THE STRUCTURE AND CONDUCT OF CORPORATE LOBBYING: HOW FIRMS LOBBY THE FEDERAL COMMUNICATIONS COMMISSION*

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ABSTRACT

This paper examines the amount and organization (individual vs. collective) of lobbying by firms in administrative agencies. It explores the power and limitations of the collective action theories and transaction cost theories in explaining lobbying. It introduces a dataset of over 900 lobbying contacts covering 101 issues at the Federal Communications Commission (FCC) in early 1998. It finds that the structure and conduct of large firm lobbying at the FCC is consistent with the predictions of theories of transaction costs and the main results of theories of collective action. Small firms show little sensitivity to collective action issues or transaction cost issues in the organization of their lobbying, but they do lobby less when having to reveal proprietary information. In sum, large firms behave in a manner largely consistent with theoretical predictions, while small firms do not.

1. INTRODUCTION

Firms engage in both market and "nonmarket" strategies to create shareholder value (Spulber 1994; Baron 1996). Whereas market strategies involve decisions such as product positioning and pricing, nonmarket strategies are actions taken by the firm in its political, regulatory, and social environments for the purpose of increasing firm value (Baron 1997, 1999). Nonmarket behavior includes such company activities as lobbying a legislator or regulator, litigating a case in court, and making campaign contributions. Two aspects to understanding

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nonmarket activity are (1) "how much" nonmarket behavior firms are likely to undertake, and (2) whether nonmarket activity will be done individually or collectively within the industry. These questions are important as they relate to both firm strategy and the boundaries of the firm. We apply these questions to the lobbying of the Federal Communications Commission (FCC) by firms. In particular, we examine the number of FCC lobbying contacts by firms and in what organizational forms (trade associations v. individual firm) the lobbying occurs.

The current theory on lobbying tends to be focused on the amount of lobbying that occurs, and has largely omitted the options firms have to organize their lobbying. Since the seminal work of Olson (1965), the literature has focused on the ability of individuals and groups to overcome the free-rider problem in creating collective action (Bendor and Mookherjee 1987, Sandler 1992, Sandler and Tschirhart 1980). While the collective action literature has much to say about the amount of lobbying that occurs, it is less informative when it comes to the organization of lobbying. The theories articulating the free-rider problem do not address whether firms will choose to internalize the lobbying function, or choose to do it through a common body. The only conclusion that can be drawn from the literature is that less lobbying occurs when there are collective action problems.

The empirical literature on the subject has been no more informative. Because of the difficulty in obtaining data on lobbying activities, most empirical studies that examine the amount and organization of corporate political activity have focused on political action committee (PAC) contributions to legislators (Strattman 1992, Kroszner and Strattman 1998, Snyder 1990, Grier, Munger and Roberts 1994, Pittman 1976). This literature has found evidence consistent with the collective action theories in the amount of contributions PACs give to legislators. They have also found evidence that support the theories of production economics, such as economies of scale, in the amount of PAC contributions made. That is, empirical studies have shown that larger firms do give more to legislators (Grier et al 1994, Schuler 1999). The handful of published studies that have examined lobbying have not examined lobbying directly or have only conducted descriptive (yet valuable) case studies (e.g. Hansen 1991, Schlozman and Tierney 1986, Coleman 1988, Walker 1991, Maitland 1985).[1]

This article extends the study of corporate lobbying in a number of ways. First, it is the first paper to examine lobbying at the transactional or contact level. Second, using multivariate statistical techniques we examine how both collective action problems and transactional hazards affect the quantity and organization of lobbying. Third, we study lobbying of regulators instead of Congress, as has been done by every other empirical study. We use a data set of "ex parte" lobbying presentations at the Federal Communications Commission in early 1998. This data set contains over 900 instances of lobbying on over 100 different issues before the FCC. Finally, rather than use PAC proxies for lobbying, we measure the actual quantity and organization of the lobbying effort, making this one of the first studies to examine actual lobbying events statistically.

[1] Austen-Smith and Wright (1994) do conduct a statistical study of non-corporate lobbying, in their study of the Supreme Court nominee Robert Bork confirmation process in the Senate. Ideological interest groups make up the bulk of the lobbying in this study.

II. THEORY

Collective action theory and transaction cost economics offer insight into issues affecting organizational and group behavior. We use these theories to motivate empirical questions regarding both the quantity and organizational form of lobbying of federal regulators. We define organization of lobbying as whether the firm uses an individual form (internal lobbyists or contract lobbyists) or collective form (trade association) of lobbying.[2] We define quantity of lobbying as the number of contacts with the FCC made either by a firm independently or through a collective group. In this section, we argue that firms will choose to lobby collectively, rather than independently, when the net benefits of collective lobbying exceed the net benefits to independent lobbying. The severity of the collective action problem depends upon the degree of commonality of interests and free riding, and the ability of lobbyists to exclude others from receiving the benefits. In addition, the use of collective lobbying includes the risk that proprietary information might be revealed in the course of lobbying. We explain in further detail below.

A. Collective Action Theory

Collective action theory emphasizes the barriers to group action and how they are overcome (Olson 1965). A motivational requirement for group action is common interests in a particular policy outcome amongst firms. Divergent interests amongst firms generally means that a regulatory policy will differentially impact business in a way that would create conflict among industry members over policy (and thus lobbying) goals. We can think of rules regarding unbundling of network elements as an example. The effect of unbundling the elements and charging for them separately will differentially affect companies that have heavy investments in modern switching equipment, companies that maintain legacy systems in rural areas, and competitive local exchange carriers who wish to offer local service. Indeed, each company may have its own view on what is a network element and how unbundled it has to be. Such conflict over policy outcomes will have two likely effects: one, multiple viewpoints will be expressed to regulators; and two, the likelihood of acting collectively (through a trade association) will be reduced because members are not motivated to work together for each other's goals.

While the effect of divergent interests has received some attention in the collective action literature, the mainstay of the literature is the free-riding problem. The free rider problem suggests that if it costly to lobby, and firms cannot localize the benefits to their lobbying efforts, which in the aggregate may be greater than the costs, then no lobbying will occur. This is because the individual firm that lobbies will bear the entire cost to lobbying, but receive only a portion of the benefits. Thus, the individual firm's incentive to lobby will be diminished. Attempts to engage in group-action will fail, as nonmembers of the group have the incentive to "free-ride" off of the group. In equilibrium, no lobbying occurs. Note that the literature does not

[2]Contacts made by a firm independently include those contacts made by either in-house or outside counsel or lobbyists. By trade associations, we mean the multi-member industry organization to which firms from the industry contribute money and support for the greater benefit of the industry as a whole. Examples of such include the National Association of Broadcasters, the National Cable Television Association, and the United States Telephone Association. We use trade association and collective group interchangeably in the paper.

make a prediction how the ability to free ride affects the organizational choice of lobbying (i.e., independent vs. collective lobbying), if the free rider problem is present, but not so severe that it eliminates lobbying altogether. It only suggests conditions when lobbying occurs with less frequency. We leave it as an empirical exercise to determine the effects free riding has on organization.

