

LINKING INTEREST GROUP ORGANIZATION AND INFLUENCE:
STATE INTEREST GROUP MARKETS AND MEASUREMENT ISSUES

by

CHRISTOPHER AUSTIN CLEMENS

(Under the direction of Scott Ainsworth)

ABSTRACT

This dissertation contributes to the study of interest groups by connecting a key structural characteristic of interest groups to the effectiveness of group lobbyists. The connection occurs through what I term interest group markets. By interest group markets I mean collections of interest groups working on the same side of the same policy area. Concentration is a structural characteristic of a market. Markets with few organizations or one dominant organization are highly concentrated, while those with many groups of roughly the same size are characterized by low concentration. While economic theory suggests that competitive markets are usually more efficient, I argue that highly concentrated interest group markets may be more effective at changing policy outcomes. Concentrated groups benefit from economies of scale and low transaction costs. The first article in my dissertation examines concentration in pro-life interest group markets in all 50 states and attempts to predict the level of concentration in each market. The second article tests my hypothesis that more concentrated markets will be more successful at influencing policy outcomes.

The third article addresses a measurement problem related to the study of interest group influence on political outcomes. I discuss a source of error in expenditure reports required

by the Lobbying Disclosure Act of 1995. Researchers who have used this data in the past appear to be entirely unaware of the problem. I demonstrate the extent of the problem using an original dataset of sampled groups. Then, I replicate a working paper and simulate the effect of this error on the papers results. This demonstration shows that in some cases using LDA data may be misleading.

INDEX WORDS: Interest Groups, Organization and Maintenance, Market Concentration, Lobbying Disclosure Act, Measurement

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Chapter 1

INTRODUCTION AND LITERATURE REVIEW

This dissertation connects the organization of interest groups in the political system to the impacts that they have on public policy. Interest groups are subject to various pressures as they struggle to establish themselves as viable political actors and then strive to maintain and grow the organization. These pressures include conquering the various collective action problems they will face, finding a way to raise adequate seed money, building a reliable base of contributors, and positioning themselves ideologically vis a vis their potential constituents and other interest groups competing for the same members and funds. Interest groups will respond to these pressures in different ways. Some will try to appeal primarily to large foundations for funds, while others will attempt to build a constituency of small donors. Some will find their niche in producing research or disseminating information through the media, while others will serve primarily as lobbyists. Interest group scholars are keenly aware that interest groups find different sources of funding and that they also attempt to establish niches within the interest group ecosystem.

To date, however, there has been little, if any, analysis of how the organizational characteristics of interest groups affect the groups' ability to influence policy.

This is a conspicuous absence in the interest group literature. Students of US elections have invested considerable time and effort in trying to understand if, for example, negative campaign ads are more successful than biographical ads. This comparative effectiveness ap-

proach to politics is appealing for obvious reasons: it allows political scientists to make a practical contribution to the conduct of political activities and to better understand why certain political outcomes obtain. Although interest group scholars have surveyed the methods used by lobbyists (see, for example, Nownes, 2006; Nownes and Freeman, 1998; Schlozman and Tierney, 1983), very little has been done to compare the effectiveness of different kinds of interest groups or different kinds of lobbying tactics (but see Mahoney, 2007). This is attributable to both theoretical and empirical difficulties that make progress difficult.

On the theoretical side, little work has been done to connect theories of group organization to theories of group influence. Olson (1965) laid the groundwork for thinking analytically about bias in the interest group system. Although Olson does not specifically discuss how bias in the system will affect policy outcomes, the argument is simple and intuitively appealing. Certain groups will find it easier to raise funds and encourage involvement, this will allow them to spend more money influencing legislation, and spending more money than an opponent will lead to positive policy outcomes. Indeed, this is a model of lobbying that is frequently posited by citizens and members of the media alike. Political scientists have been more circumspect. Lobbying might just be “convincing” lawmakers to do something they would have done anyways. More money might not translate into more effective influence. Little has been done to extend our understanding of interest group organization past explanations of how much money is spent on a particular issues or how many groups are involved. To take one example where a link between organization and outcomes has been suggested but left unstated, interest group scholars have proposed niche theory to explain how interest groups are organized in certain issue areas (Browne, 1995, 1988; Gray and Lowery, 1996*a*). Niche theory simply states that groups will tend to find new, secluded niches in an already crowded interest group market to ensure their continued financial stability. A new environmental group might focus on a particular habitat, a particular animal, or a particular region of the country, for example. Niche theory can be helpful in understanding why certain kinds

of groups form, and even why communities of groups are composed in particular ways. No attempt has been made, however, to understand how niche theory might be tied to interest group influence on policy. Do niche groups contribute to interest group community goals, or do they simply fragment the issue and make coordinated effort more difficult? These questions have not commonly been asked in the literature.

The empirical barriers to connecting group maintenance and group influence are primarily ones of measurement and data availability. First, policy outcomes are difficult to measure. To compare the effectiveness of different types of groups or different lobbying techniques, we need to measure their policy impact. This can be especially difficult if we want to compare different areas of policy to one another. The NRA wants more permissive gun policy while environmental groups want cleaner air and these outcomes are hardly amenable to being placed on a single scale. One possibility is to track the successes or failures of legislation that an interest group cares about. Baumgartner et al. (2009) tracked 98 issues over a seven year period to assess legislative successes and failures. The Baumgartner et al. approach is very compelling, but it is one that few researchers can duplicate. To determine what interest groups were active on each side of the issues in their dataset, Baumgartner et al. interviewed dozens of lobbyists in a data collection effort that spanned years. Their approach simultaneously solved two empirical problems. First, it provided them with a measurable outcome: progress made on bills. Second, only through surveys or interviews can we determine what bills a lobbyist is working on in the first place.¹

In the first two chapters of this dissertation, I propose and explore an entirely new mechanism through which interest group organization might condition interest group policy influence. Drawing on microeconomic theory, I demonstrate that the concentration of inter-

¹The Lobbying Disclosure Act of 1995 requires lobbyists to disclose active legislation they lobbied on, but they do not have to disclose how much time was spent on each piece of legislation or what change they were trying to effect in the legislation. Moreover, lobbyists are not required to report on lobbying work that was not associated with an existing piece of legislation.

est groups in a single policy market has an important effect on their influence over policy outcomes in that market. The theory in these articles provides just one possible way that interest group organization might affect interest group policy influence, but the results show that we can learn something about interest group influence by considering interest group market concentration.

The third article in this dissertation is not directly related to the first two, but it does address a critical aspect of research into interest group influence. I analyze a measurement problem associated with data collected due to the lobbying disclosure act. This measurement problem will likely impede future research into how interest groups influence federal policy, so understanding how severe the problem is and how it affects empirical models is critical. Each article is discussed in more detail below.

1.1 Article 1: Determinants of concentration

The first article introduces the idea of an interest group market: a collection of interest groups working in the same policy area. We might think, for example, of the national gun rights market, which is composed of groups like the National Rifle Association, Gun Owners of America, and others. One way to characterize the structure of an interest group market is with a measure of concentration. Some markets might be dominated by a single interest group or just a few interest groups. These are highly concentrated markets. Other markets, characterized by dozens or even hundreds of groups, none of which is vastly larger than any of the others, are not concentrated. That is, markets can be characterized as being monopolized, competitive, or something in between.

The first step in understanding how concentration might be related to policy outcomes is to characterize the concentration of some markets and to explore why markets are structured as they are. I take one empirical test case, pro-life markets in the states, and investigate why they are highly concentrated in some states and competitive in others. First I con-

struct pro-life markets in each state across time. I then consider determinants of market concentration that are frequently mentioned in the economics literature and operationalize these for interest group markets. By developing the ability to predict market concentration, I lay the foundation for linking the circumstances of a market to that market's influence on policy. The results of this first article show that interest group market concentration is at least partially predictable.

1.2 Article 2: Concentration and policy outcomes

In the second article, I turn to quantifying how interest group market concentration helps or hurts groups in influencing public policy. As anyone who has taken microeconomics 101 knows, competitive markets are considered by economists to be more efficient than concentrated markets. This is because competition pushes suppliers to lower costs, and this in turn reduces any deadweight loss in the market that is attributable to firms underproducing the good. I argue that interest group markets are markedly different. Because a monopolist can extract more surplus from the market's consumers and because lobbying efforts are impeded by the transactions costs that come with coordinating the actions of many different groups, concentrated markets should be more efficient than their competitive counterparts.

To test this hypothesis, I link pro-life interest group market concentration over the span of seven years to the abortion rate in each state. The abortion rate is a relatively clean measure of policy outcomes that facilitates this analysis. Because the abortion rate is measured by both the Guttmacher Institute and the Centers for Disease Control, and because the measures taken by these two organizations differ, I use a number of variations of the dependent variable to show the robustness of my models. I control for the state's political culture and demographic characteristics of the state. The results show that the concentration of interest group markets has a substantively meaningful impact on abortion rates.

1.3 Article 3: Measuring federal lobbying activities

The third article is not as closely related to the rest of this dissertation as the first two articles are to each other. Nonetheless, it addresses an important aspect of the effort to tie lobbying efforts to policy outcomes. Investigating the influence of lobbyists requires good measures of what lobbyists are doing. One such measure, which has recently received more attention in both economics and political science, is provided by the Lobbying Disclosure Act of 1995, which requires lobbyists to disclose the total amount of money they spend to influence federal policy. Although lobbyists have been required to disclose their expenditures under the law since 1996, it is only recently that the data has been aggregated and made available in a way that is accessible to almost all researchers. Consequently, there are a number of recently published articles and working papers that utilize the LDA data in some form.

Unfortunately, LDA data suffers from a significant flaw that researchers have not noticed. The law and its associated regulations allow lobbyists to tabulate their expenditures using three different methods, A, B, or C. These methods are not equivalent. While method A does indeed require lobbyists to make an estimate of the amount they spent attempting to influence federal legislation, methods B and C include both federal and state legislation. For some filers, this results in situations where less than 10% of the expenditures reported are for influencing federal legislation. That is, the federal regulation measures and tabulates more state level funds than federal level funds. The federal Lobby Disclosure Act regulations do not reflect federal lobbying efforts.

To diagnose the severity of this problem, I first establish that a significant number of lobbyists use methods B or C. I sample a significant number of groups and manually check the method each group used in five years of reporting. Next, I reference lobbying disclosure reports in six states to determine what percentage of lobbying expenditures reported by

LDA filers who used methods B or C were state level expenditures. Finally, I replicate a working paper and show that this source of error in LDA data has important consequences for research that makes use of the data.

Chapter 2

THE DETERMINANTS OF CONCENTRATION OF NONPROFIT INTEREST GROUP MARKETS ¹

¹Clemens, Christopher. To be submitted to Interest Groups and Advocacy.

Abstract

I use economic theories of industrial organization to investigate the structure of non-profit interest group markets. Understanding how interest group markets are structured gives us important insight on how groups conduct themselves. Markets are characterized by a level of concentration that can succinctly express whether a market is monopolistically or competitively organized. I create an original dataset of pro-life interest group markets in all 50 U.S. states and empirically examine the determinants of concentration in these markets across time. The results show that theories of industrial organization are a valuable way to understand and predict the concentration of nonprofit interest group markets.

2.1 Introduction

The study of the organization and maintenance of interest groups was vaulted into a position of prominence by the publication of Olson's (1965) *Logic of Collective Action*. Olson's key insight, that the cost to organize varies across different types of groups, suggests that there will be bias in the interest group system. This concern is echoed by Lowi (1979) and Schattschneider (1960) in their critiques of democratic governance, emphasizing that a key task for interest group scholars is to explain who gets represented and how. Olson's work was primarily concerned with whether groups would organize, however, and did not devote much thought to the structure of groups that do organize. This article extends our understanding of group organization by tackling an aspect of group organization that has received little attention: the concentration of organized interest group markets. It builds on the work of Lowery and Gray (1995, and 1996) by adopting a more nuanced measurement of group organization and by grounding group organization in microeconomic theory. Gray and Lowery looked at the diversity of groups and the number of groups of a particular type in the 50 states. I refine these ideas by looking at concentration in an

interest group market, as measured by the Herfindahl-Hirschman index (HHI). I employ theories of industrial organization from the economics literature to make hypotheses about the determinants of concentration, and I test these hypotheses in a single interest group market across all 50 states.

2.2 Market Structure and Population Ecology

By an interest group market, I refer to a collection of interest groups that are active on the same issues in the same geographical area. For the purposes of this paper, the geographical areas I am concerned with are the 50 U.S. states. Of course, each state could have dozens of markets. For instance, Save the Bay, a group devoted to conservation of the San Francisco bay area, is part of the environmental advocacy market in California.² The NRA is a member of the national pro gun-ownership interest group market. I confine myself to nonprofit interest groups for reasons of data availability.

The structure of a market refers to how it is organized. Are there many groups or few groups? Are the groups large or small relative to groups in other sectors of the economy? Structure is a primary concern of the branch of economics known as industrial organization. Bain (1951) first outlined the structure-conduct-performance (SCP) framework for analyzing markets. Market structure affects the conduct of groups in the market, and this will in turn affect the performance of the entire market. The virtue of understanding market structure in the SCP framework is that it gives us insight into the outcomes that obtain in markets. Likewise, studying the structure of groups is valuable for the same reason that studying bias in group mobilization is: the way group markets are structured has an impact on the way in which they influence the political process and therefore on policy outcomes. This work is closely related to work done by Lowery and Gray (1995, and 1996). Gray and Lowery point

²We could define it more narrowly as being part of an environmental advocacy market in San Francisco. Defining markets geographically can be subjective.

out that little has been done to explicitly connect our understanding of how groups organize and maintain themselves to the study of how groups influence policy outcomes. The more we understand why groups and group markets are structured in particular ways, the better equipped we are to discuss their impact as policy actors. Walker (1983) likewise highlights the benefits of building on existing theoretical work in collective action to better understand group maintenance.

Lowery and Gray (1995) are primarily concerned with the number of firms in an interest group market. Using state lobbyist registration roles, Gray and Lowery compile a list of groups in every state and then categorize those groups according to sector of the economy served. Their work pioneers the use of the theory of population ecology in the interest group literature. Population ecology holds that the success of an organism in an ecosystem is conditioned by the supply of energy, stability, and area. They operationalize these concepts in the context of political interest group markets and show that the ESA framework is capable of explaining density and diversity in interest group markets. In Lowery and Gray (1995) they isolate just a few sectors of the economy and use the ESA framework to predict the number of firms in each sector. Gray and Lowery (1996*b*) takes a more comprehensive approach, looking at many different sectors of the economy as well as the diversity of a state's interest group population as a whole, where diversity describes the distribution of markets within the state, rather than the distribution of groups inside one market. Their analysis concludes by showing that density and diversity have an impact on the number of bills the state legislature passes and on economic growth in the state. Gray and Lowery (1996*a*) explore extensions of the ESA model to encompass the niche theory of interest groups. Nownes and Lipinski (2005) use the population ecology framework to explain when groups disband, while Nownes (2004) uses it to explain when groups form.

Measuring the number of groups in a market, as Gray and Lowery do, is a first step towards understanding the structure of interest group markets. Simply observing the number

of organizations in a market, however, can give a misleading view of how the market is organized. There are basically two companies that write operating systems for computers, but for anyone who is aware of the circumstances of this market, the fact that there are two companies in the market is a gross simplification. One company, Microsoft, controls more than 90% of the operating system market, while the other, Apple, controls only a tiny sliver of the market. Knowing that two companies are in the market tells you little about the actual structure of the market. Similarly, you will have a poor understanding of the national interest group market for aging issues if all you know is that there are approximately 22 groups in it.³ One of these groups, the AARP, commands a revenue stream more than 25 times larger than the next largest group and more than fifty-thousand times larger than the smallest group. This market is so highly concentrated that just knowing the number of groups in the market becomes an unimportant and even misleading piece of information.

How might we better characterize the structure of a market? One measure of concentration is the Herfindahl-Hirschman index (HHI). The HHI is the sum of the squared market shares of every firm in a market. The HHI of a market takes values between zero and one, where a one indicates that one group controls the entire market, and numbers closer to zero indicate that the market is competitive. The HHI indicates at a glance whether the market is structured competitively or monopolistically. This is a useful way to think about market organization, because microeconomic models of the firm can be used both to predict how concentrated a market will be and how efficient markets of a particular concentration will be. Although other measures have been used in economics⁴, the HHI has several nice properties and is now widely utilized. In the next section, I discuss the determinants of market concentration and relate these ideas to nonprofit interest group markets.

³This number comes from my own efforts in quantifying the number of groups in nonprofit interest group markets. These methods are discussed in detail in the section on data.

⁴Curry and George (1983) offers a survey. The HHI is especially desirable in part because it satisfies the theoretical properties of a good measure of concentration laid out by Hall and Tideman (1967) and Hannah and Kay (1977).

2.3 Determinants of Market Concentration

What elements influence the structure of markets? The economics literature suggests three particularly important factors: the presence of barriers to entry in the market, the attractiveness of entry to the market, and the history of the market's development (Amel and Liang, 1990; Cabral, 2000; Curry and George, 1983).⁵ In the remainder of this section I look at each of these three factors in turn and make six hypotheses regarding the determinants of concentration in nonprofit interest group markets.

2.3.1 Barriers to Entry

As Myers (1993) points out, there is little consensus in the economics literature regarding what should be considered a barrier to entry. Many markets face high sunk costs. That is, a large amount of capital is needed to get started in the market. A new airline carrier, for instance, would have to bid on airport gates and buy or rent planes, so sunk costs are a significant barrier to entry in this market. Another barrier to entry is the reputational advantages possessed by incumbent firms. These effects were first discussed by Demsetz (1982). Reputational effects and sunk costs are among the most widely agreed to barriers to entry and are incorporated into Baumol, Panzar and Willig's (1982) theory of contestable markets as prerequisites for ease of entry into a market. Ornstein, Weston and Intriligator (1973) identifies capital intensity of the market, level of product differentiation, and minimum efficient plant scale as barriers to entry for a typical market. Connor, Rogers and Bhagavan (1996) and Davies and Geroski (1997) emphasize that advertising on the part of incumbent

⁵Other categorization schemes have been offered. Cabral distinguishes between barriers to entry and economies of scale but many researchers consider economies of scale to be a special case of barriers to entry. While attractiveness of entry into the market is not as frequently cited by theorists, it is an important part of the empirical literature. The three factors I have given here are convenient for the theoretical analysis below and are relevant to nonprofit advocacy markets in a way that some other possible causes of concentration are not. Mergers and acquisitions, for example, are often considered an important determinant of structure for profit markets (e.g. Scherer, 1980). While nonprofits do occasionally merge, this is a rare phenomenon, and not likely to play a major role in determining concentration.

firms can create a long-lasting advantage in the market that acts as a barrier to entry. Unfortunately, there is no close analog for some of these ideas in the nonprofit market. Moreover, the available data is not amenable to determining capital intensity, for example (nor is capital intensity likely to vary much between different nonprofit advocacy markets).

What then constitutes a barrier to entry for a group that wants to enter the environmental market, for example, and compete with the Sierra Club? The sunk costs are relatively low. The group may want to rent an office, hire an expert on environmental issues, hire a director of development, and supply their office. If the founder is particularly ambitious, he could try to fill all these roles on his own and even work out of his own house. Will this interest group entrepreneur be able to attract foundation grants and small donations from interested citizens across the country? Will he be able to gain access to legislators? Barring some unusual circumstance, the answer is that it seems unlikely. There are a number of reasons we might give for this: no one has ever heard of this new group, legislators are wary of dealing with new interests that they are unfamiliar with, and the group has no constituency to use as leverage over lawmakers. This group has no brand-name recognition. Demsetz (1982), in encouraging more careful definition of the concept of barriers to entry, noted that, “A reputable history is an asset to the firm possessing it and to the buyer who relies on it because information is not free.” In other words, since gathering information on new groups is costly, older and more recognized groups tend to have an advantage in attracting donors. New groups are unlikely to be able to secure the large donations that are so critical to an interest group’s survival (Walker, 1983). New groups are especially likely to struggle if another group that already exists in the market has built up name recognition.

