

Economic Concentration and Political Advocacy, 1999-2017

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Abstract

The growing concentration in markets raises important questions about the political power of large firms and concentrated industries. Indeed, many scholars and activists have sounded alarms about the dangers of monopoly for democracy and have called for reforming antitrust law to consider the political implications of greater market power. But to date there has been little systematic evidence linking increased economic concentration to democratic harms in established democracies. This paper reports on our preliminary effort to fill this gap by exploring the correlation between the economic concentration of an industry and the lobbying expenditures of its firms. Linking lobbying data with industry-wide and firm-specific economic data, we investigate whether lobbying expenditures have become more concentrated over time and whether this concentration in the political market is associated with concentration in economic markets. Our preliminary results are mixed but do not suggest a strong relationship between the concentration of economic and political markets. We also outline the many additional avenues of inquiry opened up by our data that we are currently pursuing.

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In recent years economic inequality has become a focus of academic and public debate. Economists have documented substantial and growing inequality in the United States. They have also documented a substantial increase in industry concentration—i.e., the market share held by a small number of firms—in many sectors of the economy. Growing concern about economic inequality and market concentration has led to greater scrutiny of the possible links between the economic and political power of firms. Of particular concern is the possibility of a “Medici vicious circle” (Zingales (2017)) where economic power begets political power which begets more economic power. Many scholars and activists have accordingly sounded alarms about the dangers of monopoly for democracy. Some are calling for reforms of antitrust law to consider the political implications of greater market power (e.g., Wu (2018), Teachout (2020)). Under this “neo-Brandeisian” view, antitrust should broaden its focus beyond consumer welfare (mainly manifested in prices) and concern itself also with how citizens are disadvantaged when a few economically powerful firms can dictate public policy (see Lamoreaux (2019) for an overview). The concern that economic power can translate into political power seems sensible; indeed, it was a main motivation for the enactment of the Sherman Act in 1890 (e.g., Hofstadter (1965)). But there is little systematic evidence linking increased economic concentration to democratic harms in established democracies. More broadly, there is little systematic evidence linking economic concentration with a more concentrated market in political advocacy and lobbying. This paper tries to fill this gap.

Our preliminary focus is primarily descriptive. We uncover trends in the concentration of firm political advocacy and demonstrate their correlation with the trends in market concentration. Specifically, we address questions such as: What is the relationship between the economic size of an industry and the amount and concentration of lobbying in that industry? What is the overlap between top economic firms and the top spenders on lobbying? How do these patterns vary across industries and over time? Although we are limited

in what we can say at this preliminary stage about any causal relationships between the concentration of political and economic power, the patterns we uncover will hopefully lay the foundation for future theoretical and empirical work.

Section 1 describes the existing literature linking economic concentration and firm size to corporate political activity, while Section 2 describes the legal requirements of the Lobbying Disclosure Act from which much of our data is drawn. Section 3 describes our data sources, our efforts to improve existing datasets, and our new data. We begin our analysis in Section 4 by reporting the aggregate patterns of lobbying expenditures over the past two decades and putting them in perspective by comparing them to GDP figures for the same time frame. Section 5 breaks down the composition of lobbying participants, using our new data to show how much is contributed by different kinds of entities.

We then turn to the question of the relationship of firm size to spending on political advocacy. Section 6 reports who the big spenders on lobbying are and how much they overlap with the wealthiest firms. Section 7 discusses our measures of “political concentration,” the conceptual and practical challenges attendant to such measurement, and the comparison to economic concentration. Section 8 breaks down the lobbying data by industry and issue, including aggregate lobbying statistics on all sectors and case studies of specific sectors and important issues.

Finally, Section 9 develops some multivariate models of political concentration from which we estimate the correlation between political and economic concentration, conditioning on several economic and political variables. These reduced form estimates shed light on the central question of whether increasing economic concentration has led to greater concentration of the marketplace for political advocacy through lobbying. Section 10 concludes with some lessons from this preliminary analysis and some thoughts for future work.

1 Related Literature

Our paper is motivated by emerging debates surrounding the increase in the concentration of market power in the US and its broader implications (see for example De Loecker, Eeckhout and Unger (2020), Autor et al. (2020), Gutiérrez and Philippon (2017), and Rossi-Hansberg, Sarte and Trachter (2018)). Much of this debate has focused on economic explanations such as the emergence of “superstar” firms, the role of fixed IT investments, or increases in the elasticity of consumer demand. Several legal scholars have focused more on the political dimensions on these trends (see, e.g., Wu (2018) and Teachout (2020)). These scholars have argued that antitrust law should be reformed to return to its political roots, paying attention to the consequences of monopolization or mergers, not just in terms of rising prices for consumers but also in terms of firms’ rising political power. More recently, scholars have begun to integrate the economic and political explanations (see Covarrubias, Gutiérrez and Philippon (2020), Gutiérrez, Jones and Philippon (2019), and Callander, Foarta and Takuo (2021).)

Several papers address the extent to which firm political activity and lobbying behavior are correlated with firm size and industry structure. Of particular relevance is Bombardini (2008), who develops a formal model of firms’ decision to lobby on trade policy. Due to industry collective action problems, small firms free ride on large firms. So industries that have large, dominant firms are more likely to engage in influence-seeking activity. In support of her hypotheses, Bombardini finds that tariff rates are lower for industries that have more dispersion in the size of firms, and that larger firms are more active in making campaign contributions, but she does not consider lobbying activity. In a related paper, Bombardini and Trebbi (2012) find that industrial sectors that are more concentrated and with more differentiated products rely more on the lobbying activities of individual firms whereas more competitive industries tend to lobby through trade associations. Similarly, Kim (2017) finds

a substantial correlation between firm productivity and lobbying in industries characterized by differentiated products. Together these results suggest that lobbying in less competitive industries should be characterized by individual lobbying by the dominant firms.

While not the main focus of their studies, many other authors consider the correlation between firm size, industry competitiveness, and lobbying activity. Overall, the results are mixed. Lee and Baik (2010) find no correlation between firm size and the likelihood of lobbying on antidumping cases. Guo (2009) also finds no correlation between firm sales and lobbying expenditure, but does find a positive relationship between a firm’s share of industry revenues and lobbying. Hansen, Mitchell and Drope (2004) find that firm revenues correlate positively with an index of corporate political activity (which includes lobbying), but find no relationship between that index and the industry concentration ratio. Hill et al. (2013) find a relationship between firm size and lobbying, but none between lobbying and the industry Herfindahl-Hirschman index. Richter, Samphantharak and Timmons (2009) and Drutman (2015) find a positive relationships between lobbying and firm employment and sales (respectively).

Finally, we share a focus with Drutman, Grossmann and LaPira (2019), who demonstrate the increasing concentration of lobbying over time in a persistent “top tier” of firms, associations, and interest groups.

2 The Lobbying Disclosure Act

Congress passed the Lobbying Disclosure Act in 1995. According to the accompanying House Report, the Act had two aims—to combat a rising sentiment that Congress was beholden to special interests and to remedy an ineffective patchwork of other federal lobbying legislation by instituting a single umbrella statute. The LDA instituted two major requirements.

First, professional lobbyists must register with the Secretary of the Senate and the Clerk of the House of Representatives. Second, lobbyists must file periodic reports detailing their lobbying activities directed at members of the federal government, including members of Congress and certain other legislative branch officials as well as the President, Vice President, and certain other executive branch officials. The reports include information such as the name of the entity doing the lobbying, the name of the entity on whose behalf the lobbying was done, the amount of money spent on lobbying, and the issues lobbied. The most significant amendment to the LDA is the Honest Leadership and Open Government Act of 2007. This amendment changed the reporting requirement from semiannual to quarterly, increased the penalties for noncompliance, and created an audit process to review lobbying registrations. Lobbying reports filed pursuant to the LDA are the main source of our data.

3 Data

We have two primary data sources. The first is In Song Kim's LobbyView, a massive project that has gathered and coded all lobbying reports filed with Congress pursuant to the LDA.¹ Kim provided a dataset comprising almost a million (972,005) observations of lobbying reports filed between 1999 and 2018. (The 2018 data is incomplete, so the analysis in this draft ends in 2017.) For each lobbying report, the dataset lists the lobbying entity, the year and amount lobbied, and certain other information. Importantly for our purposes, lobbying entities are assigned identification numbers which can be matched to firm financial data provided by Compustat (gvkey) and Bureau van Dijk (bvidid). Because most lobbying entities are not the publicly listed companies and do not have gvkeys, the bvidids are more useful in matching economic data such as an entity's revenue and its industry classification.

¹See Kim (2018) and <https://www.lobbyview.org/>.

Finally, the LobbyView dataset contains lobbying issue codes assigned by Congress. We have improved the LobbyView dataset by cleaning and standardizing entity names and bvids, an effort we describe in greater detail in the Appendix.

Our second data source comes from gathering and handcoding information on a number of new variables relating to each lobbying entity—including whether it is a freestanding entity or an association of entities such as a trade association. The new data are described in greater detail in Section 5, where we explore the composition of lobbying entities.

4 Spending Trends

The total expenditure on lobbying the federal government from 1999 to 2017 (inclusive) is \$60.4b. The annual aggregate expenditure ranges from a low of \$1.7b in 1999 to a high of \$4.1b in 2010. The median is \$3.7b and the mean (i.e., annual average) is \$3.2b. The standard deviation is around \$888m and the dispersion index is 247,027,063. (In the appendix we discuss alternative ways of measuring lobbying expenditures; as we show there, the trends are the same regardless of the method chosen.) Figure 1 shows aggregate lobbying expenditures by year.

Aside from the sheer amount of money going into lobbying, two things stand out in Figure 1. First, there is a steady climb in spending during the first decade followed by a plateau in the second decade. Between 1999 and 2009, the total amount spent on lobbying increased steadily every year, more than doubling from around \$1.7 billion to over \$4 billion. Spending remained relatively stable after 2009, ranging between \$3.7 and \$4.1 billion. Some have speculated that the plateau in lobbying following 2009 is due to increased noncompliance with the LDA, a possibility we are investigating.