There may be conditions under which the free-riding problem is overcome. We examine two possibilities in this paper. First, if the benefits conferred by the trade association (such as information, studies, special lobbying and policy benefits) can be allocated solely to the participating members of the collective lobbying group, then individual firms have a higher incentive to participate in group action, thereby overcoming the free-riding problem. If individual firms defect, they would not get the benefits of the collective body. We call this excludability by the group. Second, if unique benefits can be obtained by lobbying individually, individual firms may engage in lobbying on their own. Unique benefits may come in two ways: (1) if an individual firm can lobby for a policy action that the regulator can tailor to the firm, then that firm may engage in individual lobbying, regardless of whether other firms do or do not want the same policy (the regulator excludes others from the policy benefit); (2) it may be that an individual firm wants the same general policy as the rest of the industry, but is also able to get something extra and unique through additional lobbying. Thus, individual lobbying can occur in addition to trade association lobbying when additional unique benefits can be obtained. Unique benefits is a form of excludability, but occurs on the individual rather than the collective level. [3]

B. Transaction Cost Theory

The transaction cost approach to organizational issues is more comparative in its analysis, emphasizing the benefits of alternative organizational choices. In its more standard economic applications, this approach addresses the "make or buy" decision -- that is, the decision of the firm to either internalize production or purchase goods and services on the market. This perspective suggests that in an effort to promote efficiency in firm governance, the objective for the firm is to match organizational forms (ranging from market to hierarchy) with any transaction "hazards" facing the firm in making agreements, or contracts, with others. The contracting hazards are many, some related to maladaptation in the presence of specific assets (Klein, Crawford and Alchian 1978; Williamson 1985, 1996), some related to the appropriation of property rights (Teece 1986, Oxley 1997), and still others related to measurement of performance (Holmstrom and Milgrom 1991). The hazard particular to our analysis is the appropriation of proprietary information by a party to the lobbying transaction -- that is, appropriation of proprietary information by other members of a trade association. When, the revelation of proprietary information is required for effective lobbying, collective lobbying by the trade association may become less attractive as an organizational choice. The information dissemination and disclosure mechanisms within the trade association would increase the probability that proprietary competitive information of the firm (e.g., future pricing strategies or new market entries) necessary for effective lobbying would be divulged, or "leaked," to other

[3] Note that unique benefits do not necessarily mean divergent interests. For example, a number of local carriers might all wish for a certain policy, but it may be granted to only small local carriers because of their lobbying efforts. Or, a special exemption may be granted to an individual carrier, though all local carriers would like to receive the exemption.

members of the trade association -- the firm's competitors. An individual firm would find it difficult to depend upon trade association agents to prevent leakage because the agents have multiple principles (industry competitors). Thus, if competitive proprietary information is involved in the lobbying process, the trade association is a poor governance vehicle. Firms may be inclined to choose to lobby independently.

In addition to the effects of proprietary information on organizational choice, we also consider the direct effect of proprietary information (in the hands of the regulator) on the quantity of lobbying. Firms may be reticent to lobby at all when there is proprietary information at stake, because there is fear that despite the usual protections provided by the regulatory agency to safeguard this information, the secrets will either intentionally or unintentionally leak out from the agency (Demski, Lewis, Yao, and Yildirim 1999, de Figueiredo and Teece 1996). Thus, the more proprietary information at risk, the less lobbying contacts that will occur.

C. The Interrelated Effects of Organization and Quantity of Lobbying

In addition to the effects described above, we note that the choice of organization itself may have an additional effect on the amount of lobbying that occurs. When firms choose to use a trade association as the vehicle to communicate with regulators, they may no longer each need to lobby individually to make their position known. Given the ability to lobby collectively through one vehicle, the total lobbying contacts may go down.[4] Conversely, commonality of interests may enhance the ability of a trade association to raise funds for lobbying. This, in turn, means that more lobbying occurs than would occur in multiple firms, each with high fixed costs. We leave it to the statistics to sort out these effects.

D. Small Firm Considerations

The theoretical implications we have set forth thus far assume that a firm has a fluid choice between acting independently or collectively with other firms in the industry. This is most likely to be true for large firms with internal legal departments or large budgets with which to hire independent lobbyists. Small firms raise special concerns, with new implications for the quantity and organizational form of lobbying. First, small firms might be severely budget constrained in their ability to hire contract lobbyists and may not have the sufficient economies of scale required to support an internal lobbyist. Thus, they may not have organizational choice in the sense that large firms do. For them, the general case may be collective lobbying through a trade association (or collective use of a contract lobbyist) or no lobbying at all. Second, as with large firms, it would still be necessary for the particular lobbying transaction that the overall benefits from lobbying exceed the cost of the lobbyist. This equation, however, may stack up differently for small firms compared with large firms, as large and small firms may derive different levels of benefits from lobbying. Third, smaller firms might behave in less sophisticated ways than their more experienced and larger counterparts, as they lack the frequent experience and learning that accompanies continual and active federal regulation. We examine small firms as an extension of the main case of larger, more experienced firms.

[4] It could also be argued that the involvement of the trade association may give confidence to individual members that regulatory action is likely to occur, thus encouraging them act independently as well.

III. EMPIRICAL EVIDENCE ON THE ORGANIZATION OF LOBBYING

A. Lobbying at the FCC

The empirical setting for the paper is lobbying of the Federal Communications Commission (FCC). The FCC is charged with regulating the telecommunications sector[5] and has actively promulgated rules and regulations governing market actions of companies.[6] Before the FCC renders a decision on a docket, there is a formal and informal comment procedure for the parties potentially affected. The Code of Federal Regulations and FCC Guidelines establish a set of formal procedures that must be followed to comment on, or challenge, an FCC ruling. The informal procedure is a bit more opaque. Parties are permitted to make *ex parte* presentations to the FCC. These written or oral presentations can be to any official within the FCC, from the commissioners who make the final rulings, to the industry-level bureau officials, who are industry experts who help craft the ruling for the Commission. Ex parte contacts by the telecommunications industry constitute the lobbying activities we examine here.

Ex parte contacts, as a measure of lobbying, have several attractive properties for empirical research of this type. First, because all contacts are required by federal regulation to be reported, there is not a sample selection bias problem. Second, the Secretary of the FCC provides uniform and consistent information on each ex parte presentation, minimizing the problem of missing and temporally inconsistent data. Finally, all contacts relate to a particular regulatory issue before the FCC and are reported as such. This allows us to investigate each and every instance of this primary form of lobbying.

We have collected data on every ex parte presentation made to an FCC official and reported to the Secretary's Office in January and February 1998. This includes presentations made by parties spanning from December 1997 to February 1998. (There is roughly a 15-day delay from lobbying contact to public disclosure by the FCC.) In this data set, there are 930 lobbying contacts made during the time period. We record a contact as the following: each *party, i*, that contacts *regulator, j*, about *issue, k*, on *date, t*, receives a count in the data set (each (i,j,k,t) quadruplet represents a count). Because we are concerned about business lobbying, we have eliminated observations that involve lobbying by federal, state or local government representatives. We have also eliminated 12 cases where information is incomplete. The remaining number of contacts is 823. These lobbying contacts cover 111 individual dockets facing the FCC. Ten dockets have been eliminated because of incomplete information, yielding 101 distinct issues over which the FCC was lobbied. The issue is the unit of observation. We supplemented this database with interviews of over thirty regulators, companies, lawyers, and trade associations in the telecommunications industry, to guide our theoretical and empirical design.

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[5] There are actually many industries within telecommunications, such as wireless telecommunications, long distance provision, local service, broadcast television, radio services, and so on.

[6] For example, between 1990 and 1993, the FCC handed down an average of over 1000 regulatory decisions per year. See the FCC Record for the text of those decisions. Also see Greenstein, McMaster, and Spiller 1995, for an example of the impact of regulatory decisions in the telecommunications sector.

To create and check some of the variables, we recruited three additional individuals: one former FCC regulator, one current FCC regulator, and one lawyer who represented companies on many of these issues. For each of the docket numbers, we asked one regulator and the lawyer to rate the variables on a Likert Scale (1 to 5). High ratings mean that the experts strongly agreed with the characterization of the variable in the questionnaire; low numbers indicate a strong disagreement. We used the average of the two experts' results to determine the values of the variables. The raw data had a reasonably high degree of consistency, with 81% of answers within one rating point and 95% of answers within two rating points. The questions used in this study from the original questionnaire are found in the Appendix. We then asked the remaining official to take a version of the questionnaire with a subset of questions. We then checked his answers with the results from the previous two individuals to insure consistency with the answers. Again, the results were similar, as 79% of his answers were within one rating point of the mean of the respondents, and 91% within two rating points.

B. The Data on the Organization of Lobbying

The unit of observation is the issue docket (n=101). The dependent variable in this section is the percentage of individual firm contacts of the total contacts on a given issue, and is defined as (number of individual firm contacts/number of total contacts). The dependent variables are called PERCENT INDIVIDUAL TOTAL, PERCENT INDIVIDUAL LARGE, and PERCENT INDIVIDUAL SMALL for the entire sample, large firm subsample, and small firm subsample, respectively.