A group’s reputation is not just useful for securing donations. Established interests have the advantage of having interacted with legislators on multiple occasions. With some lawmakers holding the same seat for decades, being a frequent customer and earning a legislator’s trust can be a big advantage. If a new organization cold calls offices on the Hill,

they are likely to get the cold shoulder. One solution is to buy connections, perhaps by bringing on a longtime lobbyist or a former Hill staffer. Otherwise the organization will have to earn the notice and respect of legislators, perhaps by winning a legislative victory, or by establishing a large constituent base. Either way, it will take time and considerable effort to make the necessary contacts. If, however, existing organizations already have extensive networking advantages with lawmakers, it may make it difficult for a new organization to find footholds. A lawmaker may not see the need to work with multiple organizations on an issue when he already knows and trust a handful that he has worked with before. Accordingly, when an organization in a given market has strong reputational advantages, we would expect that market to be highly concentrated.

- 1) Markets will be more concentrated when a group in the market has a strong “brand-name” advantage.

A second barrier to entry for new firms are the economies of scale possessed by existing firms in the market. If one firm has achieved economies of scale that allow it to operate at significantly lower cost than other organizations in the market, it may be difficult for new organizations to enter into the market and compete. Consider the example of the AARP. The AARP is a monopolist, controlling nearly 80% of its market. Moreover, the AARP has taken advantage of this position in the market to develop several alternate methods of generating revenue. They distribute a magazine to their enormous member base. The ads generate 130 million dollars in revenue, about 13% of the AARP’s total. Another 650 million comes from royalties the AARP charges for endorsing insurance plans. Nearly 80% of the AARP’s revenue then, comes from essentially running a business. This is in stark contrast to many other nonprofit groups, who get most or all of their revenue from small donors and foundations. It gives the AARP a degree of autonomy that some organizations do not enjoy but more importantly it means the AARP can charge its members trivial amounts of money for membership and provide an impressive array of selective incentives in return. In fact,

joining the AARP costs just \$16 a year. If a new organization were to want to break into the old age issue market, they would have a very hard time attracting members.

What gives AARP such formidable economies of scale? It is primarily that they have established ongoing business operations that significantly enhance their bottom line while also separating themselves from dependency on donations. They are not alone in having developed in this way. The NRA derives a fair amount of revenue from its magazine and from events it hosts. Some large environmental organizations are similarly arranged. Any organization that has successfully established these sorts of systems for earning revenue will enjoy economies of scale and this will make entry into the market difficult, decreasing the competitiveness of the market.

- 2) Markets where organizations derive a greater percentage of their revenue from non-donor sources will be less competitive.

2.3.2 Attractiveness of Entry

When it appears that there is profit to be made by entering a market, entrepreneurs will rise to the bait. Interest group entrepreneurs are no different. Salisbury (1969) details the pecuniary incentives that interest group entrepreneurs have to organize and maintain groups. Interest group entrepreneurs will therefore tend to enter a market when they believe that there is financial gain to be made, perhaps because they believe the market is undermobilized or because recent growth in the market has been rapid. As interest group entrepreneurs found new organizations, the market will become more crowded and this should reduce the concentration of the market.

- 3) Markets will become less concentrated when financial conditions in the market appear to be especially advantageous.

Echoing Truman's (1951) disturbance theory, Nownes and Neeley (1996) find that political events may motivate entrepreneurs to enter advocacy markets. This research suggests that when events provide an opportunity to change a policy, interest group entrepreneurs will create new groups to take advantage. At these moments, when salience of the issue is high, new groups will form and this will tend to reduce the level of concentration in a market.

- 4) When issue salience is high, market concentration will decrease.

2.3.3 History of the Market

The third and final determinant of market competitiveness is the history of the market. While it is true that being first can be a critically important factor in a firm's ability to control a market, it is not the only factor at play. As Klepper and Graddy (1990) put it, "where products are characterized by considerable diversity in buyers' preferences, it is more difficult for dominant designs to emerge, which tends to lengthen the time it takes (for the market) to reach maturity." In other words, the early history of a market might be characterized by many variations of a product, splitting consumers between them. Differentiating their product allows firms to find their own niche in the market and should decrease concentration.

To see how this is relevant to nonprofit advocacy markets, consider the history of the environmental movement in the U.S. One of the oldest environmental groups still active today is the Sierra Club. It was not, however, initially a national group (although the local to national transition occurred very quickly). Initially it was formed to protect the Sierra Nevada mountain range. One of its first goals was the establishment of the Yosemite national park. Now there are dozens of environmental groups active on the national level, while other interest group markets remain highly monopolized. Why has the environmental market spawned and supported so many more organizations than other markets? History plays an important role. Just as the Sierra Club was initially a regional interest, so are

many of today's environmental organizations. The Kodiak Brown Bear Trust, the Southern Utah Wilderness Alliance, the Antarctica Project, the Pacific Forest Trust, and the Peregrine Fund are just some of the environmental groups that compete in the national environmental interest group market.

The difference between the environmental market and the other, more concentrated markets mentioned above is that environmental groups grew up regionally, with their own niche issues that insulated them from direct competition with other groups. The oldest, largest groups, like the Sierra Club, could not monopolize the market because product differentiation within the market prevented it. In the framework given by Klepper and Grady, environmental firms have a diversified set of products, each corresponding to a slightly different facet of environmental protection.

5) Markets where groups can easily differentiate their product from competitors will be less concentrated.

At the state level, there are two possible ways that interest group markets might have developed. A state might develop its own ecosystem of groups, each tending to some niche section of the relevant issue in the state. Alternately, one of the large national organizations might enter the state and become a monopoly provider thanks to economies of scale and strong name recognition. Skocpol, Ganz and Munson (2000) investigate the factors that encourage the formation of groups structured as national federations, with branches in a number of states. They find that this kind of structure has been common since the Civil War. A national federation has many advantages over a local nonprofit advocacy group, which may get pushed out of business by a branch of the national federation. Therefore, when a national federation participates in a state market, the market will tend to become more concentrated.

- 6) State markets with a local branch of a national federation will be less competitive.

2.4 An Empirical Test Case

To evaluate the hypotheses given above, I collect data on the pro-life interest group markets in all 50 states across seven years. This ensures that I will have a sufficiently large N for the empirical test and by choosing the same market in different geographical areas, internal validity is maximized. From a practical standpoint, it is relatively easy to construct pro-life interest group markets in all 50 states. Economists typically use SIC codes or NAICS codes, which classify firms by industry, to identify markets. I use national the national taxonomy of exempt entities (NTEE) codes that the IRS assigns to nonprofit groups. Code R62 identifies pro-life groups but is not exhaustive. By checking the NTEE codes of many large pro-life groups, I found that R24 and R01, which identify women's rights groups and civil rights groups respectively, are also common classifications for pro-life advocacy groups. I separated the groups by state and pruned the R01 and R24 groups to eliminate those that are not in the pro-life market. Appendix A describes this process in more detail.

After constructing the pro-life market in each state, I used the 990 tax forms that nonprofits must file and make publicly available to associate yearly expenses and other data with each group. The yearly expenses of each group are used to construct my dependent variable, the HHI for each state market. The HHI is the sum of the square of the marketshare of each organization in the market.

There is considerable variation in the dependent variable both within states and between states. The markets in some states are extremely stable over time, whereas others are considerably more volatile. Figure 2.1 shows the HHI over time for six states. Although concentration in the South Dakota market looks extremely stable over time, this belies a large amount of volatility in the market. In 2006 a ballot referendum mobilized pro-life

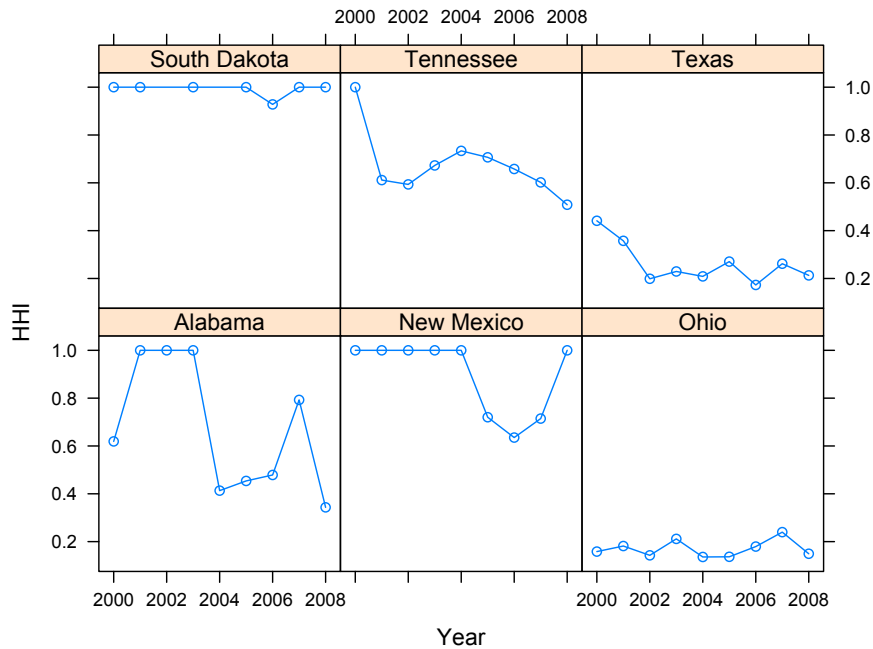


Figure 2.1: Pro-life interest group market HHI across time in 6 states

forces. A new group was founded and spending in the market surged to \$3 million from just a bit over \$100,000 in the previous year. The group was then disbanded completely.

As Figure 2.1 clearly shows, pro-life interest group markets in the states follow very different paths. Some have become less concentrated over time, while others have changed very little, or have experienced brief but unsustainable changes in market concentration. Much of this variation has to do with the volatility of nonprofit groups. In some markets, a single group will vanish and reappear year after year as it struggles to survive on paltry revenues.⁶ Other groups will see their revenues fluctuate erratically as abortion becomes a more or less salient issue over time. Figure 2.2 shows the total spending in each market over the same period of time. Having identified a test market and constructed the dependent

⁶Nonprofits do not have to file a 990 if they earn less than \$25,000, so these organizations are probably continuously in existence during this time, but have uncertain revenues.

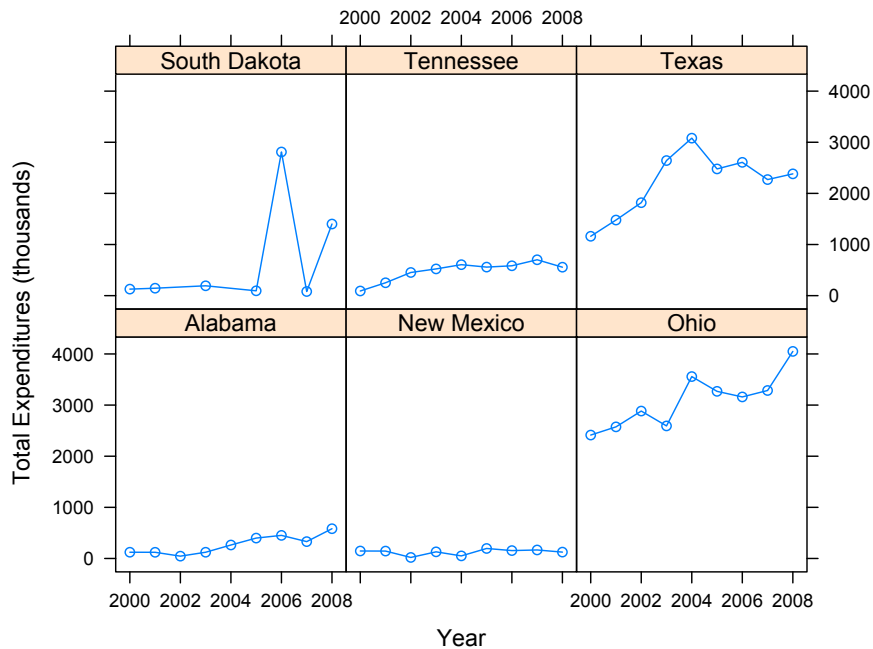


Figure 2.2: Pro-life interest group market expenditures across time in 6 states

variable, the next section explains how I operationalize each of the six hypotheses made above.

2.5 Operationalization and Data

Recall the six hypotheses discussed above. I restate them here, along with my plans for operationalizing the independent variables suggested by each one.

1) Markets will be more concentrated when a group in the market has a strong “brand-name” advantage. Quantifying a group’s reputation is difficult, especially since many of these groups exist in extremely small markets with little media attention. All things being equal however, I expect that older groups will have had more time to form bonds with legislators and make a name for themselves with potential donors. While group age is not readily available, the 990 tax forms that nonprofit groups must file indicate the date that

they obtained nonprofit status from the IRS. This is not necessarily a founding date for all groups but should be a reasonable approximation of a group’s age. To test this supposition I gathered founding dates for 20 of the groups in my dataset by examining their webpages. I then compared these to the IRS determination of nonprofit status date. The correlation was above 0.85. Most groups obtain nonprofit status within three years of being founded, but a few do not obtain this status for ten years or more. So to proxy for an organization’s reputational advantages, I use number of years since IRS exemption was granted.

2) Markets where organizations derive a greater percentage of their revenue from non-donor sources will be less competitive. Nonprofits are required to break their revenues up into several different categories when they report their taxes to the IRS. I take advantage of this to isolate revenues that did not come grants or donations. I total the amount of “other income” on the 990, which refers to non-grant non-donation income, and the amount of investment income reported by the group.

3) Markets will become less concentrated when financial conditions in the market appear to be especially advantageous. I use two proxies for the potential profit that interest group entrepreneurs might find in a particular market. First, I use the total expenditures of all groups in the market. It is a fairly well recorded fact in the economics literature on concentration that as market size increases, concentration decreases.

4) When issue salience is high, market concentration will decrease. To measure issue salience in each state, I collect data from Google trends on searches for “abortion.” Google trends provides data on the frequency of search terms across the U.S. Donovan, Tolber and Smith (2008) and Mellon (2011) both use Google Trends to track salience over time. A large number of searches for abortion indicates that events in the state have made it an especially salient issue. The numbers provided by google trends are not actual search

volumes but instead are normalized scores that indicate a region's relative search volume for a term.

5) Markets where groups can easily differentiate their product from competitors will be less concentrated. Interest group markets will tend to be more competitive when it is easier for new organizations to carve out their own niches. More such niches should exist when a state is large. I proxy for the availability of niches for groups by including the state's population. States with higher populations will give organizations more opportunities to find their own constituency and therefore their own niche. Higher population should therefore be negatively related to concentration.

6) State markets with a local branch of a national federation will be less competitive. This hypothesis will be tested by the inclusion of a dummy variable that takes a value of 1 when a national federation has a local chapter in the state that participates in lobbying activity, and 0 when there is no local chapter of any national federation or the local chapters do not participate in lobbying. There is no obvious way to define a national federation. Skocpol, Ganz and Munson (2000) alternately define it by looking at the group founder's intention or by using their own judgment about whether a group fits the description. I consider any organization that appears as an active lobbyist in at least 20%⁷ of the states in my sample to be a national federation. There is only one such group that meets this criteria: Right to Life. The federal wing of this group is National Right to Life, but it has chapters in the majority of the states.

Descriptive statistics for the six variables suggested by this analysis can be found in Appendix B.

⁷This is an arbitrary cutoff but also a largely irrelevant one in this case. Had I gone as low as 10% or as high as 70% National Right to Life would remain the only national federation in the dataset.

2.6 Model and Results

2.6.1 Long-run Dynamics in Market Structure

I follow the lead of a large economics literature that has attempted to establish the determinants of concentration using an error correction model (ECM) that distinguishes between the equilibrium steady-state concentration that a market should be in and the possibility of perturbations from that equilibrium caused by short-term phenomena in the market. The particular treatment I follow here is outlined in Geroski and Pomroy (1990) and Bhattacharya and Bloch (2000). This error correction model was first popularized by Davidson et al. (1978). A good theoretical summary of the model is given by Nickell (1985).⁸ The equilibrium concentration in a market is simply a result of the various determinants of concentration discussed above. It takes the form:

$$C_{it}^* = \beta_0 X_t \quad (2.1)$$

And therefore:

$$\Delta C_{it}^* = \beta_1 \Delta X_t \quad (2.2)$$

Where C_{it}^* is the long run equilibrium level of concentration in market i at time t and X represents the observable determinants of concentration. In any particular time period, however, the market is not in equilibrium. Instead, the observed concentration is due to an adjustment process between concentration in the previous period and the long-run equilibrium concentration. Moreover, there is the possibility of a change in the long-run equilibrium itself. That is:

$$\Delta C_{it} = \gamma_0 (C_t^* - C_{it-1}) + \gamma_1 \Delta C_t^* \quad (2.3)$$

⁸For a political science oriented treatment of error correction models, Boef and Keele (2008) is an excellent and comprehensive resource.

The first part of the right hand side of equation (3) indicates that the change in concentration in period t is partly attributable to the difference between long-run equilibrium and actual concentration in period $t - 1$. The coefficient γ_0 can be thought of as the speed with which the market returns to long-run equilibrium. When γ_0 is 0, then the market will never return to long-run equilibrium. If γ_0 is 1, then the market returns to long-run equilibrium immediately. The second part of the right hand side of equation (3) indicates that the change in concentration in period t is also partly attributable to changes in long-run equilibrium. The coefficient γ_1 is likewise an adjustment coefficient controlling this process. By substituting equations (1) and (2) into equation (3) and expanding the left hand side of equation (3) we obtain:

$$C_{it} - C_{it-1} = \gamma_0\beta_0X_t - \gamma_0C_{it-1} + \gamma_1\beta_0\Delta X_t \quad (2.4)$$

$$C_{it} = \gamma_0\beta_0X_t + (1 - \gamma_0)C_{it-1} + \gamma_1\beta_0\Delta X_t \quad (2.5)$$

To simplify the interpretation of short-run effects, I simplify further by separating ΔX_t into its constituent parts. This leaves me with an autoregressive distributed lag (ADL) model. As Boef and Keele (2008) demonstrate, the ECM model and the ADL model are one and the same. Using an ADL model is desirable in this case for interpretation.

$$C_{it} = \gamma_0\beta_0X_t + (1 - \gamma_0)C_{it-1} + \gamma_1\beta_0X_t + \gamma_1\beta_0X_{t-1} \quad (2.6)$$

$$C_{it} = (1 - \gamma_0)C_{it-1} + (\gamma_1 + \gamma_0)\beta_0X_t + \gamma_1\beta_0X_{t-1} \quad (2.7)$$

Both γ_0 and γ_1 are positive and between 0 and 1. We can directly estimate γ_0 by looking at the coefficient on C_{it-1} . To recap from the last section, the independent variables that comprise X are the age of the oldest group in the market, the percentage of market income that comes from the ‘other’ revenue category, total expenditures in the market, salience of

abortion in the state, population of the state, and the presence of a national federation. I log the total market expenditures, percentage of other income, and state population variables since these variables are strongly right skew. Total market expenditures are adjusted for inflation and expressed in 2008 dollars. It should also be noted here that the model suffers from likely endogeneity problems that the model does not solve. Market concentration and barriers to entry are so tightly linked, for example, that there is no simple way to eliminate such endogeneity. This is not necessarily a serious problem, however, so long as the model is treated as primarily a predictive one. Because I am mainly interested in predicting market structure so I can understand how certain characteristics of the market might influence their lobbying activities, a model that provides good predictions remains useful despite potential endogeneity.

2.6.2 Results

Table 2.1 shows the results of the model. The first column shows the results of estimating equation (1.7) with OLS and fixed effects for states. I use robust standard errors due to evidence of some mild heteroskedasticity. The table excludes dummy variables for each state. Although measures of model fit suggest that it is appropriate to include the state dummies, they have a minimal impact on the model. The primary effect of excluding them is that the presence of a national federation is no longer shown to increase the concentration in a market. I tried using dummy variables for each year but these were not significant and did not seem to contribute in any way to the model. Although there are perhaps one or two outliers, they appear to have only a very modest effect on the model, and do not affect the substantive interpretation at all. A few of the predicted concentration results are greater than 1, but the largest is only 1.1, and none of the others are greater than 1.05.

The results demonstrate the validity of analyzing interest group market concentration through the lens of industrial organization. As predicted, total expenditures are negatively

Table 2.1: Estimating equation (1.7). Dependent variable is pro-life interest group market HHI. Dummy variables for states not shown.