Second, the economic downturn of the Great Recession was not accompanied by a downturn in lobbying. To get more purchase on this point, and more generally to get a

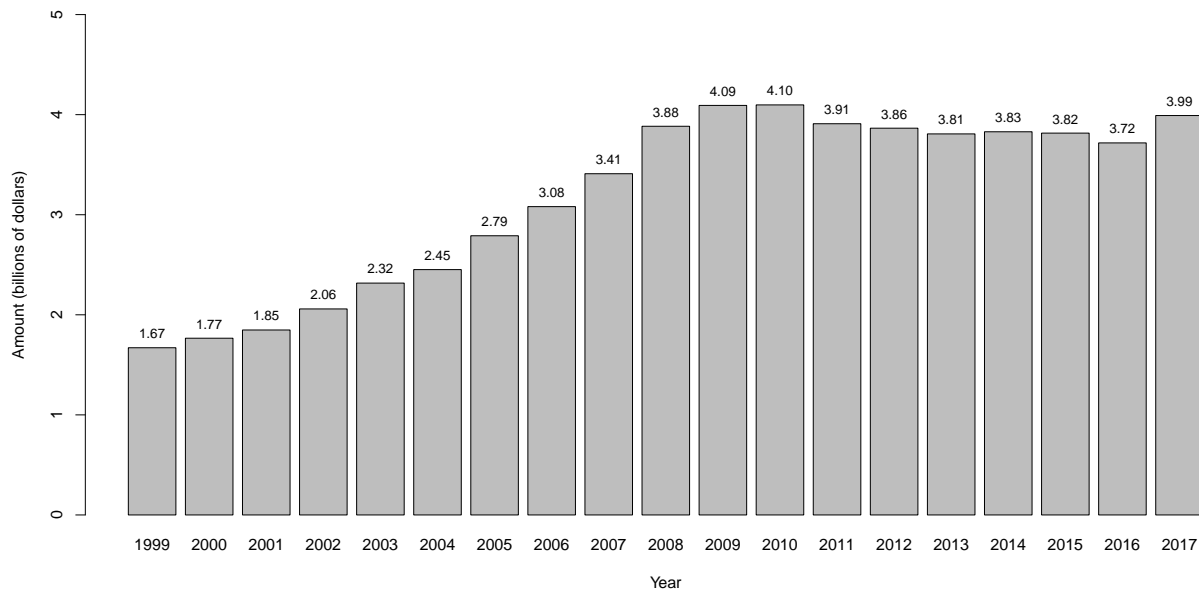


Figure 1: Spending on Lobbying the Federal Government, 1999-2017

better grasp of the relation between lobbying and national economic trends, we next look at lobbying data in relation to US GDP.²

Although lobbying expenditures are large, they are tiny compared to GDP. Lobbying expenditures stood at 0.0002 (0.02 percent) of GDP for 16 of the 19 years under study and at 0.0003 of GDP for the other three years. The three years of slightly higher lobbying-GDP ratio are 2008-2010, when national economic growth contracted.

Figure 2 shows annual GDP and lobbying numbers side by side. Visually it appears that lobbying and GDP rose together (though the rise in lobbying was steeper) during the first decade of data, corresponding roughly to the period before the Great Recession, but their trends diverged during the second decade: GDP declined from 2008 to 2009 before continuing its rise at roughly the pre-recession rates; by contrast, lobbying continued to rise until 2010 and plateaued thereafter.

Simple linear regressions of lobbying expenditures on GDP confirm this visual impres-

²The GDP numbers come from the Bureau of Economic Analysis of the U.S. Department of Commerce, aggregated by the St. Louis Fed. <https://fred.stlouisfed.org/series/GDP>, retrieved July 6, 2020.

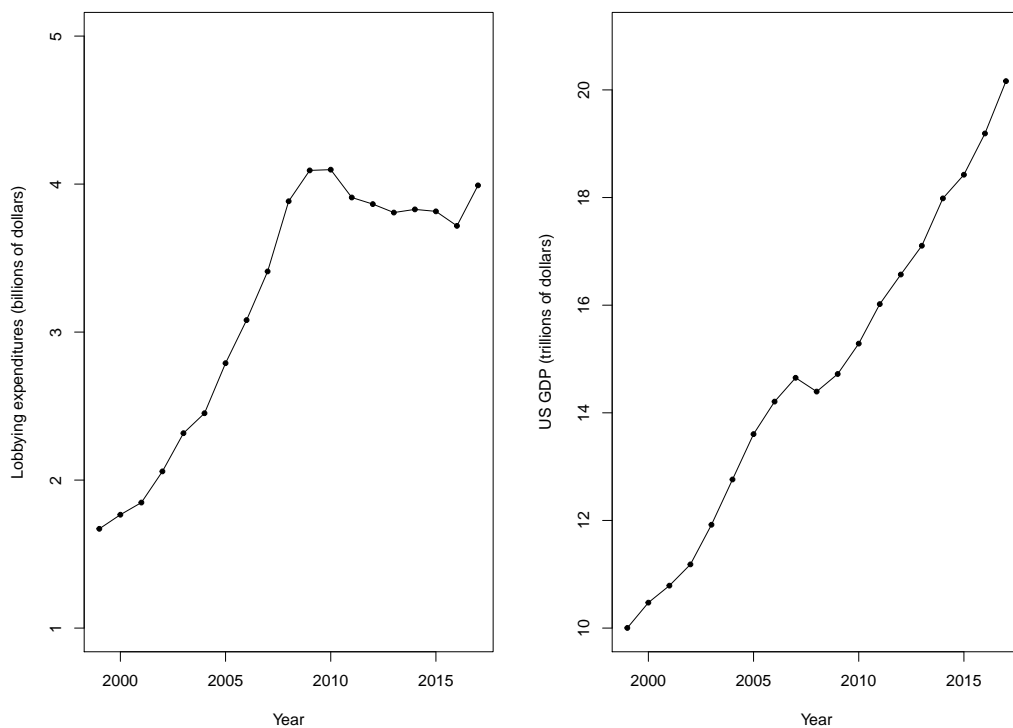


Figure 2: Trends in Lobbying Expenditures (\$ billions) and US GDP (\$ trillions), 1999-2017

sion. Over the entire period, there is a positive and statistically significant correlation between GDP and lobbying, and a large portion of the variance in lobbying is explained by GDP. Dividing this into pre-Recession (1999-2007) and post-Recession (2008-2017) periods, in the first period the correlation is positive and statistically significant and almost the entire variance in lobbying is explained by GDP, but the relationship breaks down in the second period. Similar results obtain if we extend the first period to 2008 or 2009.

Important for our questions is how these trends on corporate political activity match up with trends in market concentration. Unfortunately, beyond the fact that both lobbying and economic concentration are generally rising, the connections are not clear. For example, De Loecker, Eeckhout and Unger (2020) find that markups grew dramatically over the 1980s and 1990s, leveled off in the 2000s, before climbing rapidly in the last decade. So if we take the recent leveling off of lobbying activity at face value, price markups were stable as lobbying grew and markups were rising as lobbying stagnated. The lobbying trends do better match the trends in the median and mean Herfindahl index which grew rapidly between 1995 and 201 before leveling off (see Gutiérrez and Philippon (2017).)

5 The Composition of Lobbies

The diversity of participants in the lobbying process is staggering. The list of lobbying entities includes companies large and small, utilities, charities, lobbying and advocacy organizations, ad hoc coalitions formed for lobbying on a specific issue and later disbanded, industry-specific and trans-industry business groups, trade associations, guilds and professional associations, unions, government entities domestic and foreign, United Nations organizations, universities, schools and school districts, sports leagues and teams, individuals, and even a dog (Boo). Some of the names are well-known and expected—Amazon, Wal-Mart, Koch Industries, AIPAC, NRA, US Chamber of Commerce, American Medical Association. Others are less familiar—the American Mushroom Institute, the American Dehydrated Onion and Garlic Association, the US Association of Reptile Keepers, and the California Sea Urchin Commission. This section describes our efforts to classify lobbying entities along a number of dimensions and to get a sense of their relative contributions.

A prominent question of interest is whether firms lobby individually or collectively, for example through a trade association. However, as far as we know, very little work has been done to collect data on the individual-or-collective status of lobbying entities. To our knowledge, the only precise attempt at classifying the associational status of lobbying entities was in Bombardini and Trebbi (2012), who handcode 3,466 unique entities on this score for the period 1999–2001.³ We have handcoded 42,584 entities from 1999–2018 (42,066 of which are present in the dataset cut off at 2017), shedding light on the question of collective lobbying for a much greater set of participants over a longer time.

In addition to data on associations, we handcoded various other characteristics of lob-

³Huneus and Kim (2021) also classify the associational status of entities, but their method of detecting associations is to count “all lobbying clients with NAICS code 813910 (‘Business Associations’) along with other entities whose legal name includes ‘associations’ or ‘ASSN.’ ” We find that this proxy is not very accurate. Our handcoding of the dataset uncovered more than triple the number of associations than we would have found had we used Huneus and Kim’s proxy (5,015 instead of 1,587 distinct associations). According to our handcoding, Huneus and Kim’s scheme missed 3,747 associations and mistakenly counted 319 non-associations as associations.

bying entities, as summarized in Table 1.

Variable	Description
association	= 0 if the entity is a standalone organization or individual, or an organization of individuals, and 1 if the entity is an organization of organizations (e.g., a trade association)
profit	= 1 if the entity is for-profit and 0 otherwise
government	= 1 if the entity is a government-affiliated (including state and local governments in the US, foreign governments, and Native American nations) and 0 otherwise
native	= 1 if the entity is a Native American tribe or a subdivision of one and 0 otherwise
public-private	= 1 for a public-private entity and 0 otherwise
state-university	= 1 if the entity is a state university or college and 0 otherwise
individual	= 1 if the entity is an individual (a real person) and 0 otherwise
union	= 1 if the entity is a labor union and 0 otherwise
PAC	= 1 if the entity is a political action committee and 0 otherwise
agent	= 1 if the entity is the agent doing the lobbying rather than the principal on whose behalf the lobbying was done, and 0 otherwise

Table 1: Organizational Classifications

Some clarification of our coding might be useful. The “profit” category was coded using a clear and narrow definition—namely, whether the entity was being operated to enhance its own financial profit. Under this definition, a trade association takes 0 for “profit,” for even though the association is ultimately interested in the profitability of the trade, it is not being operated to enhance the profits of the trade association itself. The same goes for business leagues, chambers of commerce, real estate boards, and the like. The primary virtue of this method of classification is that it is clear. Adopting an alternative definition—say, one that looked to whether the organization was ultimately concerned with financially benefiting someone connected to the organization—would require arbitrary judgment calls as to what kind of benefit counts as a “financial” benefit and how connected is “connected” enough. At best, such a coding scheme would result in a collection of good-faith but inconsistent judgment calls; at worst, it would count unsympathetic entities as for-profit and sympathetic entities as nonprofit (e.g., some coders might count the pro-management advocacy organization as for-profit but the pro-labor organization as

nonprofit). It is also worth noting that trade associations, business leagues, chambers of commerce, and the like are exempt from taxation under the Internal Revenue Code (see 26 U.S.C. § 501(c)(6)).⁴ The “native,” “public-private,” and “state-university” categories are subsets of the “government” category—that is, if an entity takes 1 for one of the former three, then it must have taken 1 for “government” as well. Finally, the “agent” variable keeps track of mistakes where the agent doing the lobbying (e.g., a law firm, lobbying firm, or public relations firm), instead of the principal on whose behalf the lobbying was done, was recorded as the lobbying entity. Thankfully, mistakenly coded agents account for less than 1 percent of unique entities and only about 0.2 percent of the spending in the dataset. To our knowledge, we are the first to collect data on these measures. As our data were collected by hand and we are highly confident of their accuracy.