There are three sets of independent variables. The first set of variables, derived from the questionnaire in the Appendix, measures how the characteristics of issues with respect to collective action affect the organization of lobbying. Collective action itself has two main components. The first component is captured by the variable SHARED INTERESTS, which measures the degree of shared interests between firms on a given issue. We expect that as SHARED INTERESTS increase, *ceteris paribus*, firms are more likely to engage in collective action, and thus companies move toward a trade association form of organization. The second component is measured by the variable, FREE RIDING. While the theory has no prediction on how free-riding will affect the organization of lobbying, we include a FREE RIDING variable in the regression to allow the statistics to determine the effect. FREE RIDING examines the ability of non-contributors to enjoy the fruits of lobbying by others. Although opportunities for free-riding may not favor one organizational form over another, other characteristics of issues related to the free-riding problem – nonmember exclusion and unique benefits -- may. To account for this, we introduce two additional characteristics variables. NONMEMBER EXCLUSION represents whether it is possible for a group, like a trade association, to exclude members from benefits of its lobbying efforts, and thus overcome the free-riding problem. If trade associations are able to exclude nonmembers from the benefits of their lobbying effort, firms should be more likely to join the trade association and rely on its lobbying efforts. Thus we expect a negative coefficient on NONMEMBER EXCLUSION. UNIQUE BENEFITS measures the ability of firms to obtain selective benefits on this issue from their own lobbying efforts. We expect a positive coefficient on UNIQUE BENEFITS because a firm could obtain unique benefits through

lobbying on its own. Note that the two characteristics are not mutually exclusive and a firm could use both a trade association to obtain industry-wide benefits (when nonmember exclusion is possible) and individual lobbying to obtain selective benefits.

The second set of independent variables focuses on proprietary information; in particular, the difficulty of protecting information when lobbying. In measuring this transactional hazard, we asked the experts to assess whether lobbying on each of the issues is likely to lead to leakage of proprietary information during lobbying, outside of FCC safeguards that protect proprietary information. WEAK APPROPRIABILITY measures the likelihood that lobbying through a trade association will result in proprietary information revelation, with high values indicating a high probability of proprietary information leakage. The transactional theory suggests that we should see the trade association form of organization disfavored when there is a transactional hazard of proprietary information leakage in the lobbying. If this is true, we would expect to see a positive coefficient on WEAK APPROPRIABILITY, as firms that face higher transactional hazards tend to shy away from trade association forms of lobbying. We do include a second variable, FIRM LEAKAGE, to measure whether firms, in lobbying individually, would have to reveal proprietary information anyway. Thus, if a firm feels its proprietary information will leak out to its competitors anyway, it will be more likely to use the trade association, *ceteris paribus*, over an internal organization form of lobbying to take advantage of the least-cost option available.

The third set of variables is control variables. The first three variables – LARGE FIRM COST OF ACTION, SMALL FIRM COST OF ACTION, and COST OF ORGANIZING -- control for the cost of acting collectively. The first two variables are perhaps better described as the cost-benefit calculus that large firms and small firms use in choosing whether to lobby on an issue. In particular, LARGE FIRM COST OF ACTION and SMALL FIRM COST OF ACTION measure if a large or small firm, respectively, would find it cost-beneficial to lobby individually in the absence of a trade association. COST OF ORGANIZING measures how the costs increase in the trade association form as a function of the number of members of the trade association. As costs to the trade association form of organizing increase, and the costs of organizing individually decrease, the firm should move toward an individual form of organization. LARGE FIRMS and SMALL FIRMS measure the number of large and small firms affected, respectively, and are designed to control for issues before the Commission that disproportionately affect either large or small firms. PERCENTAGE LARGE FIRM CONTACTS is the percentage of lobbying contacts that were organized in trade association or individual form by large firms on a given issue. A large firm is a Fortune 1000 firm; all other firms are considered small firms. FIRM PROFITS measures the impact of an issue on firm profits; larger values of this variable indicate a larger effect of this issue on firm profits (and arguably should increase lobbying due to importance of issue). YEAR represents the number of years the docket has been before the Commission. This is a measure of where in the docket life cycle the issue is, and is meant to control for any organizational effects that might be attendant to that particular phase. Finally, we include control variables that are not on the questionnaire. First, we control for docket (or industry) fixed effects. ENGINEERING AND TECHNOLOGY, MASS MEDIA, WIRELESS, CABLE SERVICES and MISCELLANEOUS (which includes international, public mobile radio, compliance, and other minor bureaus) refer to the docket designation of the issue, and control for these types of industry effects, relative to issues emanating from the Common Carrier Bureau, the omitted category.

We provide three tables regarding the data. Table 1 has a list of the variable names, and what they measure. Table 2 contains the descriptive statistics. Table 3 is the correlation matrix.

TABLE 1: VARIABLE DEFINITIONS

VARIABLE	SUMMARY DEFINITION
SHARED INTERESTS	Degree of Shared Interests Amongst Firms
FREE RIDING	Ability to Free Ride
NONMEMBER EXCLUSION	Degree of Trade Associations' Ability to Exclude Nonmembers from Benefits
UNIQUE BENEFITS	Ability of Firms to Extract Selective and Unique Benefits through Individual Lobbying
WEAK APPROPRIABILITY	Amount of Proprietary Information that is required to be divulged by a firm to a trade association
FIRM LEAKAGE	Amount of Proprietary Information that is required to be divulged by a firm to a regulator
LARGE FIRM COST OF ACTION	Cost of individual lobbying by large firms relative to trade association lobbying
SMALL FIRM COST OF ACTION	Cost of individual lobbying by small firms relative to trade association lobbying
COST OF ORGANIZING	Rate of increase in costs of lobbying
SMALL FIRMS	Percentage of Small Firms Affected by Issue
LARGE FIRMS	Percentage of Large Firms Affected by Issue
FIRM PROFITS	Impact on firm profitability
YEAR	Year of Docket Introduction
MASS MEDIA	Mass Media Bureau
CABLE SERVICES	Cable Systems Bureau
WIRELESS TELECOM	Wireless Telecommunications Bureau
ENGINEERING AND TECH	Engineering and Technical Bureau
MISCELLANEOUS	Other Bureaus (including international, public mobile radio, compliance, and other minor bureaus)
PERCENTAGE LARGE FIRM CONTACTS	Percentage of lobbying contacts that were organized in trade association or individual form by large firms on a given issue
PERCENT INDIVIDUAL LARGE	Percentage of lobbying contacts through individual (as opposed to collective) form of organization for large firms
PERCENT INDIVIDUAL SMALL	Percentage of lobbying contacts through individual (as opposed to collective) form of organization for small firms
LARGE COUNT	Count of large firm lobbying contacts
SMALL COUNT	Count of small firm lobbying contacts

C. Empirical Method and Specification

In order to estimate a model to measure the organizational structures of lobbying, we use three methods. The first is a standard probit regression. Here we seek to understand whether collective action and transaction cost issues permit the possibility of collective action. The dependent variable in this equation *only* is equal to 0 if there is at least one trade association lobbying on the issue, and 1 otherwise. The second set of regressions examines the marginal effects, by exploring the amount of collective lobbying on an issue. To estimate this, we use a two-sided tobit. The dependent variable in these equations (the percentage of individual firm contacts of the total contacts on a given issue) has large probability masses at 0 (53 of 101 observations for large firms) and 1 (24 of 101 observations for large firms). These large probability masses at the endpoints suggest that parameters estimates may be biased in the standard OLS formulation. The two-sided tobit formulation accounts for a distribution that is truncated from the left and right, and allows us to generate unbiased parameter estimates. Sigma is positive and statistically significant at the 99% level in the tobit formulation, suggesting biased estimators in OLS. Finally, we do provide the ordinary least squares estimation as a basis for comparison, with Newey-West standard errors.