Independent Variable	Full Model	Eight Year Model
Lag HHI	0.1457 (0.140)	0.2218** (0.082)
Oldest group age	-0.0085** (0.004)	-0.0114** (0.002)
% other income	0.0229* (0.012)	0.0128 (0.011)
Log of total market expenditures	-0.1236** (0.054)	-0.0945** (0.021)
Salience	-0.0005 (0.001)	— —
Log of state population	0.9488 (0.643)	0.6176 (0.558)
National Federation	0.0472 (0.082)	-0.0045 (0.035)
Lag oldest group	-0.0007 (0.003)	0.0027 (0.002)
Lag % other income	0.0484** (0.015)	0.0300** (0.013)
Lag total market expenditures	-0.0346 (0.041)	0.0329* (0.020)
Lag salience	-0.0007* (0.000)	— —
Lag state population	-0.0111 (0.814)	-0.5572 (0.585)
Lag national federation	0.0572* (0.034)	0.0988** (0.041)
Number of observations:	160	309
R^2 :	0.93	0.89

Standard errors shown in parenthesis.

* significant at the $p \leq 0.10$ level

** significant at the $p \leq 0.05$ level.

related to concentration. Lagged percent of revenue that is other income is positively related to concentration, lagged presence of a national federation is positively related to concentration, and abortion salience is negatively related to concentration. Contrary to my expectations, the age of the oldest group is negatively related to concentration. Population is not significant but comes very close to being significant at the $p \leq 0.1$ level in the wrong direction. In sum then, the model provides some evidence for hypotheses 2, 3, 4, and 6, but no evidence is found for hypotheses 1 and 5. Although the R^2 is high, this is largely attributable to the presence of a lagged dependent variable.

In the second column, I exclude salience from the analysis. Because this variable is constructed using Google search results, it is available only from 2004 on. Excluding it nearly doubles the number of available observations and is a nice check or robustness on the model. The results are not much different from those in column 1. Model fit decreases a bit but nearly all the variables that were initially significant remain significant here. The current level of other income in the market is no longer significant but the lagged value remains significant, and the lagged value of total market expenditures becomes significant where it was not before.

Although the oldest group age variable has the wrong sign, it should be noted that the effect it has on concentration is fairly modest. Moving from the 25th percentile to the 50th percentile in oldest group age is a change of 7 years (21 years to 28) so this move would result in about a 0.06 increase in market concentration immediately and a long-run increase of 0.064. It is unclear why this variable does not affect concentration in the way I predicted. Possibly it is simply a poor proxy for the market advantages that established organizations have. In other issues areas, it is easy to find dominant groups with long histories (the NRA) as well as dominant groups with short histories (the AARP).

The results for population have a possible explanation: perhaps when population is both high and concentrated in one place, this allows a single monolithic group to mobilize a large

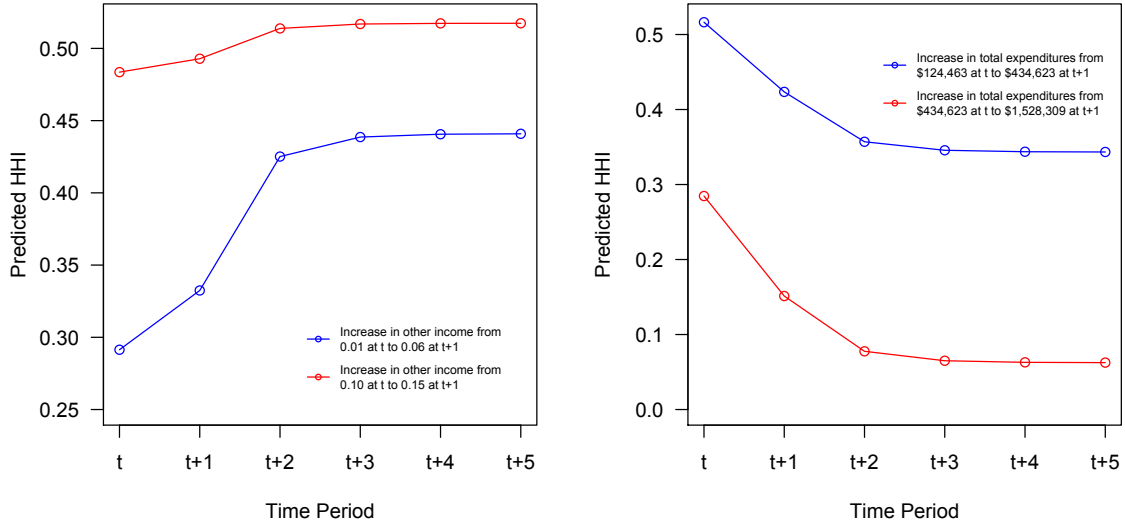


Figure 2.3: Effect of increases in a market's % other income and a market's total expenditures across six time periods.

constituency with ease. A more appropriate measure might try to take into account not only the presence of a large number of possible constituents, but the locations of those constituents. Constituents who are separated from each other by large distances will be more likely to start competing groups, taking advantage of the geographical niches that are available. One possibility is to use population density, but this also seems like an inadequate measure: Wyoming has low population density but does not offer many niches for interest group formation because there are no major population centers for a group to build a constituency. Interactions of density and population are, unfortunately, highly collinear. As a possible remedy for this problem, I collected data on the number of population centers in each state, where a population center is defined as any city with a population exceeding 100,000. This data is simple to collect using the 2010 U.S. Census. Replacing the population variables with this time invariant measure of the number of population centers in the state does not, however, lead to significance.

The presence of a national federation has no immediate impact on market concentration but does impact concentration via a lagged effect. In the long-run, therefore, the entry of a national federation into the market will increase concentration in the market by 0.12. Changing salience from the 50th percentile to the 75th percentile reduces concentration by 0.008 in period $t + 1$.

Interpreting the effect of total market expenditures and percentage other income is more difficult since these variables are logged. Figure 2.3 shows the impact on concentration of changes in percent other income and total market expenditures. The blue line in the first graph shows the impact of increasing the percent other income of a market in equilibrium from 0.01 to 0.06.⁹ Over the course of six periods, predicted HHI increases from just under 0.30 to nearly 0.45. The red line shows the impact of increasing percent other income from 0.10 to 0.15. In the second graph, the blue line shows the effect of increasing total market expenditures from the 25th percentile value to the 50th percentile value, an increase from \$124,463 to \$434,623. The red line shows an increase from the 50th percentile value to the 75th percentile value.

These effects can therefore be substantively large. While the salience of abortion in a state has little impact on concentration, the presence of a national federation, total market expenditures, and percent other income in a market can result in large swings of the Herfindahl index.

2.7 Conclusion

Although this research is similar to that of Gray and Lowery (1996*b*), it makes several important new contributions to the study of interest group organization and maintenance. Salisbury (1969) proposes an exchange theory of interest groups, rooted in the principle

⁹This represents a shift from roughly the 75th percentile of the data to the 95th percentile. The vast majority of groups in the dataset had very little income in the ‘other’ category.

of exchange between group entrepreneurs and group constituents. Entrepreneurs, Salisbury argues, are motivated at least in part by pecuniary considerations. This in turn suggests that there is a parallel between interest group markets, whether they are for-profit or nonprofit, and traditional economic markets. The theory presented here attempts to explain some of the same phenomena that Gray and Lowery (1996*b*) are interested in, but is built on microeconomic foundations instead of the ESA model of population ecology.

Theories of industrial organization, however, are well-suited to answering certain questions that population ecology may not be able to. Lowery and Gray (1995) point out the importance of finding a theory that connects organization and maintenance to lobbying influence. Such theories are rarely offered. Olson (1965) demonstrates that the interest group system is likely to be biased, and this has been confirmed empirically by a long literature asserting the dominance of institutions (Salisbury, 1984; Gray and Lowery, 1998*a*; Baumgartner and Leech, 2001; Schlozman and Tierney, 1983; Schlozman, 1984), but the presence of bias in group organization does not necessarily imply bias in policy results, although this is a commonly assumed connection. Theories of industrial organization can help bridge this gap in the literature. The study of industrial organization is concerned with how markets are structured, how this structure determines the conduct of firms in the market, and how conduct influences the performance of the entire market. This is called the structure-conduct-performance (SCP) framework. A key feature of the SCP framework is that it ties organization, in the structure step, to actual market outputs, in the conduct and performance steps.

Of course, this article has not posited any connection between market structure and market performance. Economists have investigated this link extensively however, and by following their lead we may begin to better understand how the exigencies of group organization and maintenance impact the ability of groups or markets of groups to achieve their

policy goals. This article serves as a foundation to demonstrate the promise of the industrial organization approach.

Chapter 3

INTEREST GROUP MARKET CONCENTRATION AND POLICY OUTCOMES ¹

¹Clemens, Christopher. To be submitted to the Journal of Politics.

Abstract

Interest group scholars in the post-pluralist tradition have been keenly interested in the organization and maintenance of interest groups. I examine the structure of interest group markets to understand how interest group organization and maintenance is related to policy outcomes. In some issue areas, interest groups have monopoly status: think of the AARP and the NRA. In other issue areas, there are dozens or of groups working on the same issue. For a given level of spending, which of these market structures is superior vis a vis policy impact? I examine pro-life interest groups in all 50 states to answer this question. For political and economic reasons, I hypothesize that monopolized markets will perform better. An empirical test across eight years of data provides support for this hypothesis.

3.1 Introduction

Traditionally, the study of interest groups is divided into two broad research areas. The first is the organization and maintenance of groups, which seeks to understand why groups proliferate and how they maintain themselves. The second area of study explores the impact of interest group influence on political outcomes.² Unfortunately, these two literatures rarely meet. How do the pathologies of group maintenance and formation affect the success interest groups have in changing policy outcomes?

Articles on group proliferation and maintenance often seek to understand what kinds of interests will be best represented. Olson's (1965) work on collective action problems made this a primary concern of the field and contributed to the dissolution of the pluralist consensus that groups organize in response to societal disturbances (Truman, 1951). Together with Schattschneider's (1960) criticism of the "heavenly chorus" of interest groups, Olson's work

²Many scholars have noted this division of the subfield. Cigler (1991) refers to the two parts as "demand aggregation" and "group impact." Gray and Lowery (1996*b*) refer to them as the micro-level incentives of mobilization and the macro-level research on interest organization impact.

prompted many scholars to investigate empirically the composition of the interest group community. The result has been an ironclad consensus that institutions are the dominant interest group players (e.g. Gray and Lowery, 1998*b*; Schlozman and Tierney, 1983; Salisbury, 1984; Baumgartner and Leech, 2001; Schlozman, 1984). This body of research stops short of finding a similar bias in outcomes.

The literature on the actual influence of interest groups has reached no such consensus. Instead, it gives conflicting accounts of the purpose and efficacy of money in influencing policy. Some conceive of it as a way to buy access to congressional offices (a review is given in Langbein, 1986) while others theorize that it is a direct bribe (Snyder, 1991) or a way to signal something about the contributing group (Austen-Smith, 1995). While the theoretical literature suggests many different ways that money might matter, the empirical literature has resulted in contradictory findings (for a thorough review, see Baumgartner and Leech, 1996). Baumgartner et al. (2009) conduct one of the most recent and comprehensive analyses of this subject. They assess interest group impact by looking at how bills that are of interest to groups fare in committees and on the floor of Congress. They find that institutional dominance does not lead to biased outcomes because most issues are characterized by the presence of large lobbying coalitions on both sides of the issue. Despite this recent progress, ambiguous empirical findings in this area have made it difficult to connect the proliferation and maintenance literature to the influence literature.

A few attempts have been made to bridge the gaps between the interest group organization literature and the influence literature. One approach that promises to tie group maintenance to policy influence is proposed by Salisbury (1969) in his “An Exchange Theory of Interest Groups.” Salisbury attempts to identify the driving concern behind groups, the interest group entrepreneur, and ascribes motives to the entrepreneur: he offers solidary, selective, and purposive benefits in exchange for dues. By extension, we can understand how the exigencies of group maintenance might impact the way the group attempts to influence

policy and how successful they are at it. Ainsworth and Sened (1993) explicitly connect the entrepreneur’s two audiences, members and lawmakers, by modeling lobbying as a signal to legislators about a group’s legitimacy that can reduce inefficiency in policy provision.

Gray and Lowery (1996*a*) are similarly concerned with providing a connection between organization formation and policy outcomes. They note that Salisbury’s exchange theory has not been furthered by other scholars, and that we still lack a theory that would enable us to “move with confidence between the two topics, drawing inferences about how behaviors in one influence the other.” They suggest that niche theory, couched in a population ecology framework, might help us build such a connecting theory, but they do not fully develop that theory. Although Gray and Lowery hinted at the contours of such a theory sixteen years ago, little progress has been made in this endeavor.

This article suggests one important theoretical connection between interest group organization and interest group policy influence. I then conduct an empirical test of this theory, and find promising results. Similar to Gray and Lowery, I look at the composition of interest group markets in the US states. I go beyond their 1996 effort, however, by linking interest group market composition to policy outcomes.

3.2 Industrial Organization and Interest Groups

The economic field of industrial organization is the study of markets.³ Scholars of industrial organization have traditionally examined three linked areas of study: how markets are structured, how this structure determines the conduct of firms in the market, and how conduct ultimately influences the performance of the entire market. Bain (1951, 1956) was the first to propose this framework, known as the structure-conduct-performance framework. Bain posited that market structure determines firm conduct, and firm conduct determines firm

³Industrial Organization has been applied to political phenomena before. See, for example Grier, Munger and Roberts (1991) and Weingast and Marshall (1988).

performance. Notice that this ties the creation and maintenance of firms (creation in the first step, as this determines market structure, and maintenance in the second step) to the eventual provision of goods.

Throughout this paper I refer to interest group markets: collections of interest groups that lobby on the same policy issue within the same geographic area. What exactly constitutes a single issue and a single geographic area is open to interpretation. Two environmental groups that support efforts to preserve habitat in the Florida Everglades are in the same interest group market, but that market could be Everglades conservation groups or it could be national environmental groups.

The structure of an interest group market can vary substantially. As an example, consider two interest group markets. The IRS gives the NTEE⁴ code R25 to nonprofit interest groups that advocate for “Seniors’ Rights.” There were 23 organizations with positive expenditures given this classification in 2008. Collectively, the 23 groups in this category spent just under 1.2 billion dollars to influence national and state policy. One group, the AARP, accounted for over 90% of total spending in the market. By comparison, groups in the category C30, “Natural Resources Conservation and Protection” spent a bit less: about 1 billion dollars. In stark contrast to the seniors’ rights market, which is dominated by a single group, there were 1,353 groups classified as C30. No single group had spending exceeding 10% of the market’s total.

The two interest group markets I have detailed here have comparable levels of total expenditures. The structure of these two markets, however, is markedly different. One is dominated by a single group. The other is characterized by its diffuse structure, with more than a thousand groups contributing to the goal of protecting natural resources. *Ceteris*

⁴NTEE stands for National Taxonomy of Exempt Entities. The IRS uses a variety of methods to assign this code to every nonprofit organization in the country.

paribus, which market structure will allow groups in the market to make the biggest impact on policy?

Before I can tackle this question, a more rigorous definition of market structure is necessary. Lowery and Gray (1995) measure market density with a count of the number of groups in each market. They use state lobbyist registration rolls to construct this measure, so a market for them consists of all interest groups within a single state that the state places in the same lobbyist category. Measuring the size of the various groups in their study would be difficult or impossible, since many of the groups are private, for-profit organizations. It can be misleading, however, to claim that two markets with ten groups each in them are structured the same. If we measure by total market expenditures, one of these markets could be far larger than the other. Also of concern is the structure. One of these markets could consist of one monolithic group that spends more than 90% of the market's revenue, as in the example above, while the other is composed of ten equally sized competitors. To adopt the population ecology metaphor, Gray and Lowery's method does not distinguish between 800 pound gorillas and 100 pound gorillas.

Luckily, there is a commonly used measure in economics that can capture this subtlety. The Herfindahl-Hirschman index (HHI) is frequently used to decide how concentrated a market is.⁵ The Department of Justice, for example, uses it to judge if mergers should be allowed to go forward. It is found by adding together the squared market share of each firm in a market. If a market consists of a single firm, the HHI will be one. A more competitive market will have an HHI closer to zero.

The HHI provides a snapshot look at how concentrated a market is. Market concentration has long been a concern for economists, because microeconomic models of the firm suggest that highly competitive markets will produce the greatest amount of total surplus for society.

⁵In fact, Gray and Lowery (1996*b*) use an HHI to measure the diversity of a state's interest group ecosystem, but this is a state level measure of the structure of several markets, rather than a measure of concentration in a single market.

My focus in this paper is not on societal surplus but rather only on the outcomes that interest groups are trying to affect. I explain in the next section why highly concentrated interest group markets should prove to be more effective than their competitive counterparts.

3.3 Benefits of Unity and Scale

The primary political benefit of a highly concentrated market structure comes from the ability to present a unified message. In a market with a dominant group, the message and strategy for a public advocacy campaign come from one place, and there is no need to compromise that message to build a coalition. In a market with many groups, market members have two choices: go it alone or work with a coalition. If they go it alone, they have control over their message, but they command a relatively small number of members. Politicians know that the AARP speaks for an enormous number of constituents, which affords AARP considerable lobbying power all on its own. A small group in a crowded interest group market does not enjoy the same luxury. They will likely need to find partners to work with.

Unfortunately, working in a coalition can be costly. First, some groups may free ride on the efforts of the coalition (Hojnacki, 1998). Groups must balance the benefits of joining a coalition against the possibility of losing their identity and autonomy (Hojnacki, 1997). Hula (1999) and Heinz et al. (1993) discuss transaction costs in alliances. To prevent groups from free riding, frequent meetings to coordinate group activity may be necessary.⁶ Some coalitions will hire staff specifically to oversee group efforts. Groups may bicker among themselves over policy goals and the messaging they adopt to achieve those goals. Taken together, this suggests that when a large number of groups come together in a coalition, they incur significant transaction costs.

⁶Washington-based lobbying firms are happy to facilitate and coordinate these coalitional efforts for firms that can afford it.

Of course, there are benefits to working in a coalition as well. But coalitions are unlikely to be more than the sum of their parts. A large number of small groups can command a large constituency, but a single monopolist can leverage a large constituency all the time, on every issue. Hula (1999) suggests that a coalition provides a signal to lawmakers that a policy is widely supported because advocates have already ironed out their own differences on the issue. By the same token, however, a single monolithic group signals that different types of constituents from across the country support that organization's policy goals.

The second major benefit of a highly concentrated market structure is economies of scale. As an example of the economies of scale available to large groups, consider the AARP.⁷ The AARP pulls in about \$1 billion in revenue every year. In most years, 60% of this revenue comes from ad space sold in their nationally circulated magazine for members. Scale makes it possible for them to make a considerable amount of money while promoting their views to members. This in turn allows them to price their competitors out of the market. Membership in the AARP costs just \$16 a year, and comes with a number of selective incentives.

There are political returns to scale as well. The AARP's brand is a valuable political tool, one that even novice politicians recognize and respect. AARP lobbyists will find it relatively easy to gain access to congressional offices. The organization itself accumulates lobbying power that is independent of the experience and reputation of its lobbyists. Smaller groups and even coalitions of smaller groups are less likely to enjoy this advantage.

Due to the transaction costs incurred when groups have to work in coalition, and due to the economies of scale that large, market-controlling groups can achieve, I expect that in monopolized interest group markets, where there is a single group, or a few groups, that act

⁷I use the AARP as an example frequently because of its high visibility. It is hardly the only monopoly group in the interest group world however. The NRA and the modern NAACP are two other examples. Moreover, there are a number of markets with only a few large oligopoly players. Consider, for example, NARAL and NOW in the pro-choice market.

as central points of control, the impact that interest groups in the market have on policy outcomes will be larger than in less concentrated markets.

Another point in favor of monopoly groups is that they are more effective at seizing surplus from their consumers. Monopolies effectively reduce total welfare into a market by maximizing their own welfare at consumer expense. Although total welfare declines, the firm itself benefits. If we are not concerned with total welfare, but instead only care about the interest group's ability to bring resources to bear on a policy output, then a monopolized market will outperform a competitive market.

Finally, there is reason to believe that monopolies will perform better because of the ability of interest groups to price discriminate. Unlike many firms, nonprofit interest groups have the ability to price discriminate using some mix of first and third degree price discrimination.⁸ The "customers" who donate to nonprofits tend to pay near their full valuation instead of the market price. Just because Ethel of North Dakota only gives \$10 to a charity does not mean that George Soros will also give \$10. Moreover, the nonprofit can price discriminate very effectively. Varian (1989) notes three conditions for price discrimination. The first is that the firm must have market power, true in any monopolized market. The second is that the firm must have some way to sort customers. The simplest way nonprofit groups accomplish this is by identifying potential donors whom they know to be wealthy and courting them specifically. Finally, the firm must have a way to prevent consumers from reselling the product to other consumers. The nonprofit advocacy firm is particularly good at this, since they do not really sell anything material in the first place.