Table 2 reports the contribution of different types of entities to lobbying. The second and third columns show both aggregate numbers and portions. The final column (spending-to-numbers ratio) is a ratio of ratios, the numerator being the ratio of spending by entities of a particular to number of entities of that type and the denominator being the ratio of total spending to total number of entities. It is an indicator of an entity type’s per capita spending normalized by aggregate per capita spending. Values below 1 mean that the entity type punches below its weight in numbers and values above 1 mean that the entity type punches above its weight in numbers, in terms of spending.⁵

As expected, most lobbying entities are for-profit firms. Such firms account for around 59 percent of lobbying entities and around 58 percent of total spending. Conveniently, the spending-to-numbers ratio of for-profit firms is around 1, so the spending-to-numbers ratio for other entity types is benchmarked not just to the global average but also to the baseline

⁴ In the appendix, we describe our efforts to uncover the tax status of lobbying entities and why it makes sense, for that purpose, to focus on 501(c)(3) organizations.

⁵ Because the numbers in parentheses in the second and third columns are rounded, the numbers in the fourth column might seem at variance with them, but they are correct. Also, these categories are not exhaustive, and most are not mutually exclusive, so the portions in the second and third columns need not add up to 1.

Type of entity	Number of entities (portion of total)	Spending [\$ billions] (portion of total)	Spending-to-numbers ratio
association	4,959 (0.12)	13.41 (0.22)	1.88
for-profit	24,879 (0.59)	35.28 (0.58)	0.99
government-affiliated	4,567 (0.11)	3.65 (0.06)	0.56
Native American	423 (0.01)	0.44 (0.007)	0.73
public-private	464 (0.01)	0.67 (0.01)	1.01
state university	577 (0.01)	0.68 (0.01)	0.83
individual	646 (0.02)	0.06 (0.001)	0.07
union	161 (0.004)	0.70 (0.01)	3.03
PAC	93 (0.002)	0.02 (0.0003)	0.11

Table 2: Different Entity Types’ Contributions to Lobbying the Federal Government, 1999-2017

category’s average.

Associations account for only 12 percent of total lobbying entities. But their spending per entity is higher than average, accounting for 22 percent of total spending with a spending-to-numbers ratio of 1.88. As the next section will show, associations are overrepresented in the top tier of lobbying entities.

The extensive involvement of government-affiliated entities in lobbying was unexpected. Almost 11 percent of all lobbying entities are government-affiliated. Most of these are state, local, and municipal entities in the US, but foreign governments and UN organizations are also present. But these government entities spend less than average, having a spending-to-numbers ratio of only 0.56. We also collected data on certain subcategories of government entities—Native American nations, public-private entities, and state universities. Each of these accounts for about 1 percent of total lobbying entities, and their spending-to-numbers ratio is greater than that of all government-related entities.

It was also interesting that so many individuals lobbied the federal government. Unlike campaign contributions, where individual donors like Sheldon Adelson and Tom Steyer are central to the story, in the lobbying context the involvement of individuals is not part of standard journalistic or academic accounts. So the fact that 2 percent of all participants in

lobbying are individuals shows a greater involvement than expected. However, the amount of money spent by individuals constitutes only 0.1 percent of all lobbying spending, with individuals being the category with the lowest spending-to-numbers ratio. In light of these numbers, and having looked more closely at some of the lobbying reports filed on behalf of individuals, it appears that many instances of lobbying are by small business proprietors dealing with discrete localized issues.

The involvement of PACs is minor, constituting only 0.2 percent of lobbying entities and 0.03 percent of spending. But these numbers should be interpreted with caution because, in coding the “PAC” variable, we were of necessity constrained by how the lobbying entity named itself. We could tell whether an entity is a PAC only if the entity used the word “PAC” or “political action committee” in its lobbying form or if the name of the entity does not exist except as a PAC.

Finally, we gathered data on the lobbying of unions. The conventional wisdom is that unions influence has been declining since the last quarter of the Twentieth Century. Our findings that unions constitute only 0.4 percent of lobbying entities and 1 percent of all spending show, consistently with the conventional wisdom, that they are not much of a force in lobbying. Note, though, that the spending-to-numbers ratio of unions is the highest among all types of entities; unions’ per capita spending is three times the average per capita spending. This indicates that a few major unions are responsible for a large share of unions’ lobbying.

To get a sense of the different entity types’ relative contributions over time, Figure 3 plots the percentage of total annual lobbying attributable to each of four major entity types over the two decades of our data. It is evident that the entity types’ relative contributions are consistent over time. This is true even of unions notwithstanding the conventional wisdom that their influence has been declining.

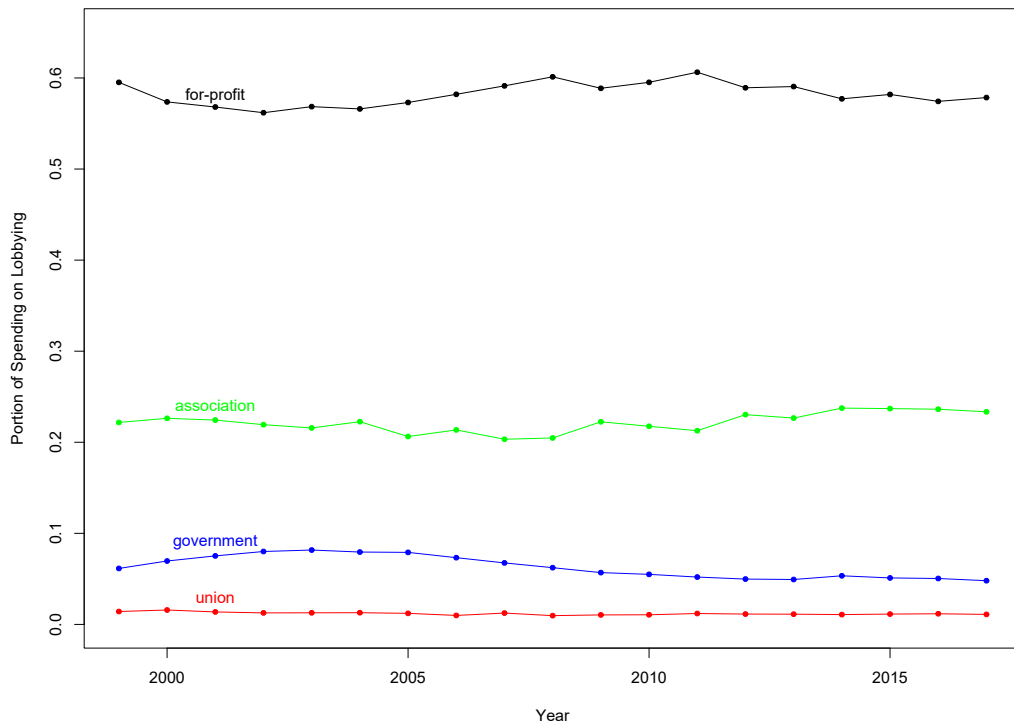


Figure 3: Different Entity Types' Contributions to Lobbying the Federal Government, 1999-2017

6 The Big Spenders

We now look at the largest lobbies. Table 3 shows the top twenty spenders on lobbying over the past two decades. Some of these entities are household names, and their appearance on the list is hardly unexpected. More interesting is the fact that nine of the top twenty are not-for-profit companies and four are associations. Indeed, 52 percent of the top twenty's spending was by nonprofit entities and 28 percent by associations.

Rank	Name	Spending in Millions
1	U.S. Chamber of Commerce	999.4
2	National Association of Realtors	468.3
3	Pharmaceutical Research and Manufacturers of America	446.9
4	AT&T	444.5
5	Institute for Legal Reform	431.9
6	General Electric	428.3
7	Verizon	387.0
8	American Medical Association	336.3
9	United Technologies	314.0
10	American Hospital Association	311.7
11	NCTA – The Internet & Television Association	307.6
12	Boeing	305.2
13	Altria	300.5
14	Business Roundtable	297.2
15	Northrop Grumman	287.9
16	Lockheed Martin	276.7
17	Comcast	271.4
18	AARP	269.2
19	Exxon Mobil	264.7
20	Southern Company	246.4

Table 3: Top Twenty Spenders on Lobbying the Federal Government, 1999-2017

Among all associations, and indeed among all entities, the most dominant is the U.S. Chamber of Commerce. The Chamber stands out in Table 3 as the unrivaled number one, having spent close to a billion dollars over two decades and having outspent the second top spender by more than two to one. If anything, the Chamber's dominance is understated because regional Chambers of Commerce as well as foreign affiliates (known as American Chambers of Commerce or AmCham) are recorded separately, as is the Institute for Legal Reform, the fifth-highest spender, which is a separately incorporated affiliate of

the Chamber.

To get a better sense of the identities and spending patterns of the top spenders over time, Table 4 reports the top ten spenders and their spending (in parentheses, in millions of dollars) for each year from 1999 to 2017. One noteworthy feature of Tables 3 and 4 is the representation of different industries. The industries most known for their political activities are well-represented. These include the medical and pharmaceutical industries (represented by PhRMA, AMA, AHA, Merck, Amgen, Pfizer), telecommunications (AT&T, Verizon, NCTA, Comcast, US Telecom Association, National Association of Broadcasters), oil and gas (Exxon Mobil, Southern Company, Chevron), and defense (United Technologies, Boeing, Northrop Grumman, Lockheed Martin). But other industries that are generally thought to be major lobbies are not well-represented—namely agriculture, the information technology industry, and finance. Despite the lore of farm lobby, there are no agricultural firms or organizations in the top ten for any year, and none in the aggregate top twenty. Google is the only entrant from high tech, and it starts appearing only in the last four years. Most surprisingly, with the exception of the government-sponsored Freddie Mac, there are no organizations from the field of finance in any of the annual top ten lists or in the all-time top twenty.

Of course, omission from this list does not disprove the influence of the three industries' lobbying. The lack of heavy spending by a single industry representative could be due to the absence of organized opposition, for example in agriculture. It could be that spending in these industries is spread among different organizations. Perhaps trans-industrial associations like the Chamber of Commerce or the Business Roundtable do much of the bidding for some of these industries, especially finance. It could be the high tech industry is only just getting started and its lobbying stature will grow in time. As we shall see in the following sections, where we discuss industry-specific spending in greater depth, some of these explanations seem well-suited to certain industries. Whatever the explana-