TABLE 2: DESCRIPTIVE STATISTICS

VARIABLE	FULL SAMPLE MEAN	FULL SAMPLE STD DEV	LARGE FIRM SAMPLE MEAN	LARGE FIRM SAMPLE STD DEV	SMALL FIRM SAMPLE MEAN	SMALL FIRM SAMPLE STD DEV
SHARED INTERESTS	3.08	.82	3.08	.82	3.08	.82
FREE RIDING	3.91	.75	3.91	.75	3.91	.75
NONMEMBER EXCLUSION	1.14	.38	1.14	.38	1.14	.38
UNIQUE BENEFITS	2.80	1.07	2.80	1.07	2.80	1.07
WEAK APPROPRIABILITY	2.18	.78	2.18	.78	2.18	.78
FIRM LEAKAGE	2.13	.80	2.13	.80	2.13	.80
LARGE FIRM COST OF ACTION			3.56	.77		
SMALL FIRM COST OF ACTION					2.74	.63
COST OF ORGANIZING	3.06	.80	3.06	.80	3.06	.80
LARGE FIRMS			4.14	.94		
SMALL FIRMS					3.60	1.10
FIRM PROFITS	2.31	.88	2.31	.88	2.31	.88
YEAR	1994.7	3.03	1994.7	3.03	1994.7	3.03
MASS MEDIA	.109		.109		.109	
CABLE SERVICES	.069		.069		.069	
WIRELESS TELECOM	.109		.109		.109	
ENGINEERING AND TECH	.079		.079		.079	
MISCELLANEOUS	.149		.148		.148	
PERCENT LARGE FIRM LOBBYING	.686	.41				
PERCENT INDIVIDUAL TOTAL	.66	.40				
PERCENT INDIVIDUAL LARGE			.368	.43		
PERCENT INDIVIDUAL SMALL					.347	.42
TOTAL COUNT	7.84	15.64				
LARGE COUNT			5.65	12.20		
SMALL COUNT					4.70	10.19

Given the data, it might be quite natural to pursue a grouped logit estimation procedure. While it has intuitive methodological appeal, it is problematic because of the structure of the data. As noted above, dependent variables (whether small firms, large firms or all firms) have large probability masses at 0 and 1. The grouped logit drops observations when all of the observations for a given issue are "collective" or all of the observations are "individual." We thus lose a majority of our sample. This is because when there is no variation in the outcome within a group, that group drops out of the likelihood function. Hence the probit, tobit, and OLS methods are used.

We present specifications for the full sample, and then examine a bifurcated sample with a group of small firms and a group of large firms. The large firm sample includes all Fortune 1000 firm contacts and all trade association contacts in which large firms are participants. The small firm sample includes all Fortune 1000 firms and all trade associations in which small firms are participants. We have done this for three reasons. First, as the theoretical section noted, one would predict there would be structural differences in the two samples. Small firms might be severely capital constrained in their ability to hire lobbyists and not have sufficient economies of scale required to support an internal lobbyist. Smaller firms might also behave in less sophisticated ways than their more experienced and larger counterparts. Second, our interviews tend to confirm that, when compared to large firms, smaller firms are more often concerned about the social and trust aspects to their relationships with trade associations, rather than a merely calculative strategy. Finally, we have determined that there is a statistical difference in the two samples. We have examined a unified model's explanatory power using interactive variables for the theoretical variables of interest versus no interactive variables on the

TABLE 3: CORRELATION MATRIX

1	SHARED INTERESTS	1.00																	
2	FREE RIDING	0.24	1.00																
3	NONMEMBER EXCLUSION	-0.27	-0.60	1.00															
4	UNIQUE BENEFITS	-0.49	-0.65	0.40	1.00														
5	WEAK APPROPRIABILITY	-0.31	-0.45	0.58	0.44	1.00													
6	FIRM LEAKAGE	-0.22	-0.58	0.40	0.61	0.81	1.00												
7	LARGE FIRM COST OF ACTION	0.33	0.22	-0.13	0.06	0.02	0.10	1.00											
8	SMALL FIRM COST OF ACTION	0.07	0.21	0.10	-0.15	0.01	-0.20	0.12	1.00										
9	COST OF ORGANIZING	-0.01	0.29	-0.06	0.00	0.20	0.01	0.44	0.52	1.00									
10	LARGE FIRMS	0.54	0.24	-0.28	-0.27	-0.22	-0.07	0.58	0.12	0.22	1.00								
11	SMALL FIRMS	0.46	0.33	-0.10	-0.48	-0.30	-0.42	0.19	0.48	0.27	0.60	1.00							
12	FIRM PROFITS	-0.28	-0.35	0.37	0.52	0.56	0.60	0.22	0.14	0.24	0.00	-0.13	1.00						
13	YEAR	0.21	-0.04	0.03	0.10	0.03	0.10	0.16	-0.12	0.07	0.06	0.01	-0.11	1.00					
14	MISCELLANEOUS	-0.16	-0.04	-0.16	0.13	-0.19	-0.16	-0.05	0.06	0.04	-0.05	0.01	0.03	-0.18	1.00				
15	MASS MEDIA	0.14	0.08	-0.14	-0.13	-0.16	-0.14	-0.01	-0.06	-0.03	-0.03	-0.05	-0.12	-0.18	-0.14	1.00			
16	CABLE SYSTEMS	0.19	0.14	-0.11	-0.31	-0.09	-0.17	0.05	0.18	0.17	0.11	0.15	-0.14	0.10	-0.11	-0.10	1.00		
17	WIRELESS TELECOM	-0.09	0.21	-0.09	-0.07	-0.12	-0.16	-0.03	0.07	0.15	-0.05	0.02	-0.16	0.19	-0.15	-0.12	-0.10	1.00	
18	ENGINEERING AND TECH	-0.12	0.06	-0.07	0.09	-0.12	-0.12	-0.14	0.15	0.05	-0.20	-0.03	-0.15	0.07	-0.12	-0.10	-0.08	-0.10	1.00
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

variables of interest, and we can reject with an F-test that the models have similar explanatory power. Thus, although we present the full sample results, we believe that examining large firms as the main case, and small firms as an extension, is a sensible way to proceed.

Finally, we have also examined the variables for multicollinearity. While a concern, it does not seem to be a large problem. Table 3 indicates that while the highest correlation between two variables is .81, most variables have bivariate correlations in the .30 range or lower. We also examined the variance inflation factors based on the eigenvalues of $X'X$ (Belsley, Kuh, and Welsch, 1980) to explore more complex relationships in multicollinearity. All variables had variance inflation factors of less than 7, well below the threshold of 20 or 30 normally seen as problematic.

C. Organizational Results

In Table 4 we provide seven models. Model 1 presents the full sample using a two-sided tobit. Models 2-4 include only large firms. Model 2 shows the probit model, which considers the possibility of collective organization. The coefficients are presented as shifts in probabilities (dF/dx). Model 3 is the base model, without the collective action or transactional hazard variables, using a two-sided tobit to determine the amount of collective lobbying that occurs. Model 4 includes all the variables of interest. Models 5-7 include only small firms, and follow the structure of Models 2-4. Additional specifications are provided in de Figueiredo and Tiller (2000). The coefficient estimates are presented with their standard errors in parentheses below. The statistical significance of the coefficients is noted at the 10% and 5% level using robust two-sided t-tests. A positive coefficient means that an increase in the variable will cause the lobbying to tend toward individual organization; a negative coefficient means that an increase in the variable will result in a more trade association form of organization.

Let us first address Model 1 with the full sample. The signs of the coefficient estimates for the theoretical variables are the same as that for the large firm sample (Models 2-4). The coefficients on SHARED INTERESTS, UNIQUE BENEFITS, and WEAK APPROPRIABILITY are statistically significant. The magnitudes of the parameters are about ½ to ¾ that of those in Model 4. The remaining parameters may not be statistically significant because of the substantial amount of noise we introduce into the estimation because of the small firms. We discuss this and the relative magnitudes of the coefficients further below. In this specification, we include the amount of large firm lobbying as a control variable, PERCENTAGE LARGE FIRM CONTACTS. It is very large and statistically significant. It suggests that a one-percentage point move in the percentage of large firm lobbying will result in 1.14% more trade association form of organization. This, combined with our earlier arguments about the substantial differences in large and small firms, leads us to split the sample and examine each subsample on its own merits which, in turn, allows us to interpret the full sample coefficients more clearly.

In Model 2, which covers the large firm sample, the coefficients on SHARED INTERESTS and FREE RIDING are both negative and statistically significant at the 90% and

95% level respectively. The first coefficient means that a trade association form of organization becomes more possible with more common interests; it also increases in likelihood the higher the probability of free riding. More striking, however, is the coefficient on WEAK APPROPRIABILITY. The possibility of a trade association form of organization becomes less likely as the firm is required to reveal sensitive information, consistent with transaction economics. The likelihood of no collective organization increases 24% for each one-point increase in the questionnaire response. The opposite is true for the FIRM LEAKAGE variable.