⁸First degree price discrimination occurs when the organization can discriminate by willingness to pay. This is the case with many very large donors to nonprofit groups. Third degree price discrimination is when some characteristic of the donor is known, such as age or location, and this characteristic is used to price discriminate. Nonprofits engage in this kind of price discrimination too. For example, they may send out different mailings to donors depending on what zip code the donor lives in (Haggerty, 1979). Second degree price discrimination is when discounts are given for buying in bulk.

Hansmann (1980, 1981) explains how theater groups intentionally organize themselves as nonprofits so they can price discriminate better. In fact there are dozens of tools available to the canny nonprofit fundraiser that allows them to glean higher donations from those with a higher valuation of the public good the nonprofit provides. Fundraisers convince particularly wealthy donors to match small donations (Feldstein, 1975), or to be leadership givers (Andreoni, 1998, 2006) who invest before a donation drive is announced and are privy to more information about the quality of the nonprofit. Then there are the various dinners and speaking events that past donors are invited to. A good fundraising effort will find ways to reduce the costs of donation for its members who are so inclined. Just by visiting the Sierra Club website, one can find a wealth of information on the legalities of donating property or making bequests in a will. It is common for nonprofit advocacy groups to have different levels of support: \$10-50, \$50-200, and so on. With this method, donors will cluster around the boundary values (they want to give just enough to be a silver member). If price discrimination is not quite perfect, we can guess that it is very good.

Since nonprofit advocacy groups can efficiently price discriminate, the market's demand curve is also the monopolist's marginal revenue curve. As more organizations enter, the marginal revenue curve will flatten out some. The presence of effective price discrimination, however, leaves a profound mark on these markets. When it is possible for firms to perfectly price discriminate, monopolized markets produce the same quantity as competitive markets and are therefore efficient (Varian, 1989). Since they can charge the buyer's full valuation for their product, there is no need to restrict output in an attempt to raise profits. Instead, monopolies provide at the market equilibrium, where their marginal cost equals the marginal revenue curve they face. Total surplus of the market remains the same, although all consumer surplus becomes producer surplus.

This is not meant to suggest that there is no good reason to have multiple groups in a market. There may be an advantage to having groups that fill particular policy niches for

example. Niche groups may attract members that larger groups would not, expanding the constituency of the market.⁹ This is a fundraising advantage, however. My contention is that for a given amount of money spent by groups in the market, high concentration markets will out-perform low concentration markets.

This theory has an obvious normative implication. Namely, that interest groups should reorganize themselves into monopoly markets. This begs the question, why have they not done so already? The answer is that this is not a theory of incentives for individual actors. I do not think it is likely that interest group actors have a simple means of altering the concentration of their market because there are simply too many actors with differing incentives. Interest group entrepreneurs have a financial stake in their groups (Salisbury, 1969). Moreover, they want autonomy. David Brower, an early director of the Sierra Club, is notable in this respect. He quit the Sierra Club after coming into conflict with board members to found Friends of the Earth. Conflict between Brower and the board at FOE then led him to found the Earth Island Institute. Then there are funders, both large and small. Although little attention has been given to the motives of large funders, Walker (1983) and Nownes and Cigler (1995) discuss the importance of funders to interest groups and the efforts interest group entrepreneurs undertake to secure seed money and then build a large base of small donors. Finally there are political actors, who may nurture niche groups out of a desire to build their coalition or engage in credit claiming.

3.4 Linking Market Structure to Outcomes

There are a number of reasons that there is a dearth of research on the connection between group organization and policy outcomes. I highlight two serious problems here. First, it is difficult to monitor interest group market structure over time. Gray and Lowery (1996*b*)

⁹Browne (1995, 1988), for example, documents the balkanization of the farmer's lobby into niches based on agricultural crop and the advantages this created for some lobbies.

comb through state lobbyist registration rolls and assemble three years of data across all fifty states. Because states keep these records in a variety of formats, these data are time consuming to collect. Moreover, states may have subtly different reporting requirements that make it difficult to collect certain types of information across all states, and lead to differences in interest group composition in the states that reflect these reporting requirements rather than market structure in the state.

Another obstacle is measuring outcomes in a consistent way across states and time. If we are interested in environmental groups, for example, we must decide if it is really appropriate to use air quality as an indicator of interest group policy impact when we know that no state is an island, and that poor air quality may be due to pollution from neighboring states. Moreover, not every environmental group is interested in air quality. Some care about water pollution, some care about wildlife conservation, and some care about rain forests that are not even located in the US. Deciding which environmental groups to include in the interest group market might involve some arbitrary decisions. Environmental groups are one of the simpler cases. What is the appropriate way to measure policy outcomes for a consumer advocate group like Public Citizen? These groups trade in major legislative and judicial victories that may happen infrequently, and may be difficult to identify, especially between states.

My research design attempts to address these problems. First, rather than use state lobbyist registration rolls to construct markets in each state, I instead use the IRS's NTEE classification system. NTEE codes are given to tax exempt groups, so this restricts my analysis to nonprofit interest groups. This restriction is, however, inevitable; in order to account not just for the number of groups but also for the size of groups, I need financial data on each group. This data is not generally available for private concerns, but it is available for nonprofit interest groups through their tax filings, which must be made public.

I also restrict my analysis in this particular paper to one interest group market: pro-life interest groups. I chose this market for two reasons. First, it is well defined. That is, it is relatively simple to decide which groups do and do not belong in the market. Second, policy outcomes in this market can be measured simply by looking at the abortion rate in each state. Pro-life groups are committed to reducing the number of abortions that take place, so this variable cleanly captures their policy intent. Finally, a number of years of data are available. This is important to my research design, since there is just one market in each state. A single year of data yields only 50 data points. A time series cross sectional study that spans many years of data will yield a larger N , increasing my ability to draw substantive inference. The CDC has continuously collected data on abortion rates since 1978.

3.5 Data and Methods

To determine the extent to which the concentration of pro-life interest group markets in the 50 states impacts the abortion rate, I use a time series cross sectional design. The dependent variable is the abortion rate for each state from 2000 to 2008. There are two organizations that record this data: the CDC and the Guttmacher Institute. CDC obtains their data by polling the state directly. A few states do not report a number, and others underreport. The Guttmacher Institute surveys health providers directly, and most researchers acknowledge that Guttmacher's numbers are probably more reliable than CDC's numbers (for an explanation of how the Guttmacher methodology contrasts with CDC methodology, see Jones et al., 2008; Henshaw and Kost, 2008; Jones and Kooistra, 2011). Unfortunately, the Guttmacher Institute conducts these surveys infrequently. Between 2000 and 2008, the years I intend to examine, they collected only five years of data. To test the robustness of my models, I make use of both measures. The dependent variable is discussed in considerable depth in the results section.

The most important independent variable is the concentration of each interest group market, as measured by a Herfindahl index. Due to data limitations, I begin measuring market concentration in 2000 and end in 2008. To identify pro-life groups in each state, I use the NTEE codes for right to life, women’s rights, and civil rights alliances and advocacy.¹⁰ All groups in right to life were included. For the other two categories, I created a program to prune the lists automatically and then further pruned them by hand. Appendix A fully describes this important process that allowed me to create a market in each state. Once I identified all the groups in a state’s pro-life interest group market, I found the yearly expenses of each group using data from their 990 tax forms as reported by the National Center for Charitable Statistics in their NCCS Core Files.¹¹ I then constructed an HHI for the groups based on their total expenses for each year.

I exclude data from Virginia and Maryland. These states are home to the headquarters of several organizations that have a national, rather than state-level, policy focus. Given their proximity to DC, attempting to link the concentration of their pro-life interest group markets to outcomes within the state would be largely nonsensical.

In addition to a measure of interest group market concentration, I also include the total amount of spending by the pro-life spending in the state minus the total amount of pro-choice spending in the state per capita. This is intended to capture the effect that groups have on policy purely by spending money on lobbying, elections, public relations, and other functions.

As controls, I include a number of variables that have been identified by other scholars as being aggregate level predictors of abortion rates. They fall into two broad categories: demographic predictors and political predictors (recent literature includes Medoff, 2009; New,

¹⁰R62, R24 and R01 respectively. I identified these three codes by looking at well known pro-life groups and their affiliates. All of them fall into one of these three classifications. While the IRS makes an effort to correctly code every nonprofit group, some are inevitably misclassified (to the extent that one pro-life group was accidentally placed in the pro-choice code).

¹¹<http://nccsdataweb.urban.org>

2009; Matthews, Ribar and Wilhelm, 1997; Meier and McFarlane, 1994) First, I include a number of demographic variables. I use income per capita in each state, from the Bureau of Economic Analysis. I use the Census's American Communities Survey to determine the percentage of women in the state who are separated, divorced or have an absent spouse and the median age of people in the state. I also include unemployment in the state, as reported by the Bureau of Labor Statistics.

Finally, I account for the political environment of each state. I include a dummy variable for the party of the governor and I add the percentage of Democrats in the state House to the percentage of Democrats in the state Senate to create a variable that ranges from 0 to 2. Both variables are provided by Klarner et al. (2013). Because Nebraska has a nonpartisan legislature, it is excluded from the model. I also control for policy in each state. NARAL publishes a yearly report called "Who Decides?" that assigns grades to each state based on pro-life or pro-choice laws in place. I convert their scale, which runs from F to A+, into an ordinal scale that runs from 1 to 14, where 14 is an A+ and 1 is an F. Other scholars have attempted to determine how particular kinds of policies affect the abortion rate in a state (Meier et al., 1996; Medoff and Dennis, 2011; Medoff, 2009, 2008; New, 2009). I subsume all policy into this single measure for simplicity. This is also a measurement issue. As Graber (1996) illustrates, abortion policy in the states has historically been implemented in an inconsistent way from state to state and region to region. By using NARAL's ratings instead of a count of restrictive laws or dummies for different kinds of laws, I hope to capture each state's legal environment in a more holistic way.

Ideally I would also control for the activities of pro-choice groups in each state. Unfortunately the structure of pro-choice groups is much more centralized, with relatively few state organizations and several large national organizations that are active at the state level. This makes it difficult to construct pro-choice markets in the states. If I used the same methods I employed to construct pro-life markets, few states would have a pro-choice market at all.

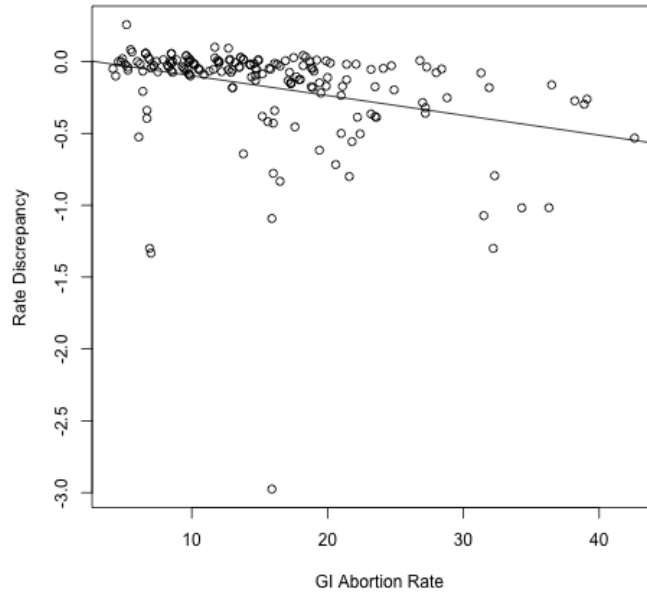


Figure 3.1: Discrepancy between CDC and Guttmacher Institute rates vs. Guttmacher Institute rate

3.6 Results

Before any further analysis can be conducted, an explanation of how I handle the dependent variable is necessary. Both organizations that record state abortion rates do so imperfectly. The CDC relies on self reporting from the states, which is known to be inaccurate. The Guttmacher Institute is unable to conduct their survey every year, leaving gaps in the data. Using either one of these measures of the abortion rate involves some tradeoffs. To check the robustness of my models, I run them with five different dependent variables. These five independent variables are:

- The CDC abortion rates without any adjustment
- The CDC abortion rates excluding states that tend to underreport their rates by large margins
- The Guttmacher Institute data that is available

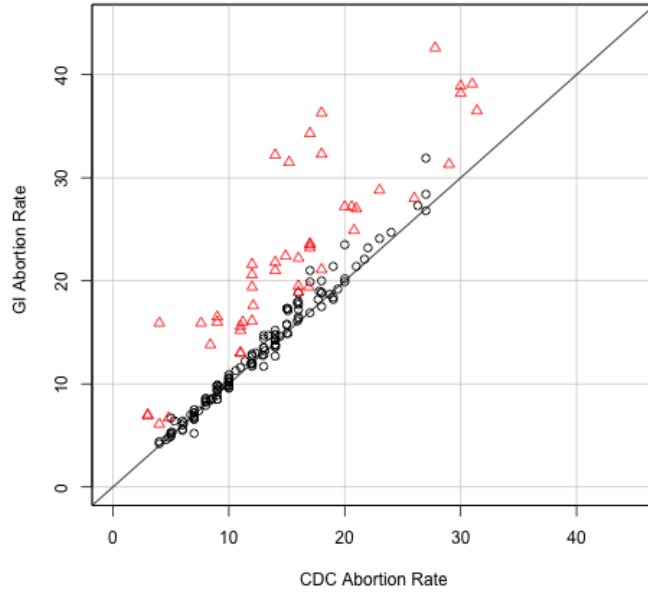


Figure 3.2: Guttmacher Institute abortion rate vs. CDC abortion rate

- The Guttmacher Institute data with estimated values for missing years found by following Meier and McFarlane's (1994) method
- The Guttmacher Institute data with imputed values for the missing years

To better understand these different measures of the abortion rate, it is helpful to understand how the CDC data is biased. I find the discrepancy between the Guttmacher Institute rates and the CDC rates and then calculate this discrepancy as a percent of the CDC rate. Figure 3.1 plots the abortion rate reported by the Guttmacher Institute against this percent discrepancy in the two rates. These two quantities are negatively correlated, indicating that states with high abortion rates tend to underreport their abortion rate more dramatically than other states. Figure 3.2 plots CDC abortion rates against Guttmacher abortion rates. Points above the 45 degree line indicate that the CDC is underreporting a state's abortion rate. The red triangles are states that consistently underreport by a large margin. These states underreport their rates by 3 or more on average. For the second formulation of the

dependent variable I exclude these ten states. They are NJ, NV, HI, MI, CO, NY AZ, DE, CA, and IL.

For the fourth formulation of the dependent variable, I follow a procedure detailed by Meier and McFarlane (1994). They assume that CDC abortion rates are consistently biased by state. That is, they assume that if Colorado is underreporting by 20% in one year, they will underreport by about that amount again the next year. I take the average percentage difference between CDC rates and Guttmacher Institute rates in each state and adjust CDC rates in years the Guttmacher Institute does not cover by this average amount.

For the fifth formulation of the dependent variable, I impute the missing data from the Guttmacher Institute. The data is imputed using Amelia II (Honaker, King and Blackwell, 2009).¹² I use Amelia's options for imputing cross sectional time series data. When possible, I also use the CDC's reported rates to create priors for the imputed data. Rather than use the CDC rate, which I know is an inappropriate mean for the prior normal distribution, I use the adjusted CDC rate found previously by the Meier and McFarlane (1994) method.

My market structure variable is the Herfindahl index of pro-life interest group concentration in each state. Scholars have proposed a wide variety of predictors for a state's abortion rate. I have taken something of a kitchen sink approach to the inclusion of independent variables because the literature on state-level determinants of abortion often presents conflicting views of what is or isn't an important control. I tested various lag structures, including lags on the independent variable of most interest to me, the HHI of the pro-life market. Only one such lag can be shown to contribute to the model by F-tests: a lag on the partisan composition of the legislature.

A Hausman test suggests that the fixed effects model is inefficient, so I run my models with random effects. Although the empirical evidence suggests that random effects are the

¹²Since the Guttmacher Institute data is missing entire years, rather than only certain states, and because the cause of this missingness is lack of funding, a strong argument can be made that the data is missing at random.

Table 3.1: Regression results for CDC and Guttmacher Institute based dependent variables, with random effects.

Independent Variable	CDC Abortion Rate	CDC Rate, minus states that underreport by 3 or more on average	GI Abortion Rate	GI Rate, Meier and McFarlane Correction	GI Rate With Imputation
HHI of Pro-Life Market	-1.412** (0.508)	-1.216** (0.557)	-1.480** (0.766)	-0.467 (1.858)	-0.625 (1.128)
Pro-life spending - pro-choice spending per capita	-0.177 (0.253)	-0.026 (0.141)	-0.774 (1.256)	-1.802 (1.525)	-1.199* (0.593)
Governor Dummy	0.133 (0.190)	0.039 (0.210)	-0.333 (0.283)	-0.877 (0.887)	-0.156 (0.412)
(1=Democrat)	-0.239 (0.802)	0.020 (0.931)	-1.698 (2.052)	15.108** (6.576)	0.662 (3.272)
% of state legislature (both chambers) that is Democratic	2.799* (1.407)	1.629 (1.246)	2.357 (2.068)	-14.491** (6.738)	-0.006 (2.422)
Lag of state legislature composition	0.069 (0.107)	-0.045 (0.082)	-0.428** (0.169)	-0.470** (0.141)	-0.368* (0.196)
NARAL state pro-choice grade (1=A+, 13=F)	-0.039 (0.044)	-0.019 (0.056)	-0.059 (0.076)	0.205* (0.122)	0.057 (0.074)
Income per capita (thousands)	16.142** (7.300)	6.741 (7.400)	26.633* (14.864)	58.503** (20.703)	25.739 (12.850)
% females separated, never married, or with absent spouse	0.040 (0.044)	0.032 (0.046)	-0.010 (0.087)	-0.400* (0.230)	-0.056 (0.104)
Unemployment rate	-0.408** (0.182)	-0.406* (0.219)	-0.568** (0.239)	-0.328* (0.409)	-0.494* (0.276)
Median age	21.940** (8.084)	25.230** (9.032)	34.622** (9.799)	7.339 (16.179)	26.615** (11.564)
Constant	301 (0.95)	240 (0.96)	202 (0.92)	311 (0.37)	367 —
Number of observations:	301	240	202	311	367
ICC:	0.95	0.96	0.92	0.37	—

Standard errors shown in parenthesis.

* significant at the $p \leq 0.10$ level

** significant at the $p \leq 0.05$ level.

right model, I present the models with fixed effects in Appendix C. I estimate robust standard errors since a Wald statistic modified for groupwise heteroskedasticity shows that my errors are heteroskedastic (Greene, 2000).

Table 3.1 provides the results of the model for all five formulations of my dependent variable. Although there is a fair amount of variation, the pro-life HHI variable is negative and significant in most of the models. Since higher values of the HHI indicate a more concentrated market, this indicates that more concentrated pro-life markets are associated with a lower abortion rate. In other words, more concentrated pro-life markets are more effective at achieving their policy goals than less concentrated markets.

In the first and fourth model, a lag of the state legislature composition is significant. This variable is the percentage of the legislature that is occupied by Democrats in the previous year. The coefficient is positive, indicating that a higher proportion of Democrats in the legislature leads to higher abortion rates. My measure of the percentage of women in the state who are either separated, unmarried, or who have an absent spouse is significant in three of the five models. Again, it is positively signed, indicating that a greater proportion of separated and unmarried women leads to higher abortion rates. Finally, the median age of the state is always significant and is negatively signed, indicating that older populations have lower abortion rates. These findings are consistent with some of the previous literature on this subject.