Year	Rank									
	1	2	3	4	5	6	7	8	9	10
1999	AT&T (25.1)	Altria (20.0)	Chamber of Comm. (18.5)	Merck & Co (15.3)	Am. Hospital Assoc. (11.9)	Lockheed Martin (11.7)	Boeing (10.0)	Bus. Roundtable (10.0)	General Electric (9.8)	AMA (9.2)
2000	Bus. Roundtable (23.7)	General Electric (18.9)	AT&T (18.6)	Chamber of Comm (17.6)	Altria (15.2)	Edison Electric Inst. (14.5)	Lockheed Martin (11.6)	Verizon (11.3)	PhRMA (10.7)	Merck & Co (10.6)
2001	AT&T (24.1)	General Electric (17.7)	Chamber of Comm. (17.0)	Edison Electric Inst. (16.0)	PhRMA (15.9)	Verizon (14.1)	Am. Hospital Assoc. (12.4)	Bus. Roundtable (11.7)	Lockheed Martin (11.7)	Northrop Grumman (11.5)
2002	Inst. Legal Reform (22.9)	Chamber of Comm. (22.0)	AT&T (21.9)	PhRMA (20.0)	Altria (18.3)	General Electric (16.4)	AMA (14.9)	Verizon (14.7)	Edison Electric Inst. (14.5)	Northrop Grumman (14.2)
2003	AT&T (23.6)	PhRMA (22.3)	Freddie Mac (22.3)	AARP (21.0)	General Electric (19.9)	Inst. Legal Reform (19.6)	AMA (17.7)	Verizon (17.4)	Altria(16.8)	Am. Hospital Assoc.(13.8)
2004	Chamber of Comm. (29.6)	AT&T (27.0)	Inst. Legal Reform (26.2)	General Electric (20.0)	Verizon (19.7)	Altria. (17.5)	US Telecom Assoc. (15.5)	Freddie Mac (15.3)	Northrop Grumman (14.6)	PhRMA (14.2)
2005	AARP (37.0)	AT&T (28.2)	General Electric (26.4)	Inst. Legal Reform (21.5)	Verizon (21.1)	AMA (20.0)	PhRMA (19.6)	Freddie Mac(19.1)	US Telecom Assoc. (18.6)	Altria(17.7)
2006	Chamber of Comm. (46.1)	AT&T (28.8)	Inst. Legal Reform (28.3)	Verizon (25.6)	PhRMA (24.2)	AARP (23.2)	General Electric (21.9)	AMA (20.2)	US Telecom Assoc.(20.0)	NCTA (19.1)
2007	Chamber of Comm. (32.1)	PhRMA (30.1)	Verizon (26.0)	General Electric (25.2)	Amgen (24.6)	AT&T (24.0)	Inst. Legal Reform (23.5)	AMA (22.6)	AARP (19.6)	Altria (19.1)
2008	Chamber of Comm. (63.7)	Exxon Mobil (31.6)	Inst. Legal Reform (31.1)	Verizon (30.8)	PhRMA (28.3)	PG&E (28.2)	AARP (28.0)	General Electric (23.8)	AT&T (23.0)	Northrop Grumman (22.1)
2009	Chamber of Comm. (125.4)	PhRMA (35.2)	General Electric (32.5)	Exxon Mobil (30.0)	Verizon (29.5)	Pfizer (26.3)	Chevron (23.0)	Inst. Legal Reform (23.0)	NCTA (21.8)	AT&T (21.7)
2010	Chamber of Comm. (102.6)	General Electric (48.1)	PG&E (46.2)	Inst. Legal Reform (33.3)	PhRMA (29.8)	United Technologies (28.8)	FedEx (28.4)	Verizon (26.1)	NCTA (23.3)	AMA (22.9)
2011	Chamber of Comm. (46.5)	General Electric (34.0)	AT&T (26.9)	PhRMA (26.9)	Comcast (26.8)	United Technologies (25.9)	NCTA (24.1)	Inst. Legal Reform (23.9)	Verizon (23.9)	Nat'l Assoc. of Realtors (22.7)
2012	Chamber of Comm. (106.3)	Nat'l Assoc. of Realtors (41.7)	Inst. Legal Reform (33.5)	PhRMA (26.0)	General Electric (25.1)	United Technologies (24.6)	NCTA (24.4)	AT&T (23.5)	Verizon (22.9)	Comcast (21.9)
2013	Chamber of Comm. (55.1)	Nat'l Assoc. of Realtors (38.9)	Comcast (25.7)	PhRMA (25.5)	NCTA (25.4)	United Technologies (25.2)	Verizon (24.2)	Inst. Legal Reform (23.1)	Northrop Grumman (22.1)	AT&T (22.0)
2014	Chamber of Comm. (92.7)	Nat'l Assoc. of Realtors (55.2)	Inst. Legal Reform (35.4)	United Technologies (29.3)	Comcast (25.4)	PhRMA (23.6)	NCTA (22.8)	Nat'l Assoc. of Broadcasters (21.4)	Google (20.7)	Verizon (20.5)
2015	Chamber of Comm. (64.5)	Nat'l Assoc. of Realtors (37.8)	General Electric (26.0)	PhRMA (25.9)	Boeing (25.0)	Inst. Legal Reform (24.2)	Comcast (23.6)	Bus. Roundtable (22.7)	AMA (22.2)	Google (20.7)
2016	Chamber of Comm. (77.1)	Nat'l Assoc. of Realtors (64.8)	Inst. Legal Reform (29.4)	PhRMA (27.2)	AT&T (21.9)	Comcast (21.6)	Am. Hospital Assoc. (19.9)	Boeing (19.8)	AMA (19.6)	Google (19.6)
2017	Chamber of Comm. (60.4)	Nat'l Assoc. of Realtors (54.6)	PhRMA (34.5)	Bus. Roundtable (29.8)	Inst. Legal Reform (25.3)	Comcast (23.4)	AT&T (22.8)	Google (22.5)	AMA (21.9)	Boeing (20.1)

Table 4: Top Ten Spenders on Lobbying the Federal Government, 1999-2017 (spending, in millions of dollars, in parentheses)

tion, the relative lack of representation for three industries (which are common targets of the Anti-Monopoly movement) that are qualitatively known as lobbying powerhouses is noteworthy.

Also noteworthy is the presence of trans-industry organizations among the top spenders. Three of the entities in Tables 3 and 4 cannot be placed in any particular sector of the economy but instead span multiple sectors. These are the Institute for Legal Reform, the Business Roundtable, and of course the Chamber of Commerce. The Chamber is dominant in the annual lists of Table 4 just as it is in the aggregate list of Table 3. It appears in the top ten for most years and claims the top spot for the first time in 2004. But it does not start dominating until 2006, from which point it consistently claims the top spot and outspends its closest rival by a large margin, including a nearly four-to-one margin in 2009.

Overall, our tally of top spenders shows that for-profit businesses and those advocating on their behalf are responsible for the lion's share of the top dollar going into lobbying. Of all the entities in Tables 3 and 4, the only ones that are not a business or an organization advocating on behalf of businesses are AARP and AMA.

Table 4 also shows how the cast of characters in the big spenders group changed in response to landmark legislative enactments. The answer is: not much. The National Association of Realtors did not appear in the top ten during the subprime mortgage crisis years of 2007-2010 (though it did appear there from 2011 onwards). Financial firms did not rise to the top following the Great Recession and Dodd-Frank Act years of 2008-2010. And, although medical and pharmaceutical organizations always enjoyed a robust presence, they did not noticeably rise in position during the Affordable Care Act debates of 2008-2010.

This brings us to the most striking feature of the big spenders group—its stability over two decades. Only 30 distinct entities (out of a maximum possible of 190) made it to the top ten list from 1999 to 2017. Of these, 25 have appeared on the list more than once. Figure 4 plots the repeat appearance makers. Pharmaceutical Research and Manufacturers

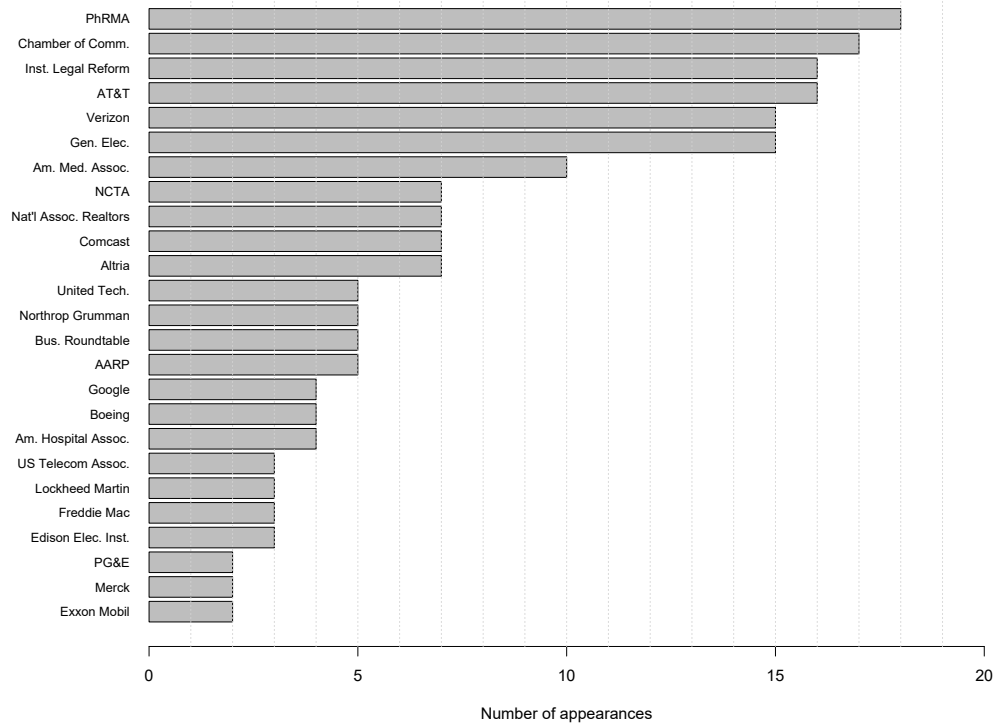


Figure 4: Repeat appearances on the annual list of top ten spenders on lobbying, 1999-2017

of America leads the pack, having made the top ten every year but one. The stability of the top tier is even more striking when we look at the top 100 annual lobbies: only 239 entities (out of a maximum possible of 1,900) made it to the top 100 list from 1999 to 2017. Indeed, 29 entities appeared in the top 100 every year.

We now take advantage of the new data we have gathered to shed light on the characteristics of the top lobbies. As noted, among the top twenty lobbies, four are associations and they are responsible for 28 percent of the lobbying. Also, the lobbying is divided almost equally between for-profit and not-for-profit entities, with for-profit entities claiming 11 of the top 20 and 48 percent of the spending.⁶ The other types of entities we have coded—government-affiliated entities (of various kinds), individuals, unions, and PACs—do not appear at all in the top twenty.

If we examine the top 100 lobbies, we find that associations represent about a quarter

⁶ It is important not to confuse for-profit status with association status. All associations are nonprofits, but not all nonprofits are associations. For example ACLU, AIPAC, NRA, and the Rotary Foundation are all nonprofits but not associations.

of the lobbies and a quarter of the spending. For-profit entities represent 72 percent of the entities and about 64 percent of the spending, indicating a lower per capita spending than nonprofit entities. Only two government-affiliated entities are represented in the top hundred. They are Fannie Mae and Freddie Mac.

We conclude this section by gauging the overlap between economic and political (lobbying) elites. To address this question, we compare the list of top 100 spenders on lobbying for every year in our dataset to the top 100 companies in the Fortune 500 for that year.⁷ Figure 5 reports the cardinality of the intersection set for every year. In other words, what we call the “similarity score” for each year is the number of companies that appeared both on our list of top 100 lobbying spenders and on the Fortune list of top 100 companies by revenue. Similarity scores are easily interpretable as the percentage of top lobbying spenders who are also top revenue earners—or equivalently, because we are taking sets of cardinality 100 from both the economics and politics sides, as the percentage of top revenue earners who are also top lobbying spenders. As Figure 5 shows, the similarity score has been rising but generally stable over two decades. It has ranged from a low of 28 in 2001 to a high of 38 in 2015 and 2016, with an annual mean of 33.4 and median of 33. The modal scores are 31, 33, and 34 (with three occurrences each).