We now focus on Model 4 as it has all the variables included and highest likelihood. A likelihood ratio test confirms at the 95% level that its explanatory power is higher than Model 3. Note, however, that the signs of the coefficients are the same in nearly every model, no matter which error distribution assumption or specification is preferred.

Consider first the collective action variables. SHARED INTERESTS has a negative coefficient and is statistically significant, which suggests that as interests converge, firms are more likely to move into a trade association form of organization. The coefficient on FREE RIDING is negative and statistically significant, meaning that the greater the possibility of free-riding on a docket outcome, the more likely the firm is to use the trade association. The theory did not impose a prediction on this variable. The coefficient on NONMEMBER EXCLUSION, also negative and statistically significant, suggests that as trade associations are increasingly able to block nonmembers from their benefits, firms respond by joining the trade association and having the trade association lobby on its behalf. The coefficient on UNIQUE BENEFITS is not statistically different from zero at the conventional levels of significance. We had predicted this coefficient would be positive – that is, unique benefits would produce a tendency for firms to lobby themselves to obtain those benefits.

Consider the transaction cost variables next. The coefficient on WEAK APPROPRIABILITY, which is the key measure of the transaction cost variable, is positive, as predicted, and statistically significant at the 95% level of confidence. The coefficient suggests that firms will organize internally or through their own agents, rather than use a trade association, the more proprietary information is at stake. FIRM LEAKAGE has a negative coefficient that is statistically significant at the 95% level. When firms who would lobby individually are unable to keep the proprietary information from regulators anyway, they are likely to rely on a trade association form of lobbying.

A one-percent move in SHARED INTERESTS, FREE-RIDING, and NONMEMBER EXCLUSION results in a 1.6%, 5.0%, and 1.7% greater probability of organizing the lobbying through a trade association form, respectively. Consistent with transaction cost theory, a one-percent move in PROPRIETARY INFORMATION revelation increases the probability of organizing individually or through an own-hired agent by 2.3% for large firms. If it is not possible to keep the information proprietary no matter what the organizational form, firms prefer to lobby through a trade association with a 2.4% higher probability (for every one-percent increase in FIRM LEAKAGE).

TABLE 4: ESTIMATION OF THE ORGANIZATION OF LOBBYING

VARIABLE	Full Sample	Large Firms			Small Firms		
	MODEL 1 TWO-SIDED TOBIT	MODEL 2 PROBIT	MODEL 3 TWO-SIDED TOBIT	MODEL 4 TWO-SIDED TOBIT	MODEL 5 PROBIT	MODEL 6 TWO-SIDED TOBIT	MODEL 7 TWO-SIDED TOBIT
SHARED INTERESTS	-.35**	-13*		-.55**	-06		.04
	(.15)	(.08)		(.27)	(.07)		(.27)
FREE RIDING	-.34	-.31**		-1.28**	.37**		.91**
	(.22)	(.11)		(.46)	(.11)		(.44)
NONMEMBER EXCLUSION	-.05	-.28		-1.55**	.56**		1.53**
	(.44)	(.17)		(.66)	(.17)		(.74)
UNIQUE BENEFITS	-.29*	-.12		-.37	-.06		-.01
	(.16)	(.08)		(.28)	(.07)		(.28)
WEAK APPROPRIABILITY	.57**	.24**		1.06**	.12		-.62
	(.28)	(.13)		(.50)	(.11)		(.50)
FIRM LEAKAGE	-.47	-.25**		-1.19**	-.10		.56
	(.29)	(.12)		(.51)	(.11)		(.53)
COST OF LARGE FIRM ACTION	.01	-.04	-.36	.01			
	(.18)	(.08)	(.29)	(.30)			
COST OF SMALL FIRM ACTION	-.21				.05	-.13	-.22
	(.20)				(.10)	(.33)	(.35)
COST OF ORGANIZING	-.14	-.02	-.14	-.30	.02	.26	.23
	(.18)	(.08)	(.24)	(.27)	(.08)	(.26)	(.29)
LARGE FIRMS	.17	.10	.45*	.65**			
	(.17)	(.07)	(.23)	(.28)			
SMALL FIRMS	.01				-.06	-.18	-.30
	(.13)				(.05)	(.17)	(.22)
FIRM PROFITS	.24*	.08	.29	.33	.02	.28	.32
	(.14)	(.08)	(.21)	(.25)	(.06)	(.22)	(.26)
YEAR	.09**	.03*	.12*	.19**	-.01	-.02	-.02
	(.04)	(.02)	(.06)	(.07)	(.02)	(.06)	(.06)
MASS MEDIA	-.18	-.15	-.98	-.87	.57**	1.46**	1.50**
	(.35)	(.11)	(.59)	(.58)	(.18)	(.58)	(.59)
CABLE SERVICES	-.67*		-1.27	-1.59**		-.11	.08
	(.35)		(.73)	(.72)		(.68)	(.68)
WIRELESS TELECOM	-.37	.02	-.63	-.50	.08	1.05*	.93
	(.31)	(.16)	(.57)	(.56)	(.16)	(.55)	(.57)
ENGINEERING AND TECH	.10	.08	-.72	-.41	.61**	1.78**	1.86**
	(.44)	(.22)	(.67)	(.65)	(.19)	(.69)	(.72)
MISCELLANEOUS	-.58*	-.21*	-1.64**	-2.22**	.26	.21	.40
	(.32)	(.08)	(.63)	(.79)	(.22)	(.48)	(.53)
PERCENTAGE LARGE FIRM CONTACTS	-1.67**						
	(.36)						
CONSTANT	-167.71**		-234.58*	-361.52**		35.28	41.54
	(72.75)		(124.78)	(142.76)		(113.45)	(119.10)
N	101	94	101	101	94	101	101
Log Likelihood	-68.95	-43.11	-89.64	-81.23	-41.24	-93.57	-89.65

** 95% confidence interval; * 90% confidence interval

Dependent variable for probit = 0 if at least one instance of collective action; = 1 otherwise. Dependent variable for remaining models is percentage of individual lobbying for the sample. The coefficients for the probit are given as shifts in probabilities. Seven observations are dropped from the regression because Cable Services perfectly predicts dependent variable.

A number of control variables are also of interest. The coefficient on LARGE FIRMS is positive and significant. The more large firms affected by the issue, the more likely they are to organize individually. The coefficient on YEAR is also positive and statistically relevant. The later in the life cycle of the docket, the more likely firms are to organize their lobbying individually. The Cable Services Bureau and the Miscellaneous Bureaus also encounter more integrated lobbying from large firms. Note that the impact of the docket on firm profits (FIRM PROFITS) does not favor one type of organization over another.

Now consider small firms. A log-likelihood ratio test does not allow us to reject the hypothesis that the two tobit models have similar explanatory power at the 95% level of confidence. That is, Model 6 has similar explanatory power to Model 7. From a modeling perspective, this suggests that jointly the theoretical variables have little explanatory power for small firm behavior. Different models have similar results, but those results seem to be fraught with problems. For example, the coefficient on NONMEMBER EXCLUSION is positive and statistically significant, suggesting that the more benefits trade associations offer, the less likely smaller firms are to join. FREE RIDING among small firms has a positive and also statistically significant coefficient, suggesting small firms, in the presence of free-riding, tend to organize individually. Specification tests reject collinearity. Given this outcome, the discussion of individual coefficients and variables, and how they affect the organization of lobbying, must be interpreted carefully because jointly they add little to our understanding of the organization of small firms. The reason underlying this could be that there is so much unobserved heterogeneity in the behavior of small firms, that it completely swamps the theoretical effects, and thus generates nonsensical results. This in turn would decrease the precision of the estimates of the full sample, and drive up the standard error estimates. These results are also consistent with the view that small firms do indeed behave differently than large firms. It could be that they may be limited in their choices of organization, or that they are maximizing a utility function that does not include these variables.