The HHI variable is not significant in two of the five models. It is insignificant in the fourth model, which imputes missing Guttmacher Institute abortion rates using a procedure detailed by Meier and McFarlane (1994). In fact, the estimates for this model often have the wrong sign as well. This is probably attributable to two factors. First, I am using the method to impute four years of data, whereas Meier and McFarlane are using it for just one year. Since I use the average amount a state underreported its abortion rate to the CDC by in all years, this estimate of the state's accuracy is probably less reliable. Second,

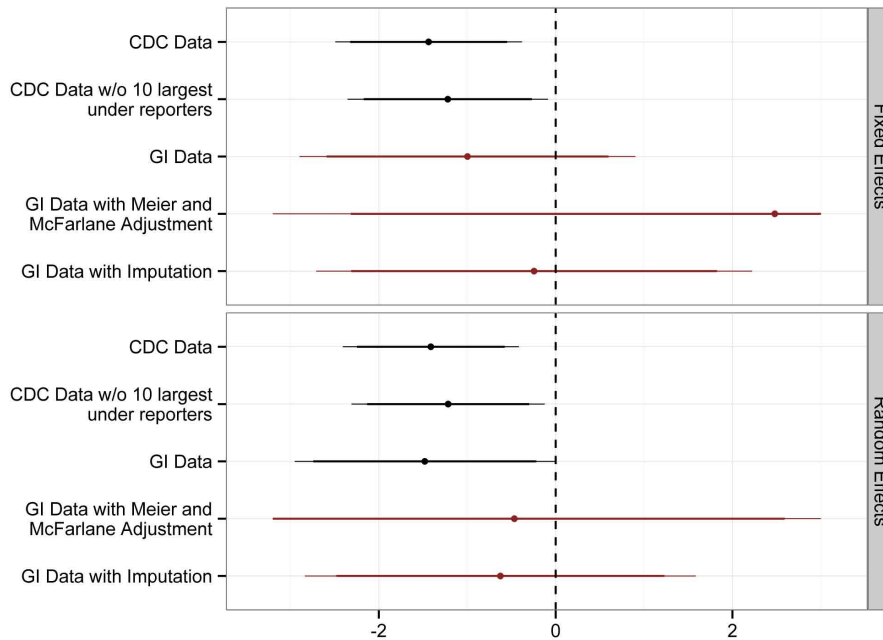


Figure 3.3: Coefficient and Confidence Interval for Life Market HHI in Different Models. The full confidence interval for the Meier and McFarlane adjustment is not shown. (black lines indicate coefficients significant at the $p \leq 0.10$ level).

their method makes the assumption that CDC abortion rates are biased in a consistent way from year to year for each state. My data show that this assumption is generally not true. States sometimes underreport by large margins but sometimes underreport by small amounts. Colorado, for instance, underreports on average by nearly 90%, but in some years it underreports by as little as 20% and in some years by as much as 300%. Generally, my data and my results show that the Meier and McFarlane (1994) method does not yield particularly good imputations.

Finally, the HHI variable is not significant in the model with imputation. In fact, very little is significant in this model, reflecting the uncertainty that has been introduced to the model by imputing more than 40% of the dependent variable. Although imputation is an effective way to deal with missing data, it fails this case for two reasons. First, the imputed variable is on the left-hand side of my model. When a dependent variable is imputed, it

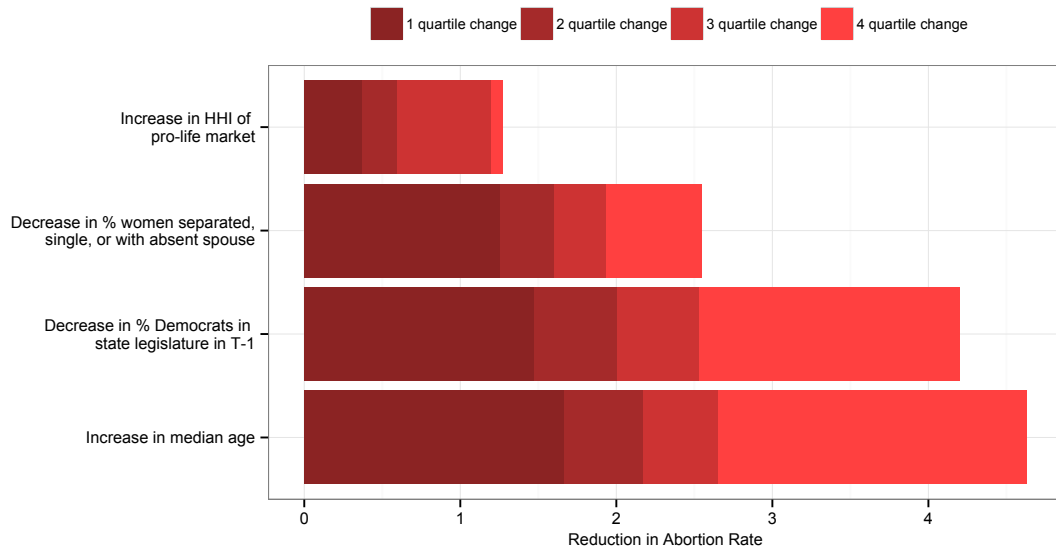


Figure 3.4: Effect on the abortion rate of moving between quartiles of significant variables. Bars represent decreases in the abortion rate.

introduces considerably more uncertainty into the model than if only a single independent variable is. This is because uncertainty in the dependent variable affects the whole model. Second, the Guttmacher data is missing a large number of data points, which increases the error associated with the dependent variable. Figure 3.3 summarizes the significance of the HHI variable in each model, under both random and fixed effects.

Figure 3.4 shows the substantive impact of the variables that are commonly significant. In this case I have used the coefficient estimates from the first model of Table 3.1. The magnitude of the HHI coefficient is relatively stable across models, so this is representative of its impact across models. The red bars show the reduction in abortion rate that can be achieved by moving from the minimum or maximum of a variable's value through its quartiles. Increasing the HHI of a market from the minimum to the 25th percentile, for example, results in a reduction of the abortion rate of about 0.36. Compared to the other significant variables, the substantive impact of market concentration may not seem large but since the interest group spending variable was not significant, this may be the best way for

these interest groups to make a difference. It is not likely that interest groups can influence the median age in their state. The legislative composition variable should be interpreted carefully. It may be the case that efforts to change the composition of the legislature are the most effective way to change policy, but this variable may also be proxying for general political culture in the state.

I explored the residuals of my models after OLS regression without any panel structure to try to discover the presence of possible outliers. While certain years can be moderate outliers in the model, there is no single state that seems to be biasing the model's outcomes in a significant way.

3.7 Conclusion

Although they address just one interest group market, my results offer evidence that concentrated interest group markets can be more effective at changing policy outcomes than their less concentrated counterparts. A one quartile increase in the concentration of a pro-life interest group market, as measured by the Herfindahl index, can lead to declines in the abortion rate as high as 0.6. Although the dependent variable is problematic, this result is fairly robust to different ways of specifying the policy outcome.

This study takes cues from the study of industrial organization in economics. Applying theories of industrial organization to the study of interest groups is a natural progression from Olson (1965) and Salisbury (1969). Although it is grounded in a different theoretical tradition, this work also builds on the work of Gray and Lowery (1996*b*), and provides a theory that links interest group organization to policy outcomes, as suggested in Gray and Lowery (1996*a*).

A number of caveats are necessary. Fragmentation of a market may be desirable for reasons that I have not captured here. Niche groups in a market may broaden the market's constituency by appealing to small donors who would otherwise be unlikely to join. Interest

group entrepreneurs may prefer the autonomy that comes from forming a niche group, and this in turn may benefit the market. Interest group entrepreneurs bring resources with them, both political (legislative connections) and economic (donor networks).

These caveats highlight promising directions for future research. Investigating the extent to which niche groups can contribute to building a constituency for particular issues is another application of industrial organization that could help us better understand how group organization affects policy outcomes within a particular policy area. This article provides a starting point, but there are many ways that industrial organization might help us understand interest group influence on the political system.

An obvious and necessary extension to this research is the application of these ideas to other interest group markets. This is not a straightforward or simple venture. As Einav and Levin (2010) report in a summary of the state of empirical industrial organization, studies need to be tailored to the conditions of each market. Analyzing a different market will likely require a very different set of controls and will present its own measurement problems.

Despite these caveats, the empirical findings of this paper suggest that industrial organization theory might be fruitfully applied to understanding an aspect of interest group activity that has received little attention in the past. Our understanding of how interest groups arise and then operate have too frequently been divorced from our understanding of how interest groups impact policy. Greater attention to the linkages between these two areas of research is an important future direction for the field.

Chapter 4

ALL POLITICS IS LOCAL, BUT LOBBYING IS FEDERAL AND LOCAL ¹

¹Clemens, Christopher. To be submitted to the Journal of Business and Politics.

Abstract

The Lobbying and Disclosure Act of 1995 requires lobbyists to disclose information about their lobbying activities. The resulting data is used by the website OpenSecrets.org (run by the Center for Responsive Politics) to give snapshot pictures of the amount of lobbying groups do. The same data has also been used by scholars to measure the impact of lobbying and to evaluate rent-seeking expenditures by firms. Unfortunately, users of the data are unaware of a reporting option for organizations under the LDA that has consequences for the validity of the data. LDA data does not accurately reflect the amount of money that an organization has spent trying to influence federal law because organizations may choose a reporting requirement under which they must also disclose the amount of money they spent to influence state laws. In this article I analyze the implications of this fact. I begin with a discussion of the problem's scope and then show how it misleads scholars.

4.1 Introduction

The Lobbying Disclosure Act (LDA) of 1995, which requires lobbyists to disclose the total amount of money they spent lobbying, the topics they lobby on, and the names of their lobbyists, promises to provide the public, the press, and scholars alike with a previously unprecedented source of information on interest group influence in Washington, DC. The data has already become well known through the efforts of the Center for Responsive Politics (CRP), which collects and aggregates LDA reports and displays them on OpenSecrets.org. OpenSecrets is frequently cited by the media² and it received nearly five million unique visitors in 2010 (OpenSecrets.org, N.d.). In addition to the OpenSecrets website, CRP also makes the data available as a bulk download.³

²According to Lexis-Nexis, CRP received about 1,600 mentions in US newspapers and wires in 2012.

³In the past, LDA reports were not available in an easily machine-readable format, and an enormous amount of work was necessary to aggregate figures from LDA reports. CRP very nearly had a monopoly

Economists and political scientists have begun to incorporate this data into their empirical work. Political scientists hope that LDA data can be used to understand what kinds of groups lobby, what determines lobbying intensity, and how lobbying affects outcomes. Economists use LDA data to measure the returns to lobbying. As this research blossoms, this article provides something of a cautionary note. Important to all of this work is the assumption that expenses reported under the LDA represent federal lobbying expenses. This is in fact not the case because for some organizations, reported lobbying amounts also include state lobbying expenditures. This fact has heretofore gone unnoticed or at least unmentioned by the many users of this data.

In the next section I explain how it came to be that some organizations are reporting only their federal lobbying expenditures while others are reporting both federal and state lobbying expenditures. I then provide an analysis of the scope of the problem by using a new dataset of lobbying expenditures in six states to show that the LDA is often misleading. In the final section, I examine recent scholarship that uses LDA data and demonstrate that some existing empirical research may not be robust to this source of error in an important variable.

4.2 Reporting options under the Lobbying Disclosure Act

The LDA requires that lobbyists provide “a good faith estimate of the total expenses that the registrant and its employees incurred in connection with lobbying activities,” where lobbying activities are fairly broadly defined. These expenses must be reported for any registrant with

on the aggregate data until recently, since starting a new effort to aggregate the data would have been fantastically time consuming. The Senate now makes XML files available that contain most of the same information as the CRP files. The CRP files do include certain fields created entirely by the CRP as, for example, a catcode that is based on the US government’s standard industrial classification (SIC) code for each group in the data.

expenditures exceeding \$5,000, and can be rounded to the nearest \$10,000.⁴ There are three ways that a covered entity can choose to account for its expenses, denoted methods A, B, and C on the LDA form filled out by lobbyists. Method A requires the organization to account for its expenses using definitions found in the LDA itself. These definitions are found in 2 USC §1602 and apply broadly to federal lobbying activities. Methods B and C allow the entity to instead report its expenses using definitions found in the Internal Revenue Code. Method B is reserved for nonprofits, and allows them to use definitions for lobbying found in section 6033(b)(8) of the Internal Revenue Code, while method C is reserved for for-profit organizations, and requires them to use definitions for lobbying found in section 162(e) of the Internal Revenue Code. Every organization that files an LDA report therefore has two options. Non-profits can either file using method A or method B, while for-profits can pick between method A and method C. As I will show, the important distinction between method A and methods B or C is that organizations that file using methods B or C *must also report expenses incurred relating to lobbying of state entities*. Figure 4.1 shows the first page of an LDA report, with the filer’s selection of a filing method shown in the bottom right.

Section 3 of the LDA, which defines terms used in the act, makes it clear that only federal lobbying expenditures must be reported if an organization chooses to report according to LDA definitions. Lobbyists are required to make a “good faith estimate of the total expenses that the registrant and its employees incurred in connection with lobbying activities,” where lobbying activities are defined as “lobbying contacts and efforts in support of such contacts...” Lobbying contact, in turn, is defined as communication with a covered executive branch official or legislative branch official. Covered executive branch officials include the President, the Vice President, any employee of the Executive Office of the President, any employee who holds a position in the Executive Schedule, any member of the uniformed services with a pay

⁴Both of these figures were altered by the Honest Leadership and Open Government Act of 2007. LDA reports prior to 2008 require reporting of expenditures exceeding \$10,000 and allowed rounding to the nearest \$20,000.

Clerk of the House of Representatives Legislative Resource Center B-106 Cannon Building Washington, DC 20515 http://lobbyingdisclosure.house.gov	Secretary of the Senate Office of Public Records 232 Hart Building Washington, DC 20510 http://www.senate.gov/lobby
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LOBBYING REPORT

Lobbying Disclosure Act of 1995 (Section 5) - All Filers Are Required to Complete This Page

1. Registrant Name ☒ Organization/Lobbying Firm ☐ Self Employed Individual EXXON MOBIL CORP			
2. Address ☐ Check if different than previously reported Address1 5959 LAS COLINAS BLVD. Address2 City IRVING State TX Zip Code 75039 - Country USA			
3. Principal place of business (if different than line 2) City State Zip Code - Country			
4a. Contact Name Ms. COURTNEY S. WALKER	b. Telephone Number ☐ International Number (972) 444-1181	c. E-mail	5. Senate ID# 14017-12
7. Client Name ☒ Self ☐ Check if client is a state or local government or instrumentality EXXON MOBIL CORP			6. House ID# 302300000

TYPE OF REPORT 8. Year 2010 Q1 (1/1 - 3/31) ☐ Q2 (4/1 - 6/30) ☐ Q3 (7/1-9/30) ☒ Q4 (10/1 - 12/31) ☐
9. Check if this filing amends a previously filed version of this report ☐
10. Check if this is a Termination Report ☐ Termination Date 11. No Lobbying Issue Activity ☐

INCOME OR EXPENSES - YOU MUST complete either Line 12 or Line 13	
12. Lobbying INCOME relating to lobbying activities for this reporting period was: Less than \$5,000 ☐ \$5,000 or more ☐ \$ Provide a good faith estimate, rounded to the nearest \$10,000, of all lobbying related income from the client (including all payments to the registrant by any other entity for lobbying activities on behalf of the client).	13. Organizations EXPENSE relating to lobbying activities for this reporting period were: Less than \$5,000 ☐ \$5,000 or more ☒ \$ 4,070,000.00 14. REPORTING Check box to indicate expense accounting method. See instructions for description of options. ☒ Method A. Reporting amounts using LDA definitions only ☐ Method B. Reporting amounts under section 6033(b)(8) of the Internal Revenue Code ☐ Method C. Reporting amounts under section 162(e) of the Internal Revenue Code

Signature ☒ Digitally Signed By: Courtney S. Walker Date 10/20/2010

Printed Name and Title Courtney S. Walker, Corporate Issues Advisors

v6.0.2a

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Figure 4.1: Example of the first page of an LDA report. Box 13 gives filers a choice of methods for calculating their lobbying expenditures.

grade at or above O-7, and any employee deemed by the Office of Personnel and Management to be serving in a position of a “confidential, policy-determining, policy-making, or policy-advocating character.” Covered legislative branch officials include members of Congress, elected officers of Congress, and employees of members of Congress, committees of Congress, or caucuses of Congress. Since only federal officials are covered, expenses reported under LDA definitions must include only federal lobbying expenses.

The Internal Revenue Code takes a more expansive view of what a lobbying activity is. If lobbyists choose to file using method B, they must report lobbying amounts as defined in section 6033(b)(8) of the Internal Revenue Code. This section calls for non-profit organizations to furnish information on: “(A) the lobbying expenditures; (B) the lobbying nontaxable amount; (C) the grass roots expenditures; (D) the grass roots nontaxable amount.”

Section 162(e) of the Internal Revenue Code does not specifically mention grass roots expenditures but in 162(e)(4)(A) defines influencing legislation as “any attempt to influence *any* legislation through communication with any member or employee of a legislative body [emphasis mine].” The only excepted spending is spending to influence a local council or a “similar governing body.” The instructions given to LDA filers explains method C reporting as follows: “Reporting amounts using Internal Revenue Code definitions of lobbying activities, of which the cost is not deductible pursuant to 162(e) of the IRC... Grass-roots and state lobbying expenses **may not be subtracted from this amount.**” (*Lobbyist Registration and Compliance Handbook*, 2009)

Why would an LDA filer prefer method C to method A? The Internal Revenue Code’s definition of a covered executive official is far more narrow than the LDA’s. Both the LDA and the IRC cover the President, the Vice President, and members of the EOP, but the LDA covers a large number of executive officials in other agencies that the IRC does not. Whereas the LDA covers all Executive Schedule officials, the IRC covers only “the 2 most senior level officers of each of the other agencies,” and officials in level I of the Executive

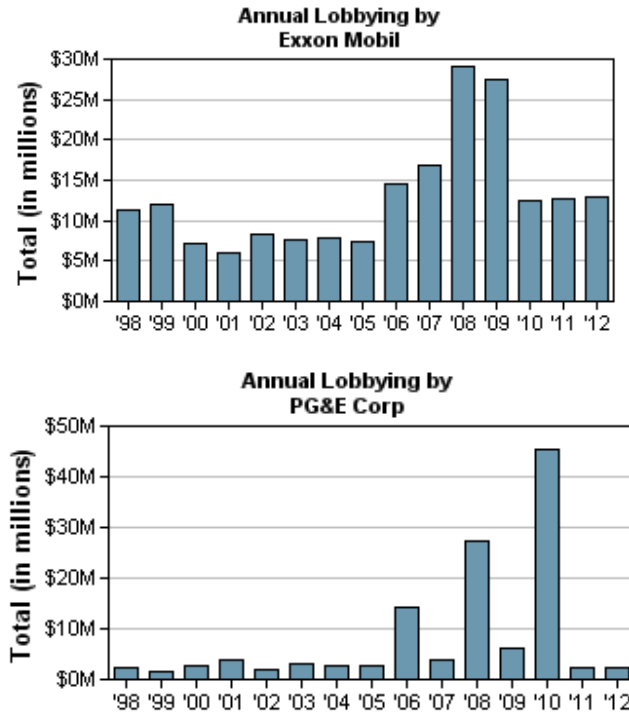


Figure 4.2: Total lobbying expenditures for two firms from OpenSecrets.org.

Schedule. Choosing method C is therefore a tradeoff: because state lobbying cannot be excluded, the amount reported is likely to be larger, but the filer will not have to disclose contacts with a number of mid to high level executive branch employees.

The fundamental problem caused by the inclusion of these expense reporting options is that amounts spent by different organizations cannot be easily compared when some are not including state spending, and others are.⁵ Figure 4.2 shows the lobbying histories of two organizations, taken directly from OpenSecrets.org. The first shows annual lobbying by Exxon Mobil. The graph seems to suggest that Exxon's spending on lobbying was relatively steady through the early 2000s, before spiking in 2008 and 2009 and then dropping off precipitously after that. In fact, the pattern at the end of this graph is entirely an artifact of the LDA's reporting requirements. Until 2009, Exxon filed using method C, which requires

⁵Some scholars may also be frustrated by the fact that some filers have to report certain mid-level executive branch officials while others do not. Although this does not affect the lobbying expense total, it may be a barrier to scholars who wish to understand how influence in the executive branch.

it to report state lobbying in addition to federal lobbying. Starting in 2010, Exxon decided to file using method A, so the totals for the last three years are smaller *not* because Exxon dramatically decreased the amount it spend on lobbying but rather because these years no longer include state lobbying expenses. Importantly, there is no way to know exactly what portion of the 2009 lobbying expenditures reflect state lobbying. Indeed, from 1998 through 2009, the increase in lobby expenditures could reflect the growing importance of state lobbying, the continually increasing importance of federal lobbying, or a bit of both. Filers are not required to differentiate between state and federal lobbying.