It is evident that the overlap between the economic and political elite is substantial. But perhaps the bigger news is how different the two sets of elites are. At the very top, the economic and lobbying elites are one-third similar—or, perhaps more significantly, two-thirds different. This means that many high-earning firms are relatively disinterested in lobbying, and many lobbying powerhouses are not generators of substantial revenue.

Note that, to construct the list of top 100 lobbies for purposes of calculating the similarity scores, we limited the list to lobbies that are not associations. Because only standalone firms, and not associations, can appear in the Fortune 500, restricting the comparison to

⁷ Because there is a lag in the Fortune lists (e.g., the 2019 Fortune 500 reports the top revenue earners of 2018), we have been careful to compare the lobbying list for year t with the Fortune list for $t + 1$.

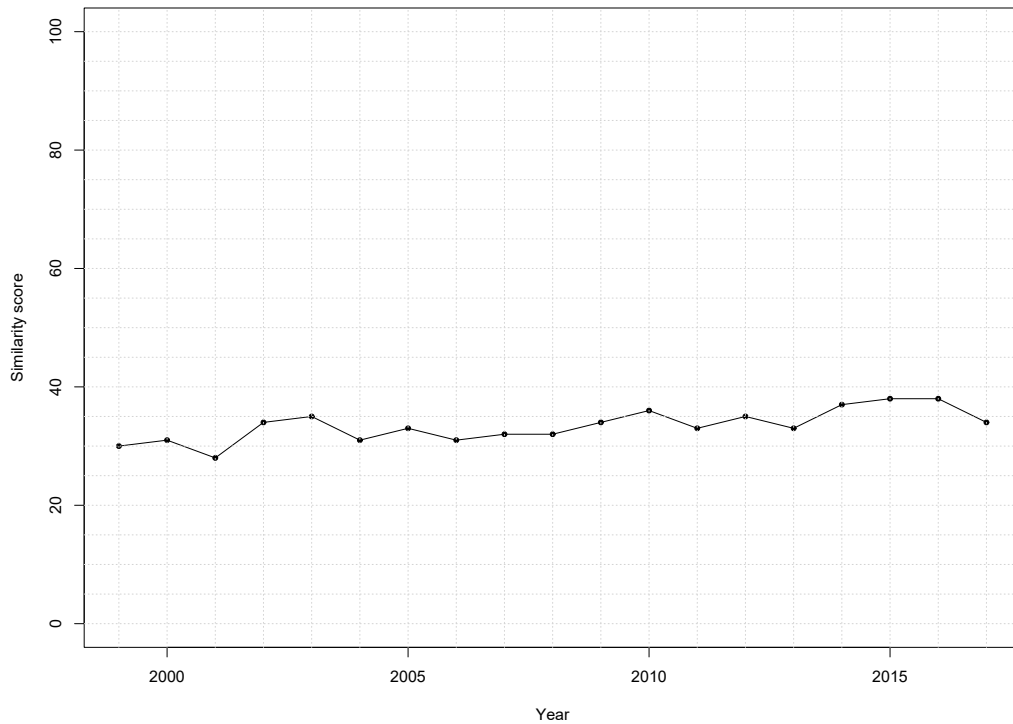


Figure 5: Similarity scores, defined as the number of firms in the top 100 lobbying spenders that are listed in the top 100 firms in the Fortune 500

standalone entities on the lobbying side would result in a more meaningful measure of overlap between economic and political elites. In the appendix we calculate similarity scores in two alternative ways—first by looking at the top 100 among all lobbies (Figure 17) and second by looking at the top 100 lobbies that are for-profit entities (Figure 18). As expected, the scores in Figure 17 are lower, and those in Figure 18 are higher, than those in Figure 5, but the difference in each case is just a handful of points. Even when we restrict the list of top lobbies to for-profit entities, the average annual overlap is only 35 percent.

7 Patterns of Economic and Political Concentration

7.1 Conceptual Challenges in Measuring Political Concentration

The preceding discussion of top spenders leads naturally to asking how much of the total spending they contribute. To answer this question one has ready recourse to measures of market concentration developed in economics. Before applying these measures to the political lobbying “market,” though, a word of caution is necessary about how well the concepts travel to this new context.

The main measures of economic market concentration are the n -firm concentration ratio and the Herfindahl-Hirschman Index (HHI). The n -firm concentration ratio is defined as the market share controlled by the n firms with the highest market share. It is given by $\sum_{i=1}^n s_i$, where s_i denotes the market share of firm i and the firms are ordered by size of share. The most common value for n is four, but eight-firm, twenty-firm, and fifty-firm concentration ratios are also sometimes reported. HHI is given by the sum of squares of market shares, expressed as whole numbers (rather than percentages), for all firms in a market. That is, in a market consisting of n firms, HHI is given by $10000 \sum_{i=1}^n s_i^2$. On one end of the concentration spectrum, HHI is 10,000 for a true monopoly; on the other end, it approaches 0 as the market approaches perfectly atomistic competition between innumerable firms. The US Department of Justice and Federal Trade Commission, which use HHI when evaluating mergers for compliance with antitrust law, classify markets into three categories of “unconcentrated” (HHI below 1,500), “moderately concentrated” (HHI between 1,500 and 2,500), and “highly concentrated” (HHI above 2,500) (DOJ-FTC Horizontal Merger Guidelines (2010 edition), § 5.3).

These measures of concentration are not free of difficulty when applied in the economic context. The main difficulty is defining the relevant market, a problem which is also present

in the political context (see the Appendix). Assuming the relevant market is properly defined, however, these measures measure what they are supposed to measure: the extent to which the market is controlled by a few firms rather than a wide variety of firms. The same is not unambiguously true when we move to the political lobbying market. In our view, three distinct challenges must be distinguished and discussed.

First, the segmentation of lobbying expenditures among different entities does not necessarily signal competition in the same way as the segmentation of revenue or sales among different firms. That is so because many different entities might be lobbying Congress to request the same thing. There are many reasons why different firms who desire the same thing might prefer to lobby separately rather than together under a single banner: they may want to emphasize different perspectives; they may want to create the impression of a multiplicity and diversity of constituencies supporting their views; they may think that repetition by different voices will better reinforce the message; they may feel that they will have Congress's ear for longer if they lobby separately; or they may simply find coordination too difficult or costly or be unaware of its possibility. For example, a participant in the process told us that multiple representatives of the finance industry lobbied separately to ask for the same thing in the lead-up to the Dodd-Frank Act. Given the current state of the lobbying data, we cannot do anything to ameliorate this challenge; figuring out the precise bill or issue and the position of the lobbying for every lobbying report is not feasible. The upshot is that while a low HHI in an economic market indicates robust competition among a variety of firms, it does not necessarily indicate that in the political context. This challenge results in understating the degree of concentration in the lobbying market.⁸

The other two challenges cut in the opposite direction. The second challenge is the

⁸One may argue that this is a challenge to measuring the competitiveness of the political lobbying marketplace, but not to measuring its concentration, in the sense of the degree to which the market is controlled by a few rather than many actors. According to this argument, concentration and competition are conceptually distinct. This issue is echoed in critiques of the structure-conduct-performance paradigm in antitrust analysis.

classic problem of freeriding. A policy of general application is a public good to those who benefit from the policy, so potential beneficiaries have an incentive to sit out and let others lobby for it. We can come up with countervailing considerations that lessen the incentive to sit out and freeride—e.g., policies also have private-good aspects and participation will help secure those; participation is helpful because it induces the perception of a multiplicity and diversity of voices supporting one’s preferred policy; and so forth—but at bottom we must acknowledge that the freeriding incentive exists and likely reduces lobbying to a nontrivial extent. Every reasonable formal model of lobbying that we know of also generates some freeriding in equilibrium when there is more than one agent benefiting from available policies. This challenge results in dampening participation (presumably by smaller firms) and therefore overstates the degree of concentration.

The third challenge is the participation of multi-firm associations. These are, in part, a solution to the freeriding problem described in the second challenge. It can be argued that, because a single association is an aggregation of multiple otherwise-independent entities, recording its lobbying under a single heading artificially understates the number of participants and overstates the degree of concentration. We are not persuaded by this argument. To the extent independent firms coordinate their spending through a single entity, it is not clear why we should attempt to “pierce the veil” of coordination and distribute the spending over the entity’s member firms. After all, the point is that the firms are acting as one. By analogy, in the economic context, it would seem proper to record the sales of a combination or joint venture under a single heading.

In the end, then, we are not convinced that the third challenge is a genuine challenge. But the other two challenges are. And unfortunately they cut in opposite directions—one understates concentration and the other overstates it—so our measures cannot be unambiguously characterized as lowerbound or upperbound estimates. Our intuition is that the first challenge is probably greater in magnitude. It seems to us that the second challenge

would mostly suppress spending by capital-constrained firms who are sensitive to the small costs (relative to potential gains) of spending on lobbying, so the “silent market share” being unrecorded is likely to be small. So we think it makes more sense to view our estimates as lowerbound estimates of political concentration. But we can imagine good arguments to the contrary.

The good news about these difficulties is that they should not affect the time trends in concentration. We cannot think of any good reasons why the respective weight of the challenges should change over the two decades of study. Whatever the shortcomings of our measures, then, we can at least claim to have uncovered reasonable estimates of the ebb and flow of concentration in the lobbying market over time. Moreover, we are doing the best we can in uncharted territory, and we hope that our estimates of political concentration will be helpful notwithstanding their limitations.

7.2 Concentration Trends

We now provide estimates of lobbying concentration. We begin with estimates pertaining to the lobbying “market” as a whole and then proceed to industry-specific estimates. We recognize, of course, that lobbying considered as a whole is not a single market in the sense that entities lobbying on unrelated matters do not compete against each other; nevertheless, the aggregate measures are useful because they provide a benchmark of comparison against the economy as a whole (which is also not a single market in the same sense).

Table 5 reports aggregate measures of the concentration of federal lobbying expenditures. As the table shows, this is not a concentrated market. If “political lobbying” were a market, the DOJ and FTC would easily classify it as “unconcentrated” under the Horizontal Merger Guidelines; the HHI of 16 does not come remotely close to the 1,500 threshold of “moderately concentrated,” let alone the 2,500 threshold of “highly concentrated.”⁹

⁹One might object that comparing political and economic concentration measures is like “apples and

Number of entities	4-Firm Ratio	8-Firm Ratio	20-Firm Ratio	50-Firm Ratio	100-Firm Ratio	500-Firm Ratio	HHI
42,066	0.04	0.07	0.12	0.21	0.30	0.57	16

Table 5: Measures of the concentration of lobbying expenditures, 1999-2017

Bear in mind, though, that this an enormous market. With 42,066 entities, the size of the unified political lobbying market is comparable to the size of an entire sector or subsector of the economy—that is, an area defined by a two- or three-digit NAICS code (see the Appendix for a discussion of NAICS codes).¹⁰

Moreover, the “unconcentrated” label should not lull one into thinking that the distribution of spending on lobbying is relatively equal among various participants in the political process. To put the distribution in perspective, compare it to statistics often cited when lamenting the great levels of income and wealth inequality in the United States. Today, the top 1 percent of households have a 13 percent share of total income (after taxes and transfers) and the top 20 percent have a 48 percent share; by comparison, over the years of our data, the top 1 percent of entities were responsible for 54 percent of the entire spending on lobbying, and the top 20 percent of entities were responsible for 93 percent. This is far more unequal even than the distribution of wealth, of which the top 1 percent of households have 39 percent and the top 20 percent have 78 percent.¹¹ Although the numbers reported in Table 5 are measures of concentration, not inequality, the comparison to income and

oranges.” But the comparison presents a natural interpretation. A reasonable measure of a firm’s political investment is its lobby expenditures divided by sales. So if political concentration is lower than economic concentration, this implies that firm political investment is declining in sales. We return to this point below.