IV. EMPIRICAL EVIDENCE ON THE QUANTITY OF LOBBYING

A. Data

The dependent variable measuring the quantity of lobbying occurring is the number of lobbying contacts made by firms and trade associations, as defined in Section IIIA. The dependent variables are called TOTAL COUNT, LARGE COUNT, and SMALL COUNT for the entire sample, large firm subsample, and small firm subsample, respectively. The independent variables are as defined in the previous section, with two exceptions. The first is that we have omitted the cost variables that refer to the cost of organization, because they are not expected to have a direct impact on the amount of lobbying.[7] Second, we have added variables that measure the organization. That is, we have included the dependent variables from the previous equations as independent variables in this equation (like a recursive model) to determine whether the *organization* of lobbying affects the *amount* of lobbying.

[7] These will serve as instruments in the two stage least squares estimation described below.

B. Method and Specification

In the previous section we argue that a number of exogenous variables affect the organization of lobbying. In this section, we argue that a large subset of these exogenous variables will directly affect the amount of lobbying, and that the organizational choice a firm makes may affect the amount of lobbying. From the theory, this suggests a recursive system of equations. That is, from Section II, the organization of lobbying affects the amount of lobbying, but the amount of lobbying does not affect the organization. This theoretical structure has driven our empirical design.

The system of equations we estimate is:

$$y_1 = x_1\beta + x_2\lambda + u_1 \qquad \text{(eq 1)}$$
$$y_2 = y_1\alpha + x_1\gamma + u_2 \qquad \text{(eq 2)}$$

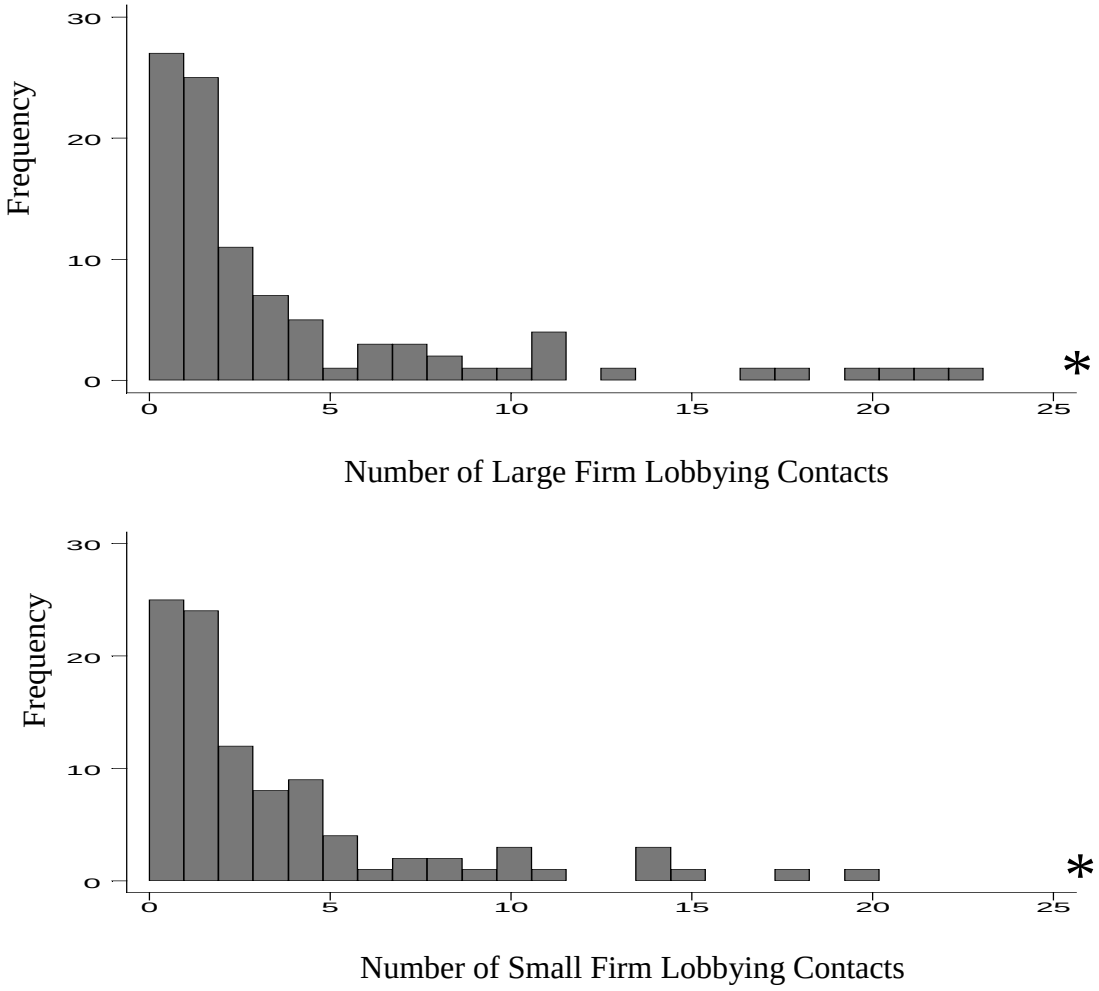
where equation 1 is the organization equation, and equation 2 is the equation for the frequency of lobbying. In this system, we define y_1 as the percentage of individual contacts on an issue, x_1 is the matrix of independent variables included in both equation 1 and equation 2, x_2 are those variables only in equation 1, and y_2 is the amount of lobbying. The error terms are u_1 and u_2.

If the system has $\text{cov}(u_1, u_2) = 0$, and is recursive and linear, then the correct empirical method is to estimate two separate ordinary least squares equations (OLS). The parameter estimates from the first equation will be the best linear unbiased estimators, while the parameter estimates in the second equation will be consistent and efficient. In order to avoid measurement error, the actual values, as opposed to the predicted values, of y_1 are required on the right-hand-side of the second equation (Greene 2000: 659, 674; Johnston 1984: 467-469).

We now explore the three assumptions. The first is that the $E(u_1, u_2) = 0$. If we assume the given model is the true model, we can test for correlation in the error terms. A Breusch-Pagan test of error independence (Greene 2000: 601) rejects the hypothesis of correlation between u_1 and u_2 at the 95% level of confidence. Thus we cannot reject the hypothesis that the variance-covariance matrix is indeed a diagonal matrix.

The second assumption we examine is whether the system is recursive. Although our theory suggests it is, it is not implausible that there may be simultaneity. An omitted variable in a recursive system has the same properties and problems as that of a simple OLS. To the extent that omitted variables cause biased estimates in OLS, they will cause problems in almost all kinds of estimations, including two-stage least squares (TSLS). However, if the omitted variable results in simultaneity, then an instrumental variables (IV) method is called for.

Figure 1: Frequency Distribution of Lobbying for Large and Small Firms



* For large firms, one observation each at 49, 51, and 88;
For small firms, one observation each at 40, 49, and 77.

To conduct a TSLS estimation, instruments are required. We have two variables which appear in the paper related to the cost/benefit of acting: COST OF ORGANIZING and COST OF FIRM ACTION. Unfortunately, these are weak instrumental variables. Stock and Staiger (1997) argue that in small samples, it may be better to use OLS rather than weak instruments and TSLS, because of the high variance of the coefficient estimate in TSLS with weak instruments. So we proceed with our IV technique with some caution, but nevertheless, estimate a TSLS using the instruments above.[8] We then conduct Hausman specification tests, comparing the OLS model to the IV models that are just identified and over-identified. In all tests, we cannot reject the hypothesis that the OLS model is the consistent and efficient estimator of the true parameters. Together, this suggests that OLS is likely to be the preferred model to TSLS. This, again, points back to our recursive system.

The third assumption is that of linearity. Figure 1 shows the frequency distributions of the dependent variables, LARGE COUNT and SMALL COUNT. The distributions are highly skewed. Because the data are count data, it is not surprising that it seems to be generated by a Poisson (or Negative Binomial) process.