The second graph in Figure 4.2 shows the annual lobbying of Pacific Gas and Electric Corporation. One might notices the massive spikes in 2006, 2008, and 2010. PG&E filed using method C for each of those years. Luckily, they also voluntarily disclosed the amount of spending that came from state lobbying in 2010. Of the \$45,510,000 of reported lobbying PG&E did in 2010, \$44,339,056 of it was at the state level. As a measure of influence at the federal level, the amounts in this graph are incredibly misleading.

Unfortunately, many users of the LDA data are either unaware of the problem or downplay its significance. Here is how OpenSecrets.org introduces the data on www.opensecrets.org/lobby: “In addition to campaign contributions to elected officials and candidates, companies, labor unions, and other organizations spend billions of dollars each year *to lobby Congress and federal agencies* [emphasis mine]”. On their methodology page, however, they acknowledge that, “There are three different filing methods. . . Filers using the IRC methods must report state and grassroots lobbying costs. . . Thus, lobbying expenditures may not be strictly comparable among organizations.” It seems unlikely that most OpenSecrets visitors see this particular disclaimer. There is no mention of state lobbying expenditures in the OpenSecrets.org FAQ or glossary. One page on lobbying does link to “Lobbying Disclosure Act Guidance,” an article on the House of Representative’s website that explains the differences between different LDA reporting methods (lobbyingdisclosure.house.gov/amended_lda_guide.html).

None of the nearly 20 academic articles making use of LDA data that I review in section 4 of this article demonstrated an awareness that LDA data does not exclusively apply to federal lobbying. To take one high-profile example, Baumgartner et al. (2009), in their expansive study on how lobbying affects legislation in the US Congress, remark that, “Grassroots lobbying—the mobilizing of citizens to contact their members of Congress—is not included under the definition of lobbying. . .” Having established that this problem exists and exhibited a few high-profile instances where it hinders proper interpretation of LDA data, I now turn to measuring the severity of the problem.

4.3 The Scope of the Problem

The cases of Exxon Mobil and PG&E, shown in Figure 4.2, attest to the potentially serious nature of distortion in the LDA data due to the use of different reporting requirements. Still, it is plausible that the presence of methods B and C do not systematically introduce significant error into the data. It could be that very few filers choose to use these options. Or perhaps the organizations that choose method C do so knowing that they have little state spending to report. Such organizations are best positioned to reap the benefits of method C (fewer reporting requirements for executive branch contacts) while suffering no real harm (the appearance of increased spending on lobbying). In other words, the tradeoffs that lobbyists make when they file with method C might serve as a natural sorting mechanism, giving organizations with large state expenditures an incentive to file under method A, while those with few state expenditures file under method C. If this were the case, then the error in the dataset would be slight, because most method C filers would have little in the way of state lobbying expenditures.

To understand how the three filing methods are affecting LDA data, we need to know how many organizations use methods B or C and what amount of those organizations’ lobbying expenditures are for state lobbying rather than federal lobbying. Neither the Senate nor

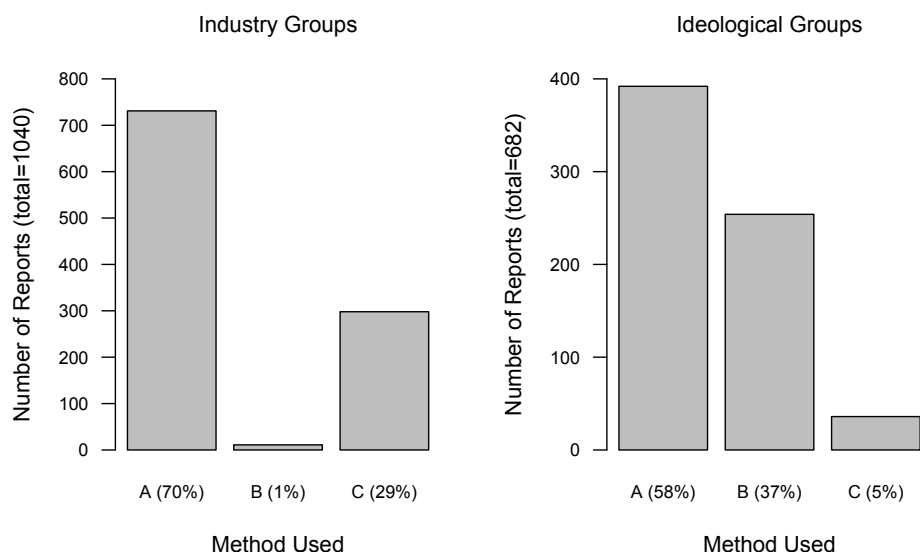


Figure 4.3: Breakdown of filing methods used in my sample.

the CRP record the accounting method used by an LDA filer, so the collection of filing method data cannot be easily automated. Instead, LDA reports must be checked by hand. Distinguishing between state and federal lobbying expenditures is no easier. Filers are not required to differentiate between state and federal spending. Some states have their own lobbying disclosure laws, but it is impossible to aggregate all state level spending, since many states require very little in the way of disclosure.

I created a new dataset that tracks filing method and state level lobbying for 509 organizations over one to five years each, resulting in 1722 observations. The dataset is a mix of industry groups and non-profit ideological groups. My sample of industry groups is composed of Fortune 500 companies in 2010. Using OpenSecret's database, I found the total lobbying⁶ expenditures of every company in 2002, 2004, 2006, 2008, and 2010. I dropped observations

⁶Only in-house lobbying expenditures, where an organization lobbies on its own behalf, are subject to error due to the B and C filing methods. Lobbying performed by contract lobbyists is always 100% federal. Nonetheless, I look at total expenditures (in-house plus contract) because this is what OpenSecrets reports and what most scholars are interested in when they use LDA expenditures as a covariate.

where no lobbying took place. This left 290 companies and 1040 total observations. My sample of non-profit ideological groups is composed of groups that OpenSecrets classifies as Ideology/Single-Issue. Again, I eliminated groups with no lobbying expenditures, leaving 219 groups and 682 total observations.

For each observation, I referenced LDA reports to determine what reporting method the organization in question used. If the reporting method used was B or C, I then associated state lobbying figures with the observation. Only a handful of states disclose the same kind of expenditure data that the organizations filing with the LDA are required to disclose. Of those that require it, many have only recently begun collecting data, or do not offer older data online. I selected six states that have reporting requirements similar to the LDA, have been collecting data for a number of years, and that I feel are broadly representative of different regions of the country.⁷ The six states are California, Massachusetts, Washington, Michigan, Wisconsin, and New York.

Figure 4.3 shows the number of ideological and industry filers using each of the three methods.⁸ Figure 4.4 shows the method used by each Fortune 500 filer, ordered by rank in the Fortune 500. The data points have been jittered for clarity but the y-axis has no significance. There does not appear to be any relationship between the size of a company and the method that it chooses. The second graph in Figure 4.4 orders all organizations in the dataset by their total lobbying expenditures and reports the method they file under. Unsurprisingly, method B is most common among filers with small expenditures, since it is only used by non-profits. Also unsurprisingly, method C filers appear to be bigger spenders. This should be the case, since method C filers are reporting both federal and state lobbying.

⁷I do not have any southern states. Although a few southern states have begun to collect this data, they remain considerably behind other parts of the country in this particular area of sunshine legislation.

⁸The presence of non-profits picking C and for-profits picking B is not a data collection error on my part. It is either an entry error or, in some cases, could be a transcription error, for pre-electronic filing reports.

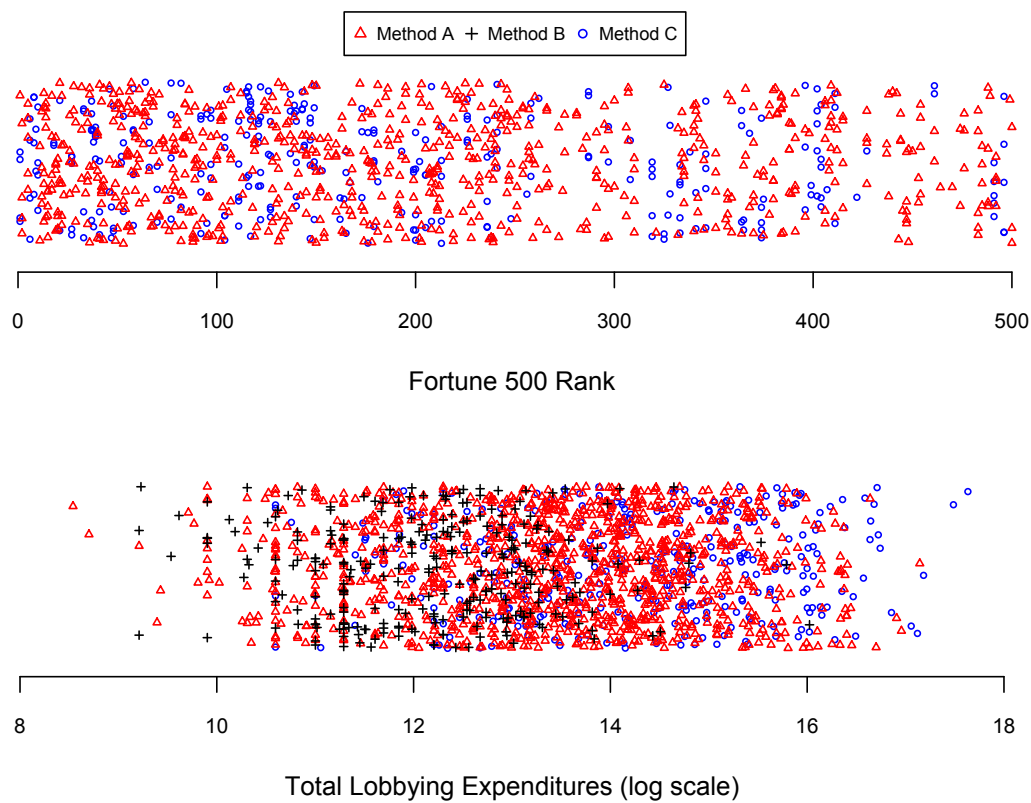


Figure 4.4: Filing method by Fortune 500 rank and total lobbying expenditures.

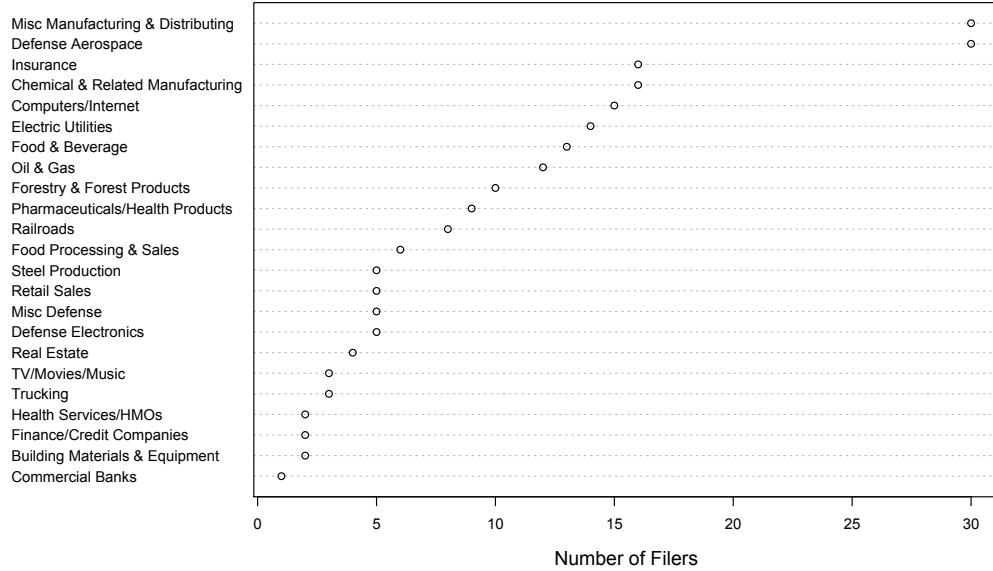


Figure 4.5: Number of method C filers by industry classification.

Is the use of method C associated with companies in a particular sector of the economy? To address this question I used the catcode assigned to each filer by CRP. CRP's catcodes are based on SIC codes, which were created by the federal government to classify members of industry. Figure 4.5 shows filers grouped by catcode. While some industries are clearly better represented than others, the small sample size makes it difficult to say for sure if these are real differences. Since some organizations were not assigned catcodes by CRP, only 216 data points were available for this analysis. Moreover, because there are multiple years of certain organizations, a few companies may be driving high numbers as, for example, in defense aerospace, where both Northrop Grumman and Boeing are method C filers.

There are few obvious patterns in the use of a particular accounting method. The next step is to try to estimate the extent of state lobbying for method C filers. To try to generalize from my six states, I obtain the gross state product (GSP) of each state in each year. My six states constitute roughly 30% of the US economy. For each of my method C filers, I divide

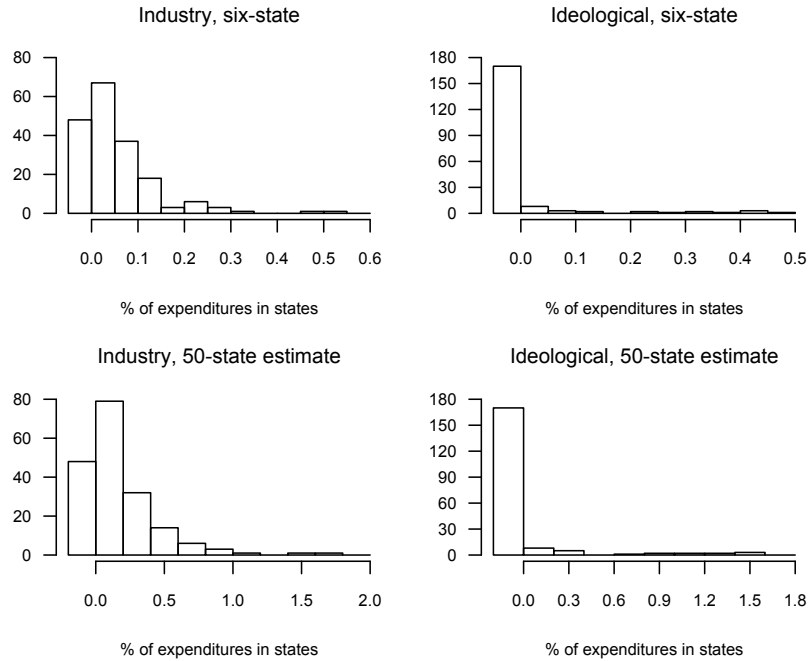


Figure 4.6: Percent of lobbying expenditures originating in the states. The first bar in each graph represents filers who were not active in any state.

the sum of the filer's lobbying in all six states by the portion of the US economy my six states make up in that particular year. This scales the total lobbying amount to give us a rough idea of what spending might be across all 50 states. It is clear just from looking at the six states I collected that some companies have strong regional interests. Walt Disney, for example, spends a significant amount of money lobbying in California, but none at all in the rest of my five states save for one year in New York. Northwestern Mutual was active only in Wisconsin, while Boeing lobbied almost exclusively in Washington (they also lobbied, in smaller amounts, in California). Other firms have a broader base. Microsoft lobbied in every state in every year. Although many firms will have little lobbying outside of the states in my dataset, some others will have a large stake in states I have not covered. On average, I hope these two competing dynamics might balance each other out, giving my estimate of 50-state spending some validity. Still, it is only a rough estimate.

The histograms in Figure 4.6 show the distribution of the percent of total LDA reported lobbying expenditures that were actually state expenditures. The top row shows only my six states, while the bottom row extrapolates to all 50 states. On average, about 4% of lobbying expenditures reported by LDA filers took place in my six states, or about 13% of lobbying expenditures if we adjust the total for all 50 states. There were sharp differences, however, between ideological organizations and industry organizations. There was, however, significant variation in this mean, as the histograms show (a few of the adjusted percentages exceed one). Among industry groups, 6% of lobbying expenditures took place in my six states, or about 19% of expenditures after adjusting for GSP. Nearly 75% of industry filers had expenses in at least one of my states in at least one year. Industry organizations that had at least some state expenses spent an average of 8% of their total LDA reported expenses in my six states (25% adjusted for GSP).

Ideological organizations were a different story altogether. Only 12% of the ideological groups in my sample had any state spending at all. On average, ideological groups spent just 2% of their LDA reported expenses in the six states, just 7% after adjusting for GSP. Ideological groups that spent at all in the states, however, tended to spend quite heavily. The average percentage of total lobbying expenses that were in the six states for ideological groups that performed state lobbying was 18%, or nearly 60% after adjusting for GSP.

For certain kinds of scholarship then, filing methods for the LDA data may have a minimal impact. If ideological groups are being studied, the data may be fairly safe.⁹ Most private industry filers, however, have at least some expenses in the states and in some cases these expenses are quite large. In the next section, I review existing and upcoming scholarship that makes use of LDA data. I then replicate the analysis of one study with simulated error in LDA amounts mirroring the results I have found in this section.

⁹A small number of ideological groups do, however, perform a significant amount of their lobbying activities in the states. This could have a substantial impact on small N studies.

4.4 Impact on Existing Scholarship

I collected 15 articles and one book that have used LDA data in some form. None of the works I reviewed demonstrated an awareness that LDA spending does not solely reflect federal lobbying expenditures. In fact most specifically stated that LDA expenditures reflect federal lobbying expenses. In this section I give a brief overview of the kinds of questions that scholars are using LDA data to answer. I then replicate a working paper to demonstrate how the existence of method C filing might alter empirical results in the field.

4.4.1 The Decision to Lobby and the Intensity of Lobbying

Scholars have long been interested in how firms decide whether or not they will be politically active. Prior to the existence of LDA data, this problem could only really be tackled using PAC contributions (see, for example, Grier, Munger and Roberts, 1994). A new crop of articles attempts to tackle the question using LDA data. Although approaches are mixed, a common approach has been to use LDA data only to determine whether or not the firm lobbies at all, and then use logistic regression to evaluate possible determinants of this dummy variable. This is the approach taken by Hansen, Mitchell and Drope (2004) and Hansen, Mitchell and Drope (2005), for example, in their empirical investigation of Olson's (1965) contention that market concentration should be positively related to the probability a firm lobbies. Since these studies are merely using a dummy variable instead of expense amounts, they are unaffected by the problem discussed in this article. The existence of an LDA report implies some level of federal spending, no matter how slight. Similarly, Baumgartner et al. (2011) and Leech et al. (2005) use a count of the number of LDA reports submitted as their dependent variable. Again, filing methods should have no impact on this measure.

Many of these studies, however, move past simply looking at the decision to lobby and also attempt to explain how a firm picks the amount it will spend on lobbying. Drope and

Hansen (2006) takes this approach in their comparison of determinants of lobbying for large and small firms. Although my dataset does not suggest any systematic difference in filing method between large and small firms, my sample is limited to Fortune 500 companies. Smaller firms are often more reliant on contract lobbyists, and contract lobbyists report only federal spending. If large firms are more likely to have lobbying expenses that could be reported under method C, then this suggests that large firms will appear to have higher lobbying expenditures than they actually do. This potential bias makes the comparison of small and large firms, as Drope and Hansen (2006) attempt, problematic.

Brasher and Lowery (2006) similarly look at determinants for the amount of money spent by a firm per issue lobbied, but they find no significant results for this particular regression. Chen, Parsley and Yang (2010) are specifically interested in the link between lobbying and financial performance, and they find that the amount of lobbying a firm does is positively related to several different measures of a firm's financial health. In a related vein, McKay (2011) looks at who firms lobby, and finds that lobbying expenditures are positively related to the decision to lobby the executive branch instead of Congress.

4.4.2 How Lobbying Impacts Outcomes

Although the question of how money spent on politics translates into actual policy influence is one of the most important questions in the field of political science, it is also one of the most difficult to answer. Several recent studies using LDA data have helped us to expand our knowledge incrementally.

Ansolabehere, Snyder and Tripathi (2002) are interested in whether PAC contributions buy lobbyists access. They use LDA data in a descriptive sense only; In their regressions they are concerned only with a dummy indicating if a firm lobbied or not. de Figueiredo and Silverman (2006) examine academic earmarks and finds that universities who have representation on the House or Senate Appropriations Committees receive more earmarks when

they lobby. Universities without representation receive no benefit from lobbying. Although I have not specifically looked at universities in this article, I believe that de Figueiredo and Silverman’s (2006) sample is likely robust to method B filing (since most universities are non-profits). The vast majority of universities are unlikely to have reason to lobby significantly in states other than their home state. In their home state, public universities are generally not required to report lobbying expenses incurred in lobbying their own legislature. Regardless of the filing method they choose, this suggests that university reported LDA expenses will be almost entirely federal expenses.