¹⁰ For example, according to the 2017 County Business Patterns series of the U.S. Census, the total number of firms is 22,641 in the Agriculture, Forestry, Fishing and Hunting sector (NAICS code 11); 19,080 in the Mining, Quarrying, and Oil and Gas Extraction sector (NAICS code 21); and 79,662 in the Information sector (NAICS code 51). But of course there are sectors that have many more or many fewer firms—e.g., respectively, Construction (NAICS code 23) with 701,477 firms or Utilities (NAICS code 22) with 5,957 firms.

¹¹The income and wealth shares are from Chad Stone et al., A Guide to Statistics on Historical Trends in Income Inequality, Center on Budget and Policy Priorities, Jan. 13, 2020, available at <https://www.cbpp.org/research/poverty-and-inequality/a-guide-to-statistics-on-historical-trends-in-income-inequality> which uses data from the Congressional Budget Office.

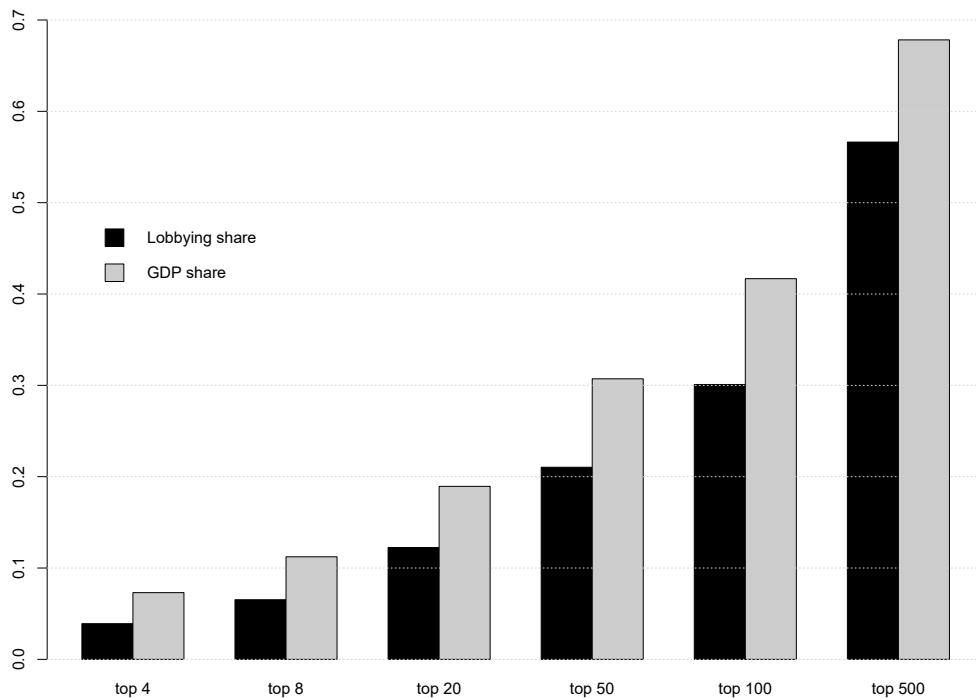


Figure 6: Share of spending on lobbying by top spenders on lobbying, compared to share of GDP by top-revenue firms.

wealth distribution helps put them in perspective.

Next, to get a sense of how aggregate political concentration compares to aggregate economic concentration, we compare the top lobbying firms’ share of lobbying expenditures to the share of US GDP produced by the top firms listed in the Fortune 500. Figure 6 compares the four-, eight-, twenty-, fifty-, hundred-, and five-hundred-firm concentration ratios in politics and economics.¹² According to every one of these measures, politics has been considerably less concentrated than economics over the past two decades (47 percent less concentrated for four-firm ratios, 42 percent less concentrated for eight-firm ratios, 35 percent less concentrated for twenty-firm ratios, about 30 percent less concentrated for fifty- and hundred-firm ratios, and 16 percent less concentrated for five-hundred-firm ratios).

We next examine the trends in lobbying concentration over time. Figure 7 shows HHI over the two decades of our data. The y -axis of the left-hand panel is scaled to emphasize

¹²The ratios for economics are non-weighted averages. That is, because Fortune ranks firm revenues only annually—and not over the entire two decades of our study—the n -firm concentration ratio is the average of 19 n -firm concentration ratios. For politics, by contrast, one can compute the aggregate ratios.

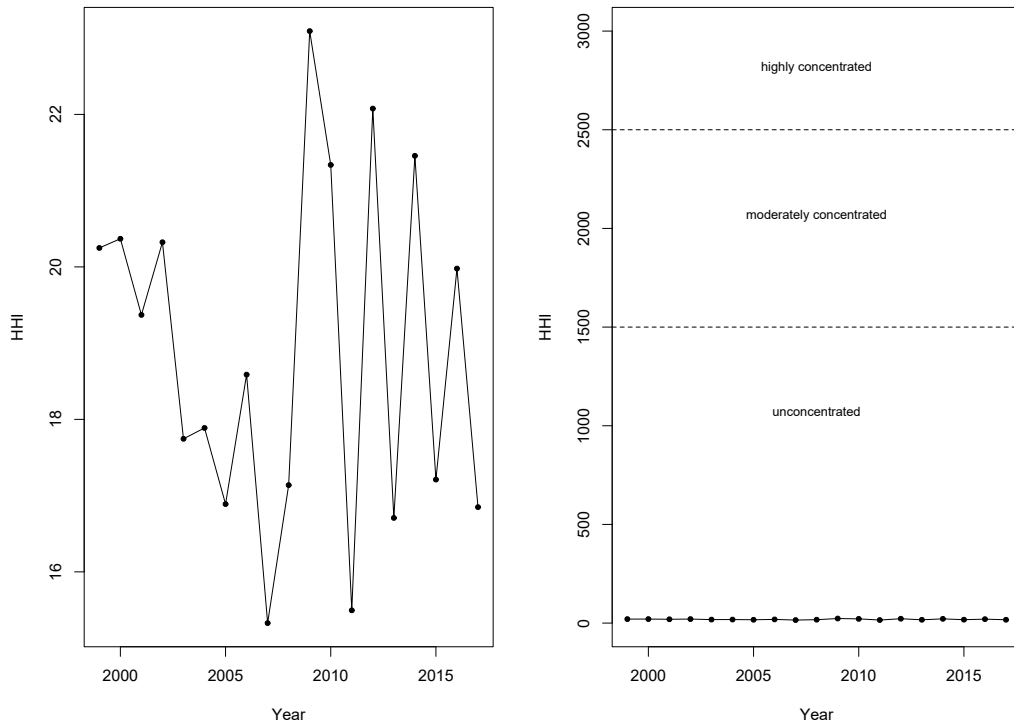


Figure 7: HHI for the market in lobbying the federal government, 1999-2017

variations over time. The right-hand panel puts the variation in perspective, with a y-axis that shows the ranges of concentration defined by the DOJ-FTC Merger Guidelines (recall that HHI can go up to 10,000). As the near-zero trendline in the righthand panel shows, the temporal variations in lobbying HHI are trivial in perspective: The political lobbying market, taken in aggregate, has been extremely unconcentrated in all the years under study.

Figure 8 plots the trends in lobbying concentration (in blue) alongside economic concentration (in red). To get a sense for the levels of concentration both at the very top and a bit farther down, we have plotted both the four-firm and the hundred-firm concentration ratios. Some interesting patterns emerge. First, the national economic market was more concentrated than the national market for lobbying the federal government, as measured by both four-firm and hundred-firm concentration ratios, in every year. Averaging over the years, the economic four-firm concentration ratio is about 65 percent (3 percentage points) greater than the political ratio, and the economic hundred-firm concentration ratio is about 27 percent (9 percentage points) greater than the political ratio. Second, there is greater variation in levels of economic concentration than political concentration, especially

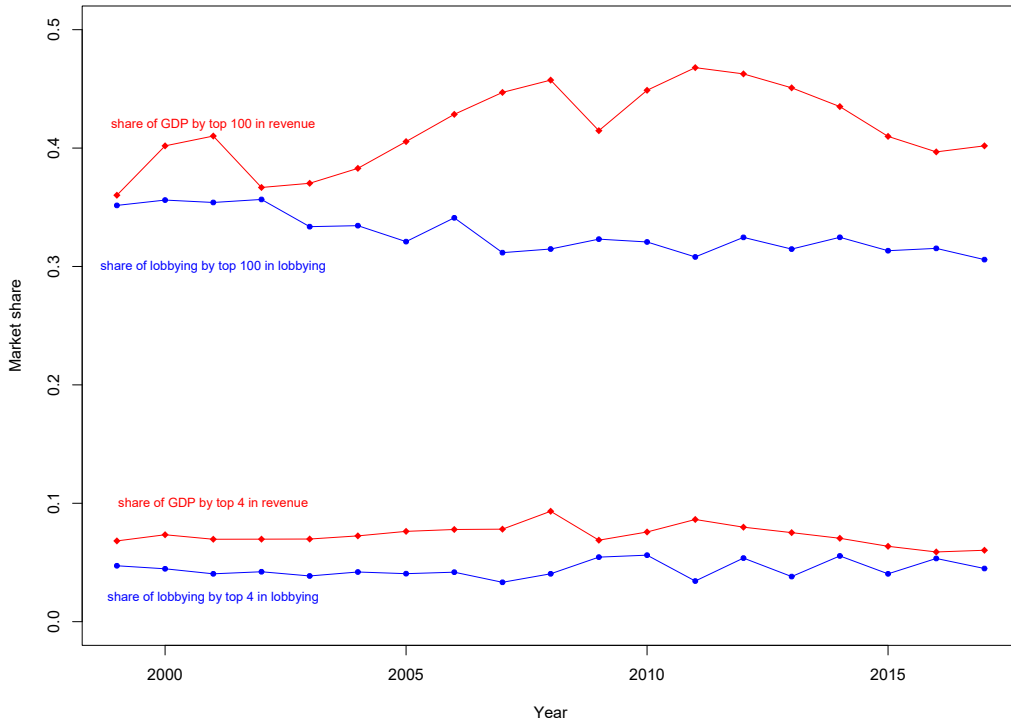


Figure 8: Four- and hundred-firm concentration ratios in economics and politics, 1999-2017

at the hundred-firm level (see Table 6). Third, levels of economic and political concentration are not positively correlated; indeed, at the hundred-firm level, there is a statistically significant negative correlation.¹³

	Politics 4-Firm Ratio	Economics 4-Firm Ratio	Politics 100-Firm Ratio	Economics 100-Firm Ratio
Variance	0.00005	0.00007	0.0003	0.001
Dispersion index	0.001	0.0009	0.0009	0.003

Table 6: Dispersion statistics for political and economic concentration ratios, 1999-2017

Finally, there is no statistically significant correlation between annual lobbying HHI and annual spending on lobbying. A one unit increase in lobbying HHI is associated with a one percent decrease in lobbying expenditures, but the correlation is far from statistically significant ($p > 0.6$).