This would suggest the use of a count model. Unfortunately recursive nonlinear systems are not well-understood, and it is not yet been shown whether or not tobit-Poisson/negative binomial recursive systems are consistent.[9] To examine whether to use the predicted values from the truncated tobit organizational variable in the count equation, rather than the actual values, we employed a Hausman specification test again. Again, in all tests, we cannot reject the hypothesis that the negative binomial model with the actual values of the organizational variable is the consistent and efficient estimator of the true parameters. This suggests that the negative binomial in the recursive form is likely to be the preferred model. We use the negative binomial model, as opposed to the Poisson model, because two different specification tests (Wooldridge 1996, and Cameron and Trivedi 1994) indicate there is overdispersion in the data.

Two additional specification concerns may arise in the count models. For the same reasons elucidated in Section IIIC, we might be concerned about the differences in lobbying by large and small firms. Thus, we have conducted specification tests to examine whether there should be a split in the sample. We can reject at the 95% level that these two groups behave similarly, and thus we present results here for two separate regressions, one for large firms and one for small firms. Finally, given the skewness of the dependent variable, we ran the regressions eliminating some outlyers, and the results are similar to those presented here.

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[8] We find that the coefficient estimates of the theoretical variables are of the same sign as the negative binomial model, but the standard errors are larger.

[9] Note also, once we permit the possibility of nonlinearity, we have not only a second stage problem (in eq 2), but a first stage problem. That is, the first stage is currently estimated as a tobit. Yet, when we use TSLS, we impose OLS upon it.

C. Frequency Results

Table 5 presents the results for large firms. Model 8 presents the negative binomial base model for the full sample. Models 9-11 include only the large firm sample. Model 9 presents the negative binomial model. Model 10 presents the same variables, under an OLS estimation. Model 11 presents the results for an IV estimation. Models 12-14 use only the small firm sample for the same methodologies. de Figueiredo and Tiller (2000) present a number of additional methods, and consider alternative specifications. A positive coefficient on the variable means that there is more lobbying, a negative coefficient means less lobbying, and the standard errors are below the coefficient estimates, with the significance of the coefficient estimates noted. The signs of the theoretical coefficients are remarkably stable across the nonlinear and linear models, suggesting some directional robustness to the results presented.

In the full sample of Model 8, all the theoretical variables coefficients are negative. None, however, reach the 95% level of statistical significance. However, the coefficient on PERCENTAGE CONTACTS LARGE FIRMS is very large and statistically significant. Combined, these results suggest, as noted in the previous section, that large and small firms are substantially different, and that the small firm heterogeneity is driving up the standard errors in the estimation.

Therefore, we turn our attention to the large firm sample, and Model 9. We begin by focusing our attention on the organization variable, PERCENT INDIVIDUAL LARGE. In all of the specifications, the coefficient on the percentage of large firms is positive as predicted, indicating that a shift in organizational form toward an internal or "for-hire" structure does result in more lobbying. The coefficients never reach the standard levels of statistical significance, calling into question whether we can determine which forces dominate.

Next we examine the direct effect of the transactional and collective action variables on the quantity of lobbying. The coefficient on WEAK APPROPRIABILITY is negative, as predicted, and statistically significant at the 90% level. A one-percent move in the variable results in 1.4% less lobbying, holding the remaining variables at their mean values. The coefficients on all of the collective action variables are negative. SHARED INTERESTS seems to have little statistically significant direct effect on the amount of lobbying. FREE RIDING does negatively impact the amount of lobbying that occurs. This is consistent with a large body of literature emanating from political economy that suggests that free-riding problems will result in less lobbying. A one-percent increase in FREE RIDING results in 2.2% less lobbying. Opportunities to correct the free-riding problem through NONMEMBER EXCLUSION and UNIQUE BENEFITS do not show statistically significant direct effects. Two reasons may underlie this result. First, these characteristics may not be as effective as has been suggested in the literature in overcoming collective action. Second, large firms, while concerned about collective action, do not consider these possibilities in designing the nonmarket organization.

TABLE 5: ESTIMATION OF THE COUNT OF LOBBYING

VARIABLE	Full Sample	Large Sample			Small Sample		
	MODEL 8 ML NEGATIVE BINOMIAL	MODEL 9 ML NEGATIVE BINOMIAL	MODEL 10 OLS	MODEL 11 IV (TSLS)	MODEL 12 ML NEGATIVE BINOMIAL	MODEL 13 OLS	MODEL 14 IV (TSLS)
SHARED INTERESTS	-.34*	-.17	-2.69	-2.43	-.03	-.71	-.89
	(.20)	(.26)	(2.27)	(4.88)	(.26)	(1.33)	(4.02)
FREE RIDING	-.18	-.58*	-3.75	-3.30	-.03	-4.28	6.53
	(.24)	(.30)	(3.37)	(7.50)	(.31)	(4.39)	(19.76)
NONMEMBER EXCLUSION	-.98*	-1.16*	-2.38	-1.80	-.62	-5.73	10.53
	(.52)	(.63)	(5.16)	(8.24)	(.60)	(4.44)	(31.87)
UNIQUE BENEFITS	-.30*	-.55**	-2.92	-2.82	-.27	-1.90	-.91
	(.18)	(.23)	(2.38)	(3.16)	(.23)	(2.56)	(4.70)
WEAK APPROPRIABILITY	-.41	-.65*	-5.91*	-6.13	-1.33**	-3.30	-8.57
	(.32)	(.35)	(3.60)	(4.11)	(.42)	(2.14)	(11.58)
FIRM LEAKAGE	.04	.32	1.76	2.06	.75*	-.19	3.93
	(.35)	(.38)	(2.80)	(5.15)	(.45)	(2.26)	(9.66)
LARGE FIRMS	.40**	.57**	3.10**	2.89			
	(.19)	(.21)	(1.53)	(3.68)			
SMALL FIRMS	.04				.06	.27	-2.85
	(.18)				(.19)	(1.01)	(6.67)
FIRM PROFITS	.57**	.47**	4.40	4.32	.71**	4.44*	9.11
	(.18)	(.22)	(2.70)	(3.32)	(.23)	(2.56)	(10.24)
YEAR	.04	.03	.47	.41	-.06	-.16	-.28
	(.05)	(.08)	(.55)	(1.13)	(.07)	(.51)	(1.17)
MASS MEDIA	.06	-.90	-1.43	-.93	-.06	3.46	26.21
	(.45)	(.59)	(4.37)	(8.41)	(.57)	(5.79)	(45.72)
CABLE SERVICES	-.17	-.22	-3.14	-2.51	.35	.63	-2.15
	(.43)	(.55)	(3.25)	(10.63)	(.55)	(2.01)	(7.13)
WIRELESS TELECOM	-.22	-.72	-5.65*	-5.30	.17	2.96	16.55
	(.40)	(.53)	(3.19)	(6.57)	(.49)	(4.40)	(27.20)
ENGINEERING AND TECH	-.18	-1.05*	-4.25*	-3.85	-.14	-.97	24.27
	(.48)	(.63)	(2.32)	(6.38)	(.59)	(2.93)	(49.76)
MISCELLANEOUS	-1.03**	-.97*	-7.60**	-6.85	-.90*	-5.23*	1.72
	(.41)	(.54)	(3.19)	(11.81)	(.48)	(3.03)	(15.60)
PERCENTAGE LARGE FIRM CONTACTS	4.29**						
	(1.90)						
PERCENTAGE INDIVIDUAL LARGE	-.11	.57	.88	2.47			
	(.36)	(.45)	(2.19)	(23.32)			
PERCENTAGE INDIVIDUAL SMALL	4.11**				.60	2.50	-51.17
	(1.81)				(.45)	(1.98)	(102.03)
CONSTANT	-80.53	-60.51	-901.72	-793.66	128.35	343.40	532.37
	(104.43)	(149.25)	(1096.06)	(2211.03)	(135.61)	(1041.17)	(2305.81)
N	101	101	101	101	101	101	101
Log Likelihood	-277.67	-238.29			-238.10		
R-Squared			.2381			.1842	

** 95% confidence interval; * 90% confidence interval

Dependent variable is the number of ex parte contacts on a given issue for the sample. All linear models are reported with robust standard errors.

The results also indicate that the more large firms are affected by an issue, the more they will lobby. More importantly, and perhaps consistent with intuition, the coefficient on FIRM PROFITS is positive and statistically significant. A one-percent increase in the impact the issue has on firm profits will result in 1.1% more lobbying. Finally, the Common Carrier dockets receive the most attention from the lobbyists, with Engineering and Technology dockets receiving the least attention.