The most significant recent work in this area is Baumgartner et al.’s (2009) book on lobbying and policy movement in Congress. By surveying and interviewing Washington DC lobbyists, Baumgartner et al. (2009) construct a snapshot of all the groups in favor of and opposed to a sample of issues. For each issue, they track congressional activity on the underlying bill or amendment in question. Using this impressive dataset, they attempt to address, “who wins, who loses, and why.” The core finding of the book is that while LDA expenditures are positively related to policy success on the margin, most issues are characterized by equally powerful groups on both sides of an issue, with neither side having a spending advantage over the other. The result is a slow process of incremental policymaking. It is difficult to say what impact filing method would have on Baumgartner et al.’s (2009) results. Their sample is relatively small, so if a number of the interest groups in their sample are method C filers, the impact could be substantial. Whether the sample contains many method C filers or not is largely a matter of luck.

4.4.3 Business Ethics

Researchers in business schools have used LDA data to tackle questions of ethical business practices. Yu and Yu (2011) show that firms that lobby are more likely to get away with fraudulent activities and that when they are detected, detection times are longer. This

article is an interesting case, because fraudulent behavior may be linked to filing method in a non-random way. Picking a filing method, after all, is essentially a choice between hiding your state expenditures or hiding your contacts in the executive branch. Fraudulent firms might have a strong preference for one over the other.

Cho, Patten and Roberts (2006) find that firms with poor environmental records are more politically active. These firms essentially find it necessary to carefully manage their relationships with the government due to their potentially unpopular activities. As with Yu and Yu (2011), the distribution of method C filers over firms with good environmental records and poor environmental records may not be random.

4.4.4 Return on Investment

A common endeavor in the economic literature is measuring the return on investment that firms receive when they lobby. This is a difficult task, since firms may receive benefits even when they do not lobby, and it is difficult to establish this counter-factual. Because of this, the existing literature has approached this in a fairly impressionistic way, by looking at marginal returns in a regression framework, as Hill et al. (2011) do, or by simply dividing benefits on some particular issue by amount spent, as Alexander, Mazza and Scholz (2009) do. Despite very different samples and methods, these studies arrived at a fairly similar conclusion. Both find that the return on \$1 of lobbying is about \$200. Since the possibility of method C filing can only depress the amount of money that firms spend on federal lobbying, the only possible result for this body of literature is for estimated returns on lobbying to increase.

4.4.5 Miscellaneous

Finally, Bertrand, Bombardini and Trebbi (2011) attempt to distinguish between two theories of lobbying that have been put forth by political scientists. First, that a lobbyist's role is

primarily to leverage his or her connections to influence policy, and second, that a lobbyist's role is primarily to use his or her expertise and subject knowledge to influence policy. The connections theory is found to be better supported by their analysis. One section of the analysis involves determining how connections and knowledge impact a lobbyist's income (estimated using LDA data). The authors focus exclusively on contract lobbyists for this part of the analysis due to computational constraints. Since all of a contract lobbyist's expenses are necessarily federal expenses, filing methods have no impact on their analysis. If, however, the authors extend their analysis to in-house lobbyists, filing methods may pose a challenge for their method.

4.4.6 An Empirical Investigation

To investigate how different filing methods available under the LDA might affect empirical research, I replicate a recent working paper by Chen, Parsley and Yang (2010). Their manuscript attempts to quantify the financial return to lobbying activities. Although this is a well-worn topic in the economics literature, it has only recently become feasible to leverage LDA data for this purpose.¹⁰

I chose Chen, Parsley and Yang (2010) for a number of reasons. First, the data can be easily reproduced. Their sample consists of all firms found in Standard and Poor's COMPUSTAT database. The COMPUSTAT database records accounting data for more than 33,900 firms. Some companies in the database are tracked as early as 1950. To assess the returns to corporate lobbying, Chen, Parsley and Yang (2010) combine the COMPUSTAT database with CRP's database of LDA filers. They use three dependent variables that measure firm performance: income before extraordinary items, net income, and cash from operations. Their independent variables are lobbying in the previous year, assets, market-to-book ratio,

¹⁰A more common approach to the question of corporate political influence is to regress financial measures of success on the amount of money given by a firm's PAC. See, for example, Cooper, Gulen and Ovtchinnikov (2010).

Table 4.1: Replication of Table V, column 1 of Chen, Parsley and Yang (2010). The dependent variable is income before extraordinary items. Estimated by OLS. Fixed effects for each year and industry are not shown. All financial variables are in millions of dollars.

Independent Variable	Table V, Column 1 of Chen, Parsley and Yang (2010)	Replication
Lobbying in $t - 1$	76.528* (10.745)	88.424* (5.785)
Total assets	0.002* (0.000)	0.004* (0.000)
Market-to-book ratio	-0.001 (0.003)	0.004 (0.036)
Dependent variable in $t - 1$	0.642* (0.024)	0.452* (0.006)
Dependent variable in $t - 2$	0.192* (0.027)	0.224* (0.006)
Number of observations:	30622	25515
R^2	0.748	0.550

Standard errors shown in parenthesis.

* significant at the $p \leq 0.05$ level

and two lags of the dependent variable. Their results show that lobbying is positively related to each of their three dependent variables.¹¹ For the purposes of my replication, I look at just one of their dependent variables, income before extraordinary items, and just one of many regression models they present.

To replicate Chen, Parsley and Yang (2010), I follow their procedure to merge the data from COMPUSTAT to the LDA data collected by CRP. The primary difficulty in doing so is that CRP does not use standard identifiers for the firms in its dataset, so firm names in each dataset must be matched to each other manually. Table 4.1 gives the results of my replication alongside the original regression results in their manuscript. Discrepancies between the two columns of Table 4.1 can be attributed to a few factors. The authors did not explain how they computed the market-to-book ratio. This is not a variable in the

¹¹That lobbying is correlated with firm success is hardly surprising. The authors take steps to limit endogeneity, but some skepticism regarding the causal relationship they posit is warranted. Simply lagging lobbying spending is not a fix for endogeneity. The authors also use a system of equations where the decision to lobby is estimated via probit. As Olson (1965) famously noted, firms that lobby have solved certain collective action problems, and are more likely to be members of concentrated markets. This suggests that a company's wealth may actually cause it to lobby more.

COMPUSTAT database but rather is calculated using other columns. There are different ways to calculate the market-to-book ratio and the variables involved may have different patterns of missingness, leading to a different N in the final model. Moreover, matching firms in the COMPUSTAT database to firms in CRP's database of LDA filers is not easy. CRP gives very few identifying details for each firm.¹² Errors in this matching process partly explain why my results do not mirror Chen, Parsley and Yang's (2010) perfectly.

It is, unfortunately, impossible to correct the lobbying expense totals associated with each firm in this dataset. First, there is no simple way to automate the determination of a firm's filing method. For a dataset with more than 25,000 observations, this is a serious concern. Even if the method of filing was manually determined for each observation in the dataset, it would be impossible to determine what the true federal lobbying expenses for a method C filer were. Because most states do not disclose lobbying expenditures, there is no way to recover the value of state level lobbying expenses that are lumped in with federal ones for a method C filer.

Because the true amount of federal lobbying is impossible to determine, I take a different approach to evaluating how method C filers may be impacting Chen, Parsley and Yang's (2010) results. I create 1,000 simulations of the dataset with alterations to the lobbying expenses variable that mirror my results from the first half of this paper. There are two determinations to be made for each firm. First, I perform a random draw to determine whether or not the firm will be considered a method C filer. I found that industry filers use method C about 29% of the time, so I draw a random number between 1 and 100 for each of the 25,000 firms in my dataset. Firms that draw less than 30 are designated method C filers.

¹²This is a flaw of the LDA filing process rather than any failing on CRP's part. Filers are only required to give a company name and an address. They are then assigned a unique identifier by the Office of the Clerk (the Senate and the House assign different identifiers). This is often not enough information to conclusively link a filer with a fairly generic name to one of several firms in the COMPUSTAT database that share that name or variations on it.

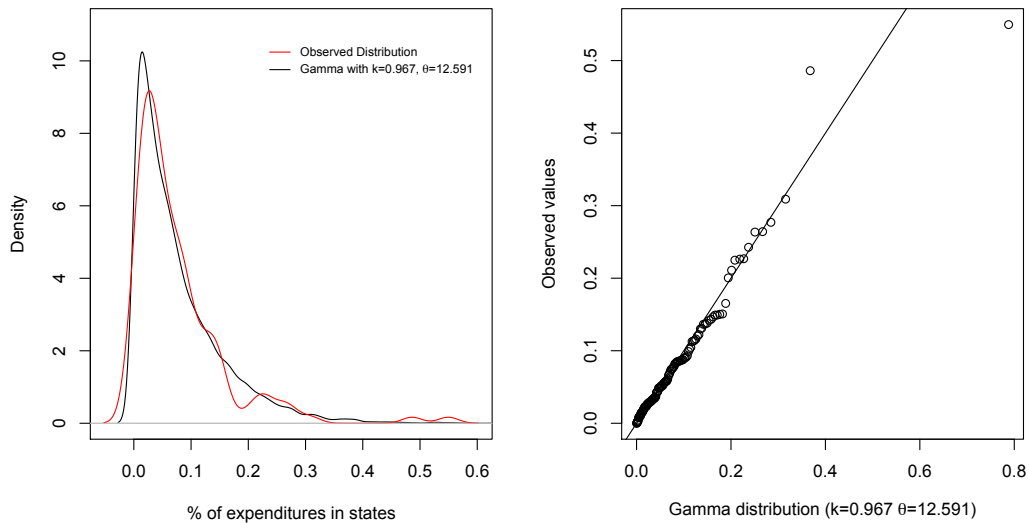


Figure 4.7: A histogram and quantile comparison chart comparing the observed data for method C filers and a gamma distribution fit to the data.

The next step is to determine what portion of a method C filer’s expenses will be designated state spending. To do this, I attempt to model the PDF implied by the upper left graph in Figure 4.6. I use the `fitdistr` command in Venable and Ripley’s (2002) MASS package for R to estimate appropriate parameters for a gamma distribution. The suggested gamma distribution has a shape parameter of 0.967 and a rate parameter of 12.591. The first graph in Figure 4.7 shows this gamma distribution overlaid on my observed data. The second graph in Figure 4.7 shows a quantile comparison chart. While the match is not perfect, it appears to fit my observed data fairly well. For each of the firms that is designated a method C filer by my random draws, I take a random draw from this gamma distribution to determine the percent of the filer’s spending that will be designated as state spending. I then adjust the filer’s total federal lobbying accordingly. All of the firms in the dataset that lobbied receive a filing method designation and, if necessary, an adjustment to their federal

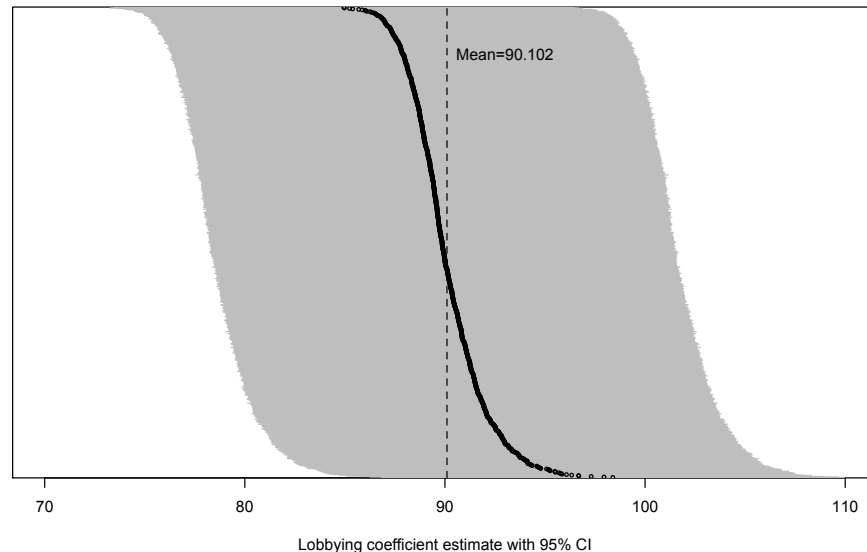


Figure 4.8: Coefficient on the lagged lobbying variable after adjusting according to 6-state lobbying numbers. The gray area shows 95% intervals. The dashed line shows the mean of all 1,000 coefficients.

lobbying expenditures. I create 1,000 datasets along these lines and estimate the model from Table 4.1 for each of them.

Figure 4.8 presents the coefficient on lagged total lobbying for each of the 1,000 models, ordered by size of the coefficient. As the graph shows, the mean coefficient is not far from the estimated coefficient in Table 4.1: about 90 versus about 88. Significant deviations from this are, however, quite possible. The simulated coefficients are as low as 85 and as high as 96. These estimates are based on my 6-state lobbying expense dataset. What if I instead use the extrapolated 50-state numbers? I do this next. Instead of simply reducing total lobbying expenditures by a percentage given by a draw from the gamma distribution, I draw from the gamma distribution and then divide by the approximate percentage of the US economy that my six states make up (0.3). Whereas under the 6-state method the average reduction

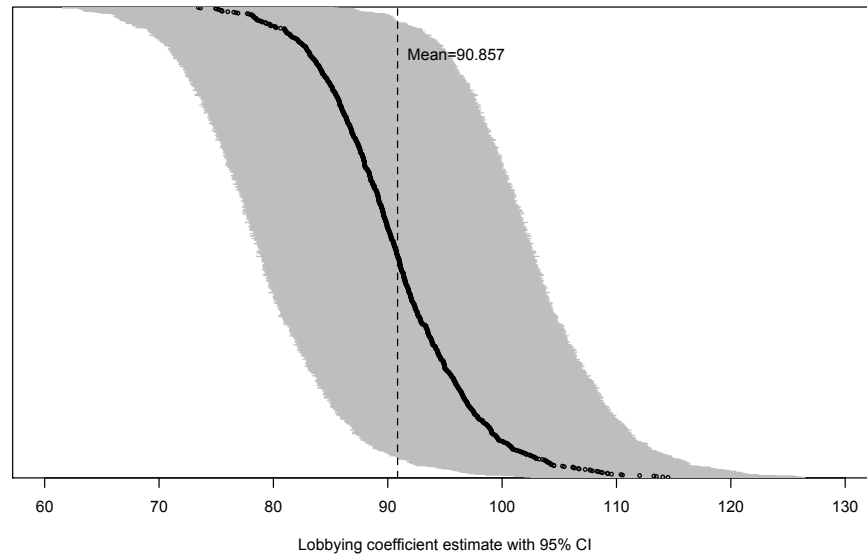


Figure 4.9: Coefficient on the lagged lobbying variable after adjusting according to 50-state lobbying numbers. The gray area shows 95% intervals. The dashed line shows the mean of all 1,000 coefficients.

in federal spending for method C filers was 5%, under the 50-state extrapolated method it is closer to 17%.

Figure 4.9 shows the results of extrapolating from my observed 6-state distribution to a 50-state distribution. The range of possible coefficients is now much wider, with lows of just over 70 and highs around 115. The magnitude of the coefficient is therefore greatly affected by the possibility of method C filers.

It is critically important to note that Figures 4.8 and 4.9 should not be interpreted as probabilistic statements of any sort. Just because most simulations are close to the estimate obtained by Chen, Parsley and Yang (2010) does *not* indicate that their estimate is close to the population parameter. It could very well be that the empirical distribution of method C filers is such that the population parameter is much higher or much lower than the average.

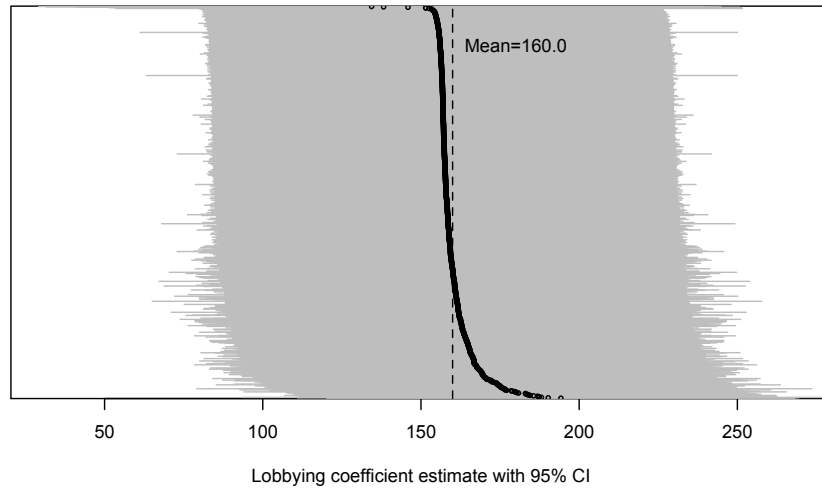


Figure 4.10: Small data set simulation ($N=500$). Coefficient on the lagged lobbying variable after adjusting according to 6-state lobbying numbers. The gray area shows 95% intervals. The dashed line shows the mean of all 1,000 coefficients.

The simulations are rather indicators of how large of an impact accounting for method C filers might have, if we could accurately account for all of the state spending involved.

Because Chen, Parsley and Yang (2010) are working with a massive sample, there is little threat of losing statistical significance. This is a far more worrisome possibility for studies that rely on a relatively small N , where the alteration of just a few observations might impact both the coefficient estimate and the standard error of the coefficient estimate in substantively important ways. To see what the impact might be on a smaller data set, I remove all but 500 data points from my replication data set at random. Figures 4.10 and 4.11 show the results of running the same simulations on this significantly smaller dataset.

The results show that variation in coefficient size is markedly increased when the sample is smaller. Using 6-state lobbying numbers, the coefficient now ranges between around 125 and around 200, with a mean of 160. These coefficients also have larger standard errors. Using 50-state lobbying numbers, the difference is even more dramatic. In this simulation, the

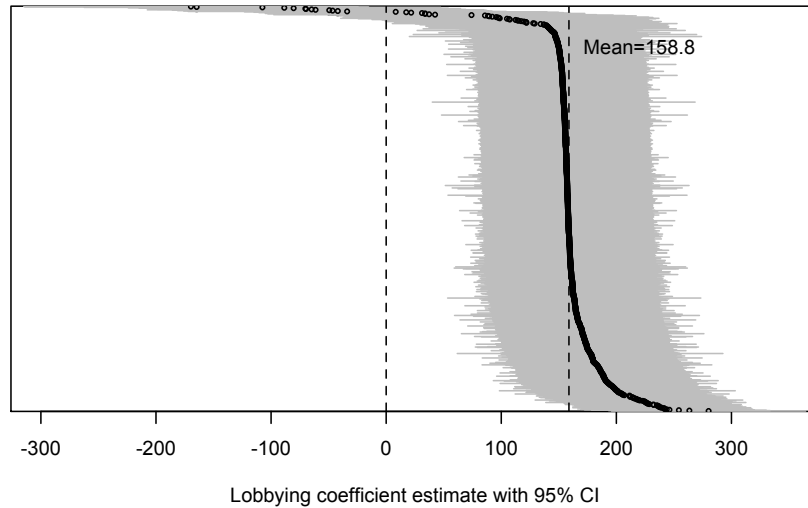


Figure 4.11: Small data set simulation (N=500). Coefficient on the lagged lobbying variable after adjusting according to 50-state lobbying numbers. The gray area shows 95% intervals. The dashed line shows the mean of all 1,000 coefficients.

coefficient in some samples is not significantly different from zero. Moreover, the coefficients range between -200 and nearly 300, with a mean of 158. Models with small samples run a significantly higher risk of error in coefficients due to filing methods B and C.

4.5 Discussion

How should scholars approach LDA data given the discrepancies introduced to the data by the different expense accounting methods? For some research, there will be little or no impact. For scholars who are primarily interested only in the binary decision to lobby or not lobby, LDA data is perfectly reliable. For scholars interested only in very particular slices of the interest group community, as de Figueiredo and Silverman (2006) are, the risk may likewise be minimal if it can be shown that the particular community in question tends to

use method A or has little in the way of state lobbying expenses. My results show that the impact may be minimized when nonprofits are the only groups in question.

Unfortunately, most of the interesting questions scholars have tackled with LDA data involve for-profit firms, and these are the groups that are most likely to use method C and often have significant state lobbying expenditures when they do use method C. Researchers should be cautious and attempt to understand how many method C filers are in their dataset.