¹³ Using a linear model, regressing the economic four-firm ratio on the political four-firm ratio yields $\hat{\beta} = -0.39$, $p > 0.1$, $R^2 = 0.11$, and regressing the economic hundred-firm ratio on the political hundred-firm ratio yields $\hat{\beta} = -1.15$, $p < 0.01$, $R^2 = 0.34$.

8 Patterns of Lobbying by Industry and Issue

We now analyze industry-specific lobbying patterns. Our industry definitions are based on classification codes assigned by the North American Industry Classification System (NAICS). NAICS codes start with two-digit numbers, being very general descriptions of an industry, and become more specific as they go through three-, four-, five-, and finally six-digit codes. By the Census Bureau’s terminology, the first two digits are the Sector, the first three digits are the Subsector, the first four digits are the Industry Group, and the five- and six-digit codes are the Industry. For example the Soybean Farming industry (111110) is part of the Agriculture, Forestry, Fishing and Hunting sector (11), the Crop Production subsector (111), the Oilseed and Grain Farming industry group (1111), and the Soybean Farming industry (11111 and 111110).¹⁴

We obtained information on entities’ NAICS codes from the Bureau van Dijk (BvD) database Orbis. This is the most comprehensive repository of NAICS codes that we have found, containing codes not only for publicly listed companies but also for many trade and industry associations, nonprofit organizations, private companies, and governmental entities. Although BvD is remarkably comprehensive, its choice of NAICS code is sometimes questionable. To minimize the impact of wrong industry classifications on our estimates, we manually reviewed and corrected the NAICS code for the top 100 spenders for each year in our data—thereby handcoding the NAICS information corresponding to 42 percent of the entire spending amount. In addition, in cases where BvD assigned more than one bvdid (and thus more than one NAICS code) to a single entity, we carefully reviewed the different assignments and chose the one associated with better NAICS data. Finally, we made sure that the top issues lobbied for each sector made sense. (See the appendix for deeper discussion of the challenges of industry definition.)

¹⁴The entire list of NAICS codes can be viewed at <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2017>.

A wide cross section of the economy is represented in our congressional lobbying dataset. The data includes 20 distinct sectors (two-digit NAICS codes), 99 subsectors (three-digit NAICS codes), and 304 industry groups (four-digit NAICS codes). Because the number of categories is large and the categories are qualitatively difficult to distinguish at more granular levels (four-, five-, and six-digit NAICS codes), and because more granular definitions are sensitive to changes in NAICS classification over the years (see appendix), we will conduct the analysis based on two-digit (sector-level) codes.¹⁵

8.1 Spending Patterns by Industry

Table 7 shows descriptive statistics by sector. Sectors are ordered by lobbying expenditures. All 20 sectors of the economy recognized by NAICS are well-represented in congressional lobbying. The large numbers for the top two sectors, especially Manufacturing, are probably due to their broad definition. At the bottom, Agriculture accounts for just 0.3 percent of all spending and is the only sector whose aggregate spending over two decades does not reach \$200 million. This, in line with the absence of any big spenders from agriculture, noted in Section 6, stands in some tension with widespread lore about the strength of the farm lobby. But of course, as noted above, the low spending does not necessarily indicate a lack of political influence; it could just as well be due to the absence of organized opposition.¹⁶ Not surprisingly, there is a positive correlation between the number of lobbying entities and spending on lobbying in a sector; on average, the presence of each additional lobbying entity is associated with \$2.2 million of additional spending over two decades. The greatest per capita spending is in the Oil and Gas sector, followed by Information.

Table 8 puts the sectors' lobbying data in perspective by viewing it alongside their

¹⁵ About 18 percent of lobbying reports lack an identifying NAICS code. Thankfully, this corresponds to only 8 percent of lobbying expenditures. The pattern suggests, as one would expect, that missingness of industry affiliation is higher in smaller-sum lobbying.

¹⁶The qualitative intuition that the amount of lobbying increases in the opposition's stakes holds formally in equilibria of menu auction and other formal models of lobbying.

Sector	# of Entities	Spending (\$m)	Percentage	Per Entity (\$m)
Manufacturing	4637	13871.4	0.251	3
Other Services (except Public Administration)	2754	8665.8	0.157	3.1
Finance and Insurance	1765	6484.7	0.117	3.7
Information	1277	5341.9	0.097	4.2
Professional, Scientific, and Technical Services	3705	3063.4	0.055	0.8
Utilities	677	2639	0.048	3.9
Health Care and Social Assistance	2470	2459	0.044	1
Transportation and Warehousing	916	2314.5	0.042	2.5
Mining, Quarrying, and Oil and Gas Extraction	396	1890	0.034	4.8
Public Administration	1828	1456.3	0.026	0.8
Educational Services	1493	1384	0.025	0.9
Retail Trade	617	1072.9	0.019	1.7
Administrative and Support and Waste Management and Remediation Services	1446	1004.1	0.018	0.7
Real Estate and Rental and Leasing	629	942.4	0.017	1.5
Wholesale Trade	1085	906.4	0.016	0.8
Management of Companies and Enterprises	366	694.5	0.013	1.9
Construction	845	361.2	0.007	0.4
Accommodation and Food Services	215	332.2	0.006	1.5
Arts, Entertainment, and Recreation	562	289.5	0.005	0.5
Agriculture, Forestry, Fishing and Hunting	201	179.4	0.003	0.9

Table 7: Lobbying by different sectors of the economy, 1999-2017

economic characteristics. The economic data, taken from the 2017 U.S. Economic Census, include annual revenue and number of firms. Because the economic data covers only one year, we report each sector’s annual averages for lobbying expenditures and number of lobbying entities instead of the 19-year aggregates presented in Table 7. This time, sectors are ordered by revenue. Two sectors (Agriculture and Public Administration) were excluded because they had no economic data available.

The variables “Expense Ratio” and “Participation Ratio” report, respectively, a sector’s lobbying as a percentage of its revenue and its number of lobbying entities as a percentage of its total number of firms. Sector-wide annual averages are 0.0002 for expense ratio and 0.005 for participation ratio; that is to say, on average two-ten-thousandths (0.02 percent) of a sector’s annual revenue is spent on federal lobbying, and five of every one-thousand firms in a sector participate in lobbying. The expense ratio is comparable to the ratio of lobbying expenditures to GDP reported in Section 4, which was 0.0002 for most years.

Different sectors’ revenue rank is not always similar to their lobbying rank. Some sectors, like Manufacturing and Finance, appear toward the top in both Tables 7 and 8;

Sector	Total Entities	Lobbying Entities	Revenue (\$m)	Lobbying (\$m)	Expense Ratio	Partic. Ratio
Wholesale Trade	297379	236	8734807	47.7	0.00001	0.00080
Manufacturing	248599	1266	5587964.3	730.1	0.00013	0.00510
Retail Trade	647480	164	4949601.5	56.5	0.00001	0.00030
Finance and Insurance	236950	517	4340010.9	341.3	0.00008	0.00220
Health Care and Social Assistance	651135	742	2527903.3	129.4	0.00005	0.00110
Construction	700952	179	1999109.6	19	0.00001	0.00030
Professional, Scientific, and Technical Services	810213	898	1844781	161.2	0.00009	0.00110
Information	79418	361	1582097.6	281.2	0.00018	0.00450
Administrative and Support?	347192	336	950894.9	52.8	0.00006	0.00100
Accommodation and Food Services	539119	67	938237.1	17.5	0.00002	0.00010
Transportation and Warehousing	184735	322	895225.4	121.8	0.00014	0.00170
Real Estate and Rental and Leasing	309393	156	674147	49.6	0.00007	0.00050
Utilities	5886	290	577100.5	138.9	0.00024	0.04920
Other Services (except Public Administration)	494666	1242	544127.7	456.1	0.00084	0.00250
Mining, Quarrying, and Oil and Gas Extraction	19250	115	408792.8	99.5	0.00024	0.00600
Arts, Entertainment, and Recreation	129547	167	265620	15.2	0.00006	0.00130
Management of Companies and Enterprises	29319	95	121526.1	36.6	0.00030	0.00320
Educational Services	70954	535	65718.4	72.8	0.00111	0.00750

Table 8: Economic and political characteristics of sectors, 1999-2017

and some, like Arts and Management of Companies, are near the bottom in both. However, the Wholesale Trade, Retail Trade, and Construction sectors are near the top of the revenue table but only the middle or bottom of the lobbying table. By contrast, Other Services (except Public Administration) is second in the lobbying table but only fourteenth in the revenue table.

The correlation between a sector's revenue and its lobbying expenditure is positive but weak; an additional dollar of annual revenue is associated with two-thousandth of a cent of additional lobbying, which is to say that a one percent change in annual revenue is associated with a quarter percent change in annual lobbying. The correlation between the number of firms in a sector and the number of lobbying entities is also positive but weak; each additional firm is associated with 1/2500th of an additional lobbying participant, which is to say that a percent change in the number of firms is associated with a 0.16 percent change in the number of lobbies. (All correlations are far from statistically significant.)

8.2 Lobbying and Landmark Events

We continue the analysis of sector-wide spending patterns by returning to a question from Section 6. There we noted that the position and spending of big political spenders in the finance, real estate, and medical industries did not rise markedly in response to critical events impacting those industries—namely the Great Recession, the housing crisis, and the Affordable Care Act. We are now in a position to see whether the same is true not just for the big spenders but for the sectors as a whole. More generally, we would like to understand the extent to which lobbying is responsive to important events, including legislative activity. We tackle the question in two ways—by looking at relevant industries and relevant issue areas.

8.2.1 The Great Recession and Related Events

First consider the subprime mortgage crisis, the ensuing Great Recession, and the enactment of the Dodd-Frank Act in 2010. Figure 9 shows how lobbying by the finance and housing sectors responded to these important events by plotting the percentage of total lobbying attributable to these sectors over the years.