The previous section discussed at length the motivation for the linear models. Of particular note is that while the collective action variables are not found to be statistically affecting the amount of lobbying in these models, the transaction cost economics variable is. A one-percent increase in the WEAK APPROPRIABILITY variable causes the average amount of lobbying to decrease by 2.3% in Model 10, the model preferred by the Hausman specification tests.

Small firms are examined in Models 12-14. In Model 12, the negative binomial model, the results for the amount of small firm lobbying are somewhat better than the results for the organization of small firm lobbying; however, it does seem in this case that large amounts of unobserved heterogeneity persist, causing many results to be insignificant. Below, we discuss the statistical results in more detail.

As with large firms, the coefficient on the organizational variable, PERCENT INDIVIDUAL SMALL, is positive across all specifications, but does not reach 95% statistical significance in any specification, except in the full model. Thus, the evidence is mixed as to whether we can reject the hypothesis that organizational form has an impact on the amount of lobbying, as hypothesized in the theory section, at the 95% level of confidence. In the direct effects of the variables, all the coefficients on the theoretical variables of interest are negative in all (but one) of the specifications, but none of the collective action variables are statistically significant. Although this suggests that free-riding may not be an important consideration for smaller firms, it may be due to the other considerations facing small firms, which were discussed earlier in the paper.

The only statistically significant coefficient of theoretical interest is the negative coefficient on WEAK APPROPRIABILITY. Its sign suggests that small firms are reluctant to lobby if they must reveal proprietary and sensitive information in the process. A one-percent increase in the independent variable results in 2.9% less lobbying.

The only other potentially meaningful result in Model 12 is the effect of issues that have large impacts on the profitability of small firms. The coefficient on FIRM PROFITS is positive and statistically significant, as with large firms. A one-percent increase in FIRM PROFITS results in 1.7% more lobbying contacts.

Model 13, the linear OLS model for small firms, shows no statistically significant coefficients for small firms, except for FIRM PROFITS and the MISCELLANEOUS category, both at the 90% level, and both signed the same direction as the Negative Binomial.

V. DISCUSSION

This paper takes lobbying data at the level of the lobbying contact, and analyzes the determinants of organizational form that lobbying takes and the amount of lobbying that occurs. It statistically examines administrative agency lobbying using actual lobbying contacts. How firms structure their lobbying of the FCC is important because it may not only determine the strategies they pursue, but it may also determine the effectiveness of those strategies and the potential for externalities.

We introduce a dataset of ex parte presentations at the FCC, and examine the pattern in the organization of corporate lobbying efforts. We show that large firms, which are systematically different from the small firms, act in ways that collective action theories and transaction cost theories predict in organizing their lobbying effort, with limitations. Consistent with the collective action theory, large firms tend to organize through trade associations when there are shared interests and when the trade association offers benefits to members. Consistent with transaction cost economics, they will attempt to protect information by lobbying internally or through their own agents when there is a possibility that sensitive information will leak out through the trade association form of lobbying. Small firms, however, show little systematic behavior; the data provide no statistical support for traditional collective action or transaction cost theories of organization. This may be because the small firms are constrained in their options for organization, due to resource constraints and economies of scale considerations. It could also be because smaller firms do not have as sophisticated lobbying strategies as large firms. It may also be due to extreme amounts of unobserved heterogeneity in the small firm data which make the results difficult to interpret. We believe it is a combination of all three factors, and, as such, is a question worthy of future research.

The second part of this paper turns to the quantity of lobbying. Again, the key results for large firms are broadly consistent with the conventional theories: large firms lobby less in the presence of free-riding. They also lobby less the higher the probability of proprietary information leaking out in the process. The statistical analysis here shows that characteristics such as nonmember exclusion and selective benefits to the free-riding problem seem to be ineffective for large firms. This suggests that there may be limitations to the literature on clubs and collective bodies as remedies to the free rider problem as they apply to the political realm. Small firms, however, are not responsive to the free-riding problem, as the theory has predicted. They show no increase or decrease in tendencies to lobby by the intensity of the free-riding problem, and characteristics of issues to overcome the free-riding problem do not have a statistically discernible effect on the amount of lobbying which occurs by small firms. Small firms are responsive to the potential leakage of their proprietary information, and will lobby less if their proprietary information is at risk. We must, however, consider these small firm results, especially the collective action results, carefully in light of the small firm caveats noted above.

We expected that the choice of organizational form would have an impact on the amount of lobbying that occurred. In the large firm case, the coefficient on the relevant variables was signed as predicted, but never reach statistical significance. In the small firm case, the evidence was more equivocal, with one of the four specifications reaching statistical significance.

Taken together, the results suggest that the structure and conduct of large firm lobbying at the FCC is consistent with the predictions of theories of transaction costs and the main results of theories of collective action. However, it suggests that the large firms do not change their behavior drastically in issues where there are opportunities to overcome the free rider problem. Small firms seem to be insensitive to these issues. On the organizational front, they show no sensitivity to collective action issues or transaction cost issues. On the rate of lobbying, they show little sensitivity to collective action issues, but do lobby less if they have to reveal proprietary information. In sum, small firms seem to face a "lobby, don't lobby" decision, while large firms choose both the organization and amount of their lobbying effort when they do lobby.

The paper also points to future research. For example, we lack a good understanding of the nature and governance structure of trade associations where small and large firm interests are both represented. In addition, opening up the black box of executive-branch agencies, to study how and to whom lobbying is most effective, is a question that is still unanswered. Also, understanding the relationship between PAC-giving and lobbying would be a useful undertaking.[10] Finally, integrating the market aspects of regulatory decision-making with nonmarket lobbying strategy seems to be a useful area to examine.

[10] Ansolabehere, Snyder, and Tripathi (2000) have begun to examine this question looking at lobbying expenditures and PAC-giving in Congress.

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APPENDIX 1: QUESTIONS FOR EXPERTS

NonMarket Strategy in Telecommunications

For each issue in the attached spreadsheet, rate on a 1 to 5 scale each statement below for that issue. 1= strongly disagree; 5=strongly agree.

THEORY:

1. **Shared Interests**: Large segments of the industry (a majority of firms) share the same interests or side of the issue.

2. **Free Riding:** If a trade association lobbied on this issue, the benefits of passage or defeat of this regulation(s) would be conveyed to large segments of the industry, irrespective of whether they were involved in the trade association or not. In other words, free-riding is possible because the trade association cannot localize the benefits to only its members.

3. **Nonmember Exclusion**: If a trade association lobbied on this issue, you should be a member of a trade association to be included in the benefits of passage or defeat of this regulation(s).

4. **Unique Benefits**: An individual firm can obtain unique benefits from passage or defeat of this regulation(s). (For example, it could realistically expect the Commission to specifically exclude it or small class of firms like it, from adhering to the regulation.)

5. **Weak Appropriability:** If the trade association lobbied on the firm's behalf, the firm would be required to divulge sensitive or proprietary information that might put it at a competitive disadvantage relative to other members of the trade association.

6. **Firm Leakage:** If the firm lobbied on its own behalf, the firm would be required to divulge sensitive or proprietary information at some point in the lobbying process that would become public, and that might put it at a competitive disadvantage relative to competitors.

CONTROL:

7. **Large Firms:** This issue relates to many large firms in the industries affected (1=<20%; 2=20-40%; 3=40-60%; 4=60-80%; 5=80%+)

8. **Small Firms**: This issue relates to many small firms in the industries affected (1=<20%; 2=20-40%; 3=40-60%; 4=60-80%; 5=80%+)

9. **Large Firm Cost of Action**: If there were no trade association, and each firm individually lobbied on this issue, the large firms would generally find the benefits from their lobbying to be higher than their costs of lobbying.

10. **Small Firm Cost of Action**: If there were no trade association, and each firm individually lobbied on this issue, the small firms would generally find their benefits from lobbying to be higher than their costs of lobbying.

11. Cost of Organizing: The total cost of organizing on this issue (through a trade association) increases, at an increasing rate, with the number of firms.

12. **Firm Profits**: The issue has a very large impact on the profitability of firm(s) and threatens survival of firm(s).