There is already a strong level of awareness of some of the LDA data's other problems that have not been mentioned here. Filers are not required to report their spending by issue for example, so researchers have commonly taken the amount of spending and divided it by the number of issues a lobbyist worked on. While this is an imperfect fix, awareness of the issue allows authors to conduct appropriate robustness checks and readers to make their own opinions about data validity. The same caution is advisable in this case. No simple fix is available if a dataset features many method C filers, but adopting robustness checks similar to the one I adopted in replicating Chen, Parsley and Yang (2010) may be a viable strategy for authors who still wish to use the LDA data. Doing so will give us a more complete picture of the uncertainty associated with an analysis.

Chapter 5

CONCLUSION

Because the application of industrial organization to interest groups is an entirely new endeavor, the first two articles presented in this dissertation raise many questions and beg for future refinement. The most obvious extension is to test other interest group markets to verify that these results have external validity. This is a difficult endeavor, because many interest group markets are trying to influence policy outcomes that are far more amorphous than the abortion rate. With careful thought, a few more markets may be amenable to this kind of analysis. Environmental groups, for example, could be evaluated based on environmental quality in their state, but this requires attention to the types of groups involved and the specific outcomes that each group has targeted. Another possible approach might mirror Baumgartner et al. (2009) and track the outcomes of legislation in Congress. The Baumgartner et al. method requires some knowledge of which groups lobbied on particular bills (knowledge that Baumgartner et al. obtain through interviews) and how much each group spent – a piece of information that is complicated by the findings in the fourth chapter.

Another way in which the empirical model could be improved is by constructing both sides of a market. As I mentioned in the third chapter, my inability to accurately construct a pro-choice market introduces omitted variable bias into the model. Constructing two sides of an issue presents its own challenges, since asymmetries between the types of groups on each side of the issue complicates measurement. Consider the environmental market again.

Various members of the energy industry are one source of opposition to the environmental lobby. Because these groups are for profit, their expenditures cannot be readily measured with non-profit tax filings. Concentration could be constructed if lobbying expenditures were known, but since few states disclose these expenses and expenses at the federal level are unreliable, this problem may be difficult to solve.

More generally, there are a vast number of possible extensions to this line of inquiry. Chapters two and three specifically address the question of market concentration, but there are many other characteristics of groups and markets that bear scrutiny. To take an example mentioned previously, the question of how niche groups affect the mobilization of supporters and total the volume of money in the market is an interesting question that that could provide an important caveat to the findings of my third chapter. Additionally, there is the question of how different kinds of lobbying tactics impact the success of efforts to change policy. In the introduction to this dissertation I discussed the possibility of comparing various lobbying tactics to one another. Is it better to leverage the grassroots or spend money on well-connected lobbyists? Should resources be allotted to convincing fence sitters or solidifying known allies? These are important questions that the discipline has yet to make serious headway on.

Where the first two articles in this dissertation suggest avenues for exploration, the third is a warning of complications in existing and future research. Researchers who choose to use LDA data should acknowledge the potential for error in their data. If possible, they should also consider examining the LDA reports of lobbying entities in their data to see if methods B or C were commonly used. Looking at a sample of state expenditures, as I did in chapter 4, may also help researchers understand the extent to which their data are affected. Unfortunately, this problem will continue to plague empirical inquiry into interest group influence until a more comprehensive solution to the problem is found. As the detail included in online XML records of LDA filings improves, it may eventually become possible

to determine which lobbyists use methods B or C in an automated way. While this would represent a significant step forward, simply excluding these groups is likely to introduce bias. Unless LDA filing requirements change¹ researchers will have to take care in using them.

¹The Lobbying Disclosure Act has been modified once, in 2007, so change would not be unprecedented.

Appendix A

Identifying Interest Groups in Each State

To identify pro-life interest groups in each state, I first used the National Center for Charitable Statistics (NCCS) core files, which collect data on the 990 tax returns of nonprofit groups, to isolate groups with NTEE codes R62, R24, and R01, which are the codes for right to life, women's rights, and civil rights alliances and advocacy. An examination of many well known pro-life groups shows that these are the codes that pro-life groups are generally categorized as. After culling groups with these codes from the entire NCCS core files, I was left with a large list of groups, most of which were not actually pro-life groups.

The next step was to create a Python script that matched group names from the large list of R62, R24, and R01 groups against keywords that I designated (for example, "life," "Christian," and so on). I choose words that I believe will catch most pro-life groups and then run the script on the list of R62 groups, all of which I know are pro-life groups. The script will cull some of the R62 groups, so I look at the names of groups that were culled and add a word from their name to the script's list of keywords. I continue doing this until running the script on the list of R62 groups does not result in any groups being deleted. I then run the script on the R24 and R01 lists.

After pruning the R24 and R01 lists with my script, I am left with a collection of possible pro-life groups. Now each one must be verified by hand. I use two resources to do this. First, I check the group's 990 tax filings. Nonprofit groups are supposed to list their main activities,

and it is often possible to ascertain a group's purpose this way. Some groups, however, give vague descriptions of their mission or no description at all. For these groups, I look for a webpage or for references in the news. If the front page, issues page, or about page of their webpage prominently mentions abortion, then these groups are added to the final list. Otherwise, they are eliminated. At this point, I have hand checked all the lists, and am left with a list of groups that I know are pro-life groups. I then organized the pro-life groups by state and year. These groups, organized by state and year, create the interest group markets that are the foundation of my analysis.

Appendix B

Descriptive Statistics

To give readers a sense of the characteristics of the markets in my dataset over time, Figures B.1 and B.2 show how total market expenditures and concentration change across the 48 continental states at two year intervals. Some states had no pro-life market presence at all (these were excluded from my analysis, since there is no meaningful way to measure concentration in a non-existent market). These are blank. Maryland and Virginia are intentionally excluded.

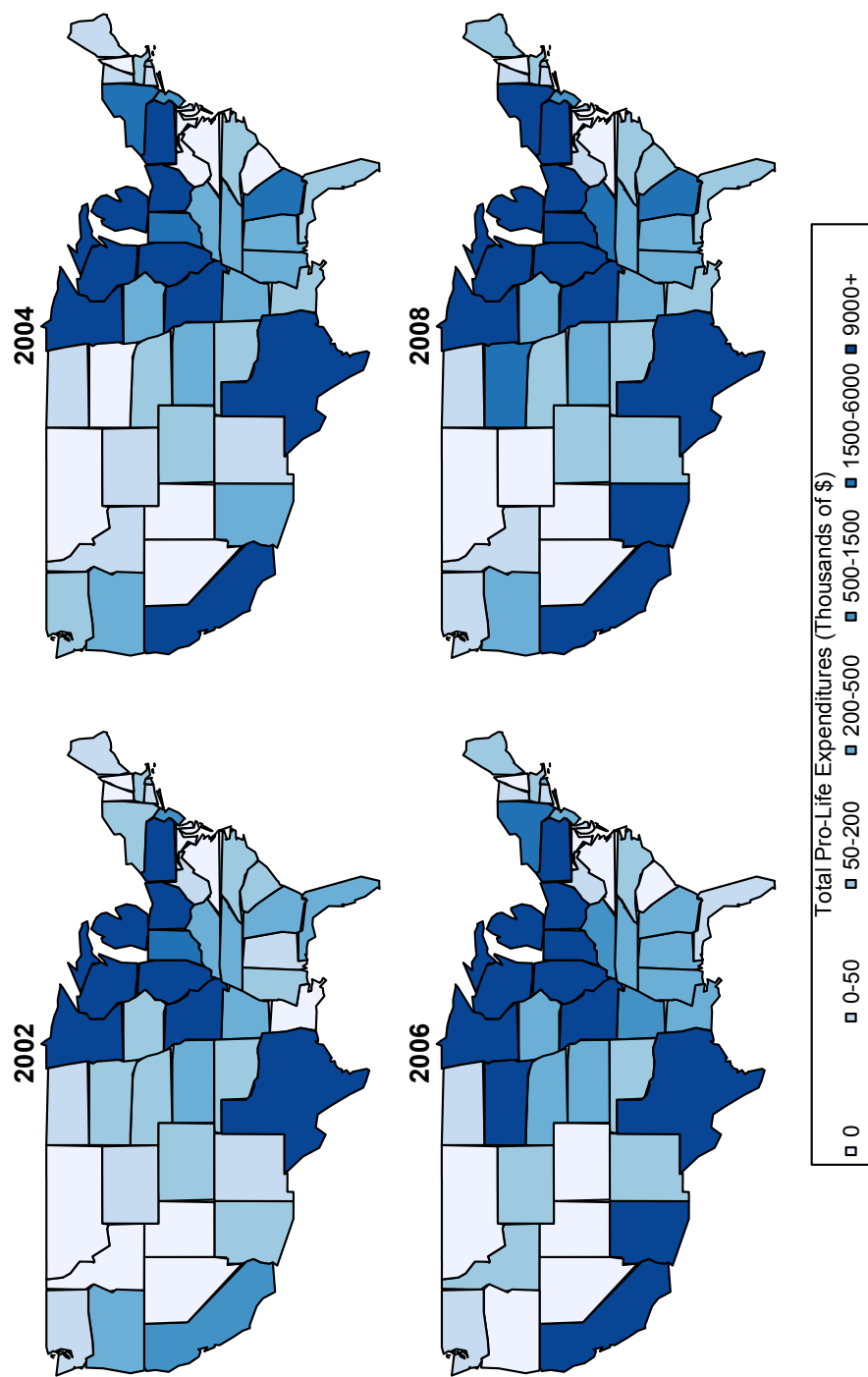


Figure B.1: Total pro-life expenditures in each of the continental 48 states across time. Virginia and Maryland have been intentionally excluded.

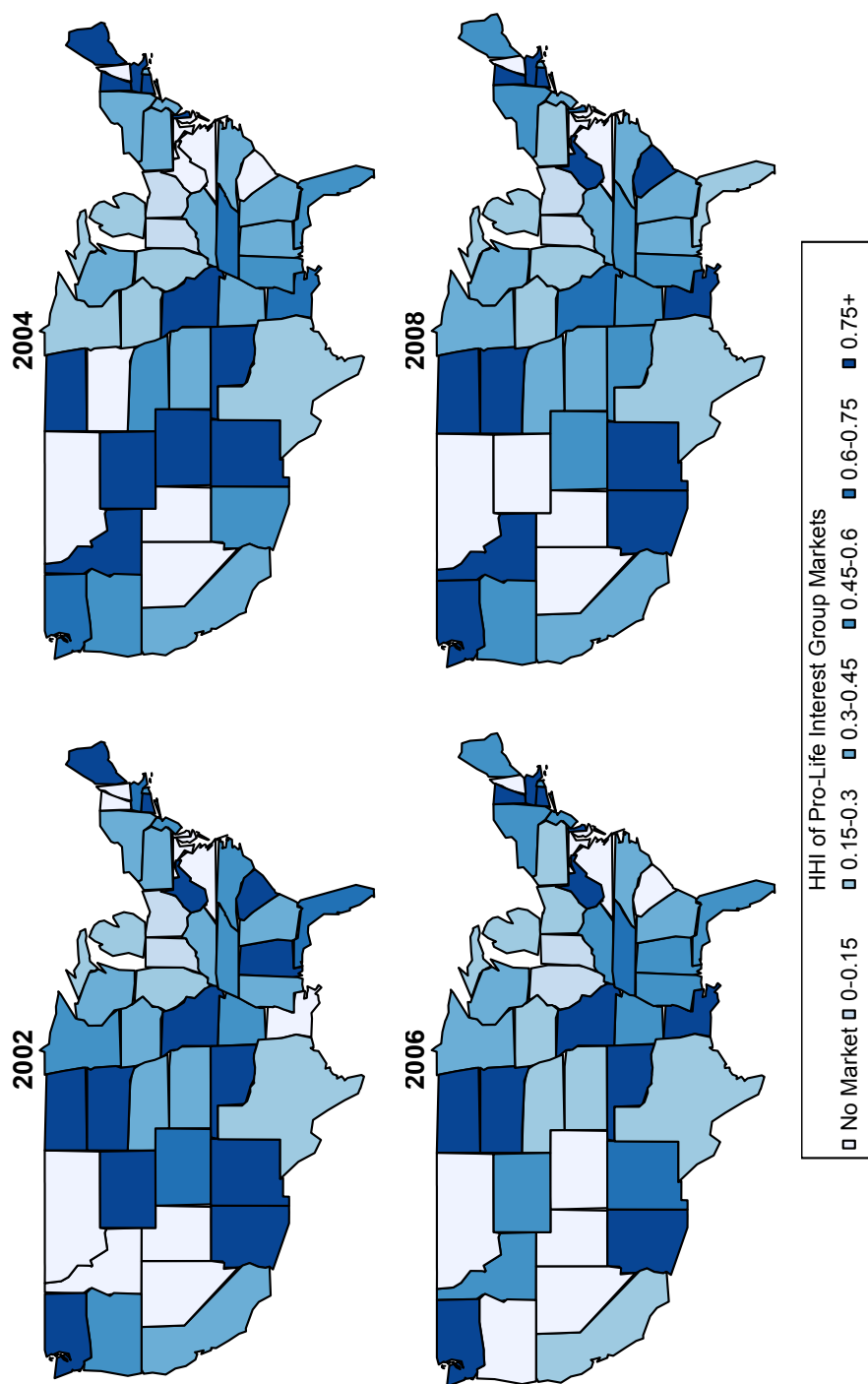


Figure B.2: Concentration of the continental 48 states across time, as measured by HHI. Virginia and Maryland have been intentionally excluded.

Appendix C

Results of the Fixed Effects Models

Tables C.1 and C.2 show the same models as Table 3.1 but with fixed effects instead of random effects.

Table C.1: Regression results for the CDC-based dependent variables, with fixed effects for states.

Independent Variable	CDC Abortion Rate	CDC Rate, minus states that underreport by 3 or more on average
HHI of Pro-Life Market	-1.437** (0.539)	-1.220** (0.578)
Pro-life spending - pro-choice spending per capita	-0.023 (0.157)	-0.025 (0.123)
Governor Dummy (1=Democrat)	0.172 (0.193)	0.069 (0.211)
% of state legislature (both chambers) that is Democratic	-0.402 (0.847)	-0.151 (0.989)
Lag of state legislature composition	2.724* (1.464)	1.483 (1.261)
NARAL state pro-choice grade (1=A+, 13=F)	0.140 (0.115)	-0.003 (0.080)
Income per capita (thousands)	-0.022 (0.043)	-0.010 (0.056)
% females separated, never married, or with absent spouse	12.312* (6.802)	4.879 (7.345)
Unemployment rate	0.036 (0.044)	0.032 (0.046)
Median age	-0.482** (0.208)	-0.461* (0.244)
Constant	25.164** (8.767)	27.843** (9.821)
Number of observations:	301	240
ICC:	0.97	0.97

Standard errors shown in parenthesis.

* significant at the $p \leq 0.10$ level

** significant at the $p \leq 0.05$ level.

Table C.2: Regression results for the Guttmacher Institute based dependent variables, with fixed effects for states.

Independent Variable	GI Abortion Rate	GI Rate, Meier and McFarlane Correction	GI Rate With Imputation
HHI of Pro-Life Market	-0.997 (0.970)	2.4780 (2.915)	-0.244 (1.258)
Pro-life spending - pro-choice spending per capita	0.428 (0.503)	0.011 (0.721)	-0.725 (0.444)
Governor Dummy (1=Democrat)	-0.306 (0.272)	-1.135 (0.943)	-0.143 (0.426)
% of state legislature (both chambers) that is Democratic	-1.338 (1.868)	16.169** (6.679)	0.554 (3.489)
Lag of state legislature composition	1.521 (1.803)	-14.766* (7.477)	-0.603 (2.582)
NARAL state pro-choice grade (1=A+, 13=F)	-0.243 (0.199)	-0.285 (0.238)	-0.244 (0.230)
Income per capita (thousands)	-0.023 (0.069)	-0.460** (0.229)	-0.111 (0.089)
% females separated, never married, or with absent spouse	10.061 (13.375)	-2.710 (31.874)	6.002 (13.958)
Unemployment rate	-0.006 (0.083)	-0.412 (0.238)	-0.067 (0.099)
Median age	-0.566** (0.223)	-1.328 (0.958)	-0.526 (0.316)
Constant	37.128** (8.845)	50.490 (35.838)	31.589* (13.133)
Number of observations:	202	311	367
ICC:	0.96	0.55	—

Standard errors shown in parenthesis.

* significant at the $p \leq 0.10$ level

** significant at the $p \leq 0.05$ level.

Appendix D

Imputation Details

I impute missing abortion rates in the Guttmacher Institute data using Amelia II (Honaker, King and Blackwell, 2009). Since the Guttmacher Institute’s decision to collect data in certain years is a result of inadequate funding, I believe it is plausible to claim that the data are missing at random. Missingness is not a function of the unobserved values. Moreover, my observed covariates should be good predictors of the missing values.

I impute using all the covariates in my model in addition to a few covariates that were not used due to collinearity or lack of explanatory power that may nonetheless be useful for imputation. I also include both a lag and a lead of the abortion rate. Most observations also have priors associated with them. The priors are obtained by taking the CDC abortion rate and adjusting it according to the average discrepancy between the CDC’s observed abortion rate and the Guttmacher Institute’s observed abortion rate within a state. For example, if the CDC recorded the state’s rate for a year as 20, and the average difference across all years between the CDC rate and the Guttmacher rate for that particular state is 20%, then the prior is $20 + 0.2(20) = 24$.

The first graph in Figure D.1 shows the overlaid histograms of both the observed data and the imputed data. The two are relatively similar although the imputed data has less density at higher abortion rates. This appears to be attributable to the imputation model’s poor performance at high abortion rates.

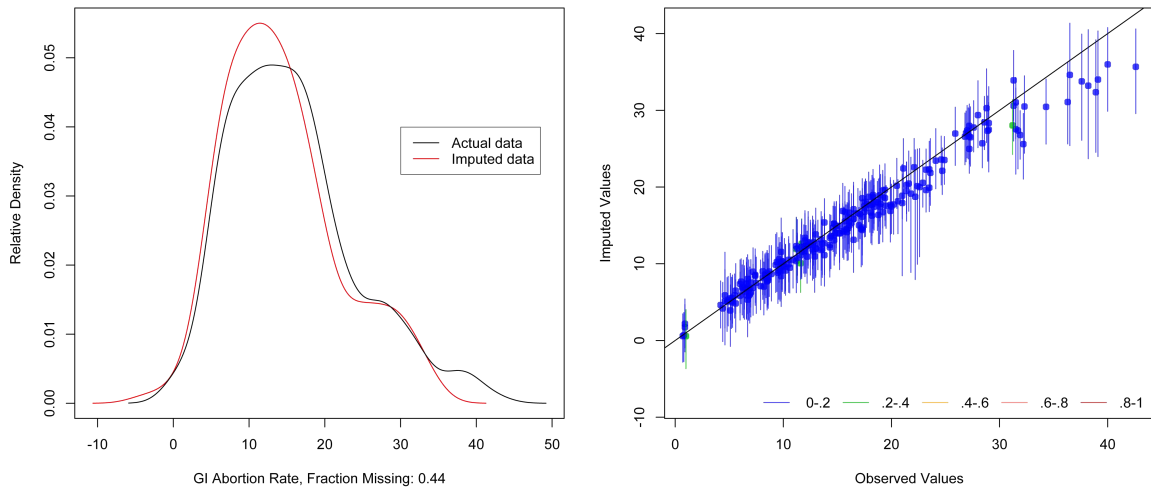


Figure D.1: Histogram of observed data and imputed data for the Guttmacher Institute's abortion rate.

The second graph in Figure D.1 shows the results of overimputation. Overimputing involves treating observed data as missing and then imputing it to check the fit of the imputation model. The x-axis reports observed values while the y-axis reports the value predicted by the imputation model for each observation. Since each value has been imputed, there is some uncertainty associated with the imputed values: the dots are mean imputed values with 90% confidence intervals. The color of each observation shows the percentage of covariates that are missing. For the vast majority of my data, there was no missingness in the covariates or very little missingness.

When imputed values lie on or near the black 45 degree line, the imputation model's prediction is very close to the observed data. As Figure D.1 shows, predictions are excellent for low values of the abortion rate, but become considerably more uncertain, and inaccurate, at higher observed values of the abortion rate. Moreover, the imputation model seems to systematically underpredict the abortion rate when observed values are high.

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