. This influence, coupled with implications from Bernheim and Winston's (1986) menu auction game, implies that residential users of telecommunications service should recognize favorable policy treatment in states where institutions (formal and informal) facilitate voting. This prediction is distinct from those that relate policy treatment to actual turnout.

Making this distinction is important. Policy entrepreneurs can, at relatively low cost, influence the level of resources necessary for political participation (e.g., by manipulating formal electoral institutions). However, altering informal constraints, such as norms of participation, appears significantly more costly. Hence, if informal constraints explain a preponderance of variation in the capacity for political participation, then policies aimed at strategically manipulating formal institutions may exhaust valuable resources without providing a commensurate return. In this light, a finer measure of the channels through which theoretically latent groups can influence policy appears valuable.

Evidence reported in this article provides such a measure. In particular, it identifies both the resource cost and nonpecuniary benefits of voting as more fundamental factors in producing political support than turnout per se. It stops short, however, of explaining how associated institutions evolve. I leave this important topic for future research.

Appendix

Table 8. Evidence of a Strong First Stage for 3SLS Estimators

Variable	Coefficient	SE
Constant	39.7562	15.2668***
Same Day	6.7286	2.2407***
Perot	0.5233	0.1761***
LEC HHI	0.0534	0.0421
ATT	0.0827	0.1489
Fortune 500	−0.0755	0.0760
Loop Cost	−0.1357	0.2230
Separate	−0.1841	0.3998
N	48	
R^2	0.4874	
Adjusted R^2	0.3976	
$\bar{y}$	51.679	
σ_y	6.6614	

Dependent variable = *Turnout*.
Estimation method = OLS.
*** $p < .01$ (two-tailed test),
** $p < .05$ (two-tailed test),
* $p < .10$ (two-tailed test).

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