The finance sector is defined as all entities with two-digit NAICS code 52, “Finance and Insurance,” and the housing sector is defined as all entities with two-digit NAICS code 53, “Real Estate and Rental and Leasing.” As the figure shows, lobbying in the housing and finance sectors was not particularly responsive to these landmark events that greatly affected the sectors. Lobbying in both housing and finance (as a percentage of total lobbying) went up from 2006 to 2007, but this was not a particularly large jump for either sector, and in both sectors there were a few years with a greater share of lobbying than 2007. And finance’s share of lobbying actually went down in 2008 and 2009, and rose only slightly in 2010. In both cases, then, the rise in lobbying (if any) was nowhere near as

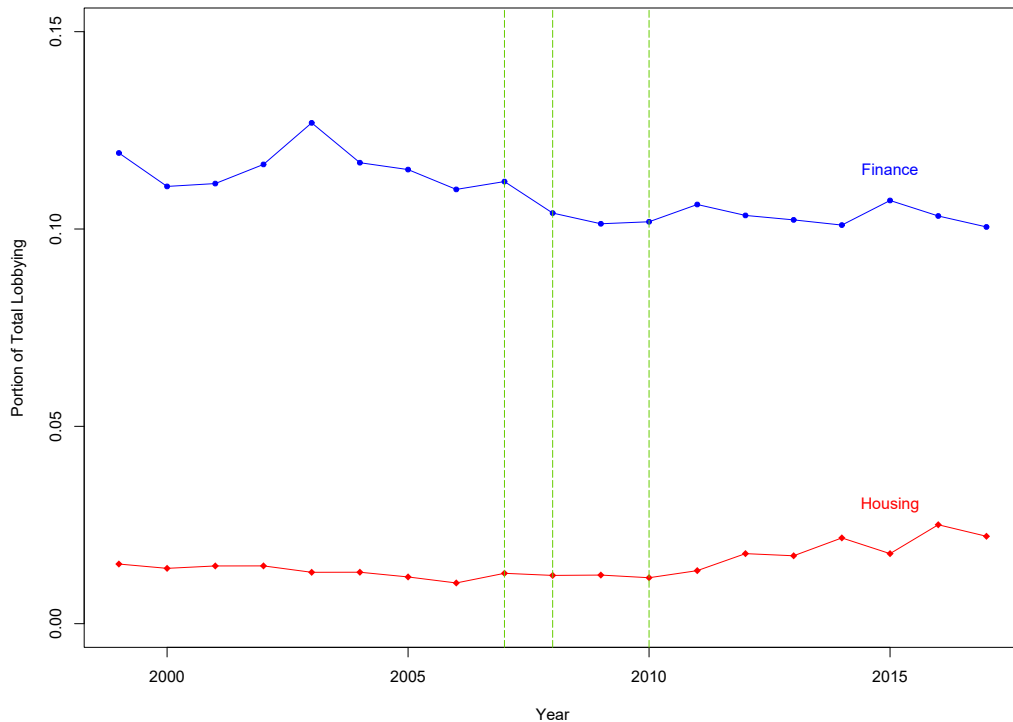


Figure 9: Lobbying in the finance and housing sectors as percentage of total lobbying, 1999-2017. The vertical lines mark the years 2007, 2008, and 2010, for the beginning of the subprime mortgage crisis, the beginning of the Great Recession, and the signing of the Dodd-Frank Act, respectively.

dramatic as the importance of the events of 2007-2010 would have led one to expect.¹⁷

Another approach to gauging the relationship between lobbying and landmark events is to look not at entities in particular industries but at lobbying on particular issues. As mentioned in Section 2, LDA reports include information on the issues lobbied, and we can exploit this information to see whether certain issues saw a surge in lobbying during landmark events pertinent to those issues.¹⁸ Figure 10 shows the portion of total lobbying attributable to the most relevant issue areas (namely, “Financial Institutions/Investments/Securities,” “Banking,” and “Real Estate/Land Use/Conservation”) over the years. The housing issue,

¹⁷ Figure 9 shows the percentage of lobbying by the finance and housing sectors, rather than the raw lobbying expenditures, so that one can assess the *relative* impact on these sectors of landmark events pertaining to them. But, as Figure 19 in the appendix shows, plotting aggregate lobbying expenditures does not change the conclusion that lobbying in neither sector was particularly responsive to the dramatic events of 2007-2010.

¹⁸ The Act specifies 79 issue areas. The full list is at <https://lda.congress.gov/LD/help/default.htm?url=Documents%2FAppCodes.htm>. Note that the issue areas are not exclusive; a single lobbying report may be marked with multiple issues.

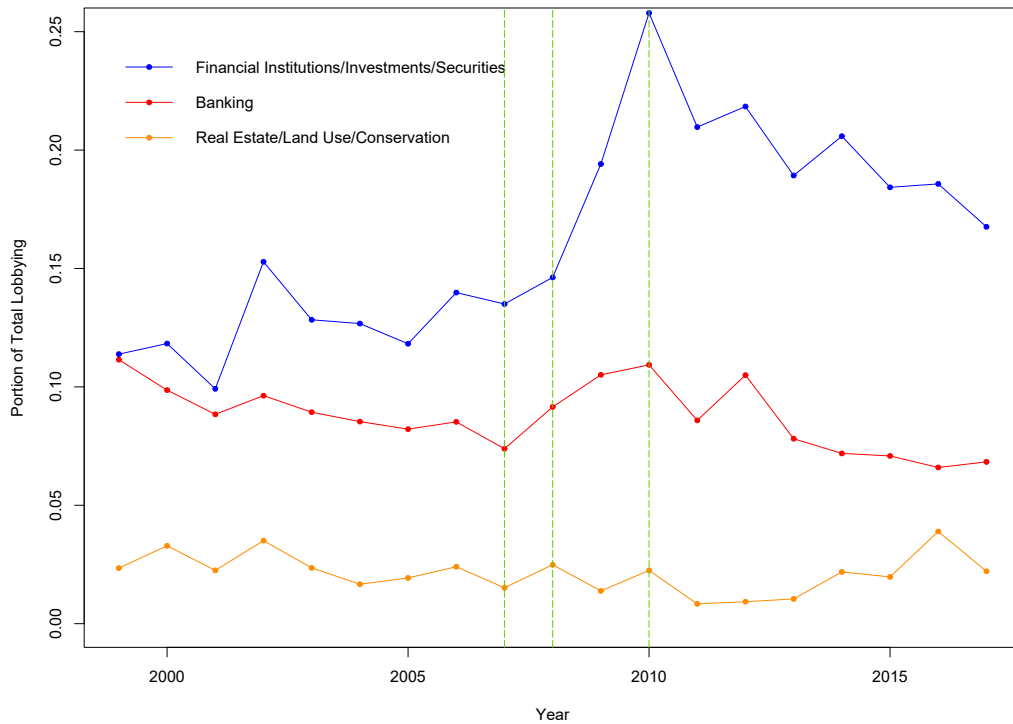


Figure 10: Lobbying in issues most related to finance and housing as percentage of total lobbying, 1999-2017. The vertical lines mark the years 2007, 2008, and 2010, for the beginning of the subprime mortgage crisis, the beginning of the Great Recession, and the signing of the Dodd-Frank Act, respectively.

like the housing sector in Figure 9, did not show a dramatic rise in tandem with the dramatic housing-related events of 2007 and thereafter. But the finance and banking issues experienced dramatic jumps in 2008, 2009, and 2010, coinciding with the Great Recession and the Dodd-Frank Act. And the year 2010 saw the greatest (relative) annual lobbying under the finance issue, and the second-greatest (relative) annual lobbying under the banking issue (second to 1999).¹⁹

Our conclusion is that lobbying on banking and finance issues increased dramatically during the dramatic events of the Great Recession. But the increase was not entirely due to greater lobbying by the finance sector. Rather, the increase was due to a redirection of lobbying money to relevant issues.

¹⁹ Like Figure 9, Figure 10 shows percentage rather than total amount of lobbying to gauge the *relative* impact of the Great Recession on more relevant issues. But as Figure 20 in the Appendix shows, plotting aggregate numbers does not change the conclusion that lobbying on banking and finance issues rose dramatically, whereas lobbying on housing did not, during the years of the Great Recession.

8.2.2 The Affordable Care Act

Next we explore the responsiveness of lobbying to the legislative ferment of the Affordable Care Act, introduced in Congress in September 2009 and signed into law by President Obama in March 2010. Again we look at lobbying first by industry and then by issue. The challenge with the group of industries most affected by the ACA is that, unlike the finance and housing industries most affected by the Great Recession and the subprime mortgage crisis, no two-digit NAICS code approximates it. We therefore craft a bespoke definition of the medical-pharmaceutical industry designed to capture entities whose work was majorly affected by the ACA. Our definition includes all entities with the four-digit NAICS code 3254 (“Pharmaceutical and Medicine Manufacturing”),²⁰ all entities with six-digit NAICS code 524114 (“Direct Health and Medical Insurance Carriers”),²¹ and relevant major professional and advocacy organizations.²²

Figure 11 shows our tailor-made group of pharma-medical-health-insurance-advocacy entities’ share of total lobbying overtime. There is no dramatic rise in 2009 or 2010, the years of great legislative activity surrounding the ACA; the increase in 2009 and the decrease in 2010 are of roughly the same magnitude as the generally mild movement of the trendline. As with the finance and housing sectors in relation to the Great Recession, the relative volume of lobbying by those most directly affected was not highly responsive to the ACA. The same conclusion holds if we plot total lobbying expenditures instead of their percentage (see Figure 21 in the appendix).

²⁰ This includes major bio and pharma firms such as Bayer, Merck, Pfizer, Eli Lilly, Amgen, and AstraZeneca as well as the association PhRMA. Note that some of these firms were not initially coded by BvD under 3254, but we recoded them as such during our recoding of the top 100 lobbies for each year (see discussion on p. 33).

²¹ This includes major health insurance companies and organizations such as America’s Health Insurance Plans, Aetna, Anthem, Blue Cross Blue Shield Association, Centene, Cigna, Health Care Service Corporation, and UnitedHealth. The same caveat about corrected coding applies.

²² Namely: 60 Plus, AARP, the American Cancer Society Cancer Action Network, the American Medical Association, the American Hospital Association, the Federation of American Hospitals, and the National Federation of Independent Business.

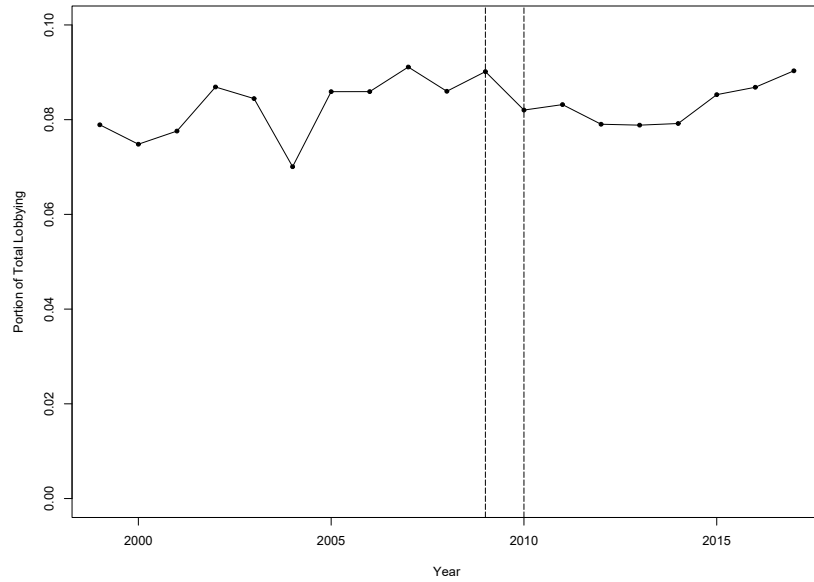


Figure 11: Lobbying by entities most affected by the Affordable Act (see footnotes 21-21 and accompanying text for definition) as percentage of total lobbying, 1999-2017. The vertical lines mark the years 2009 and 2010, when the ACA was introduced and signed into law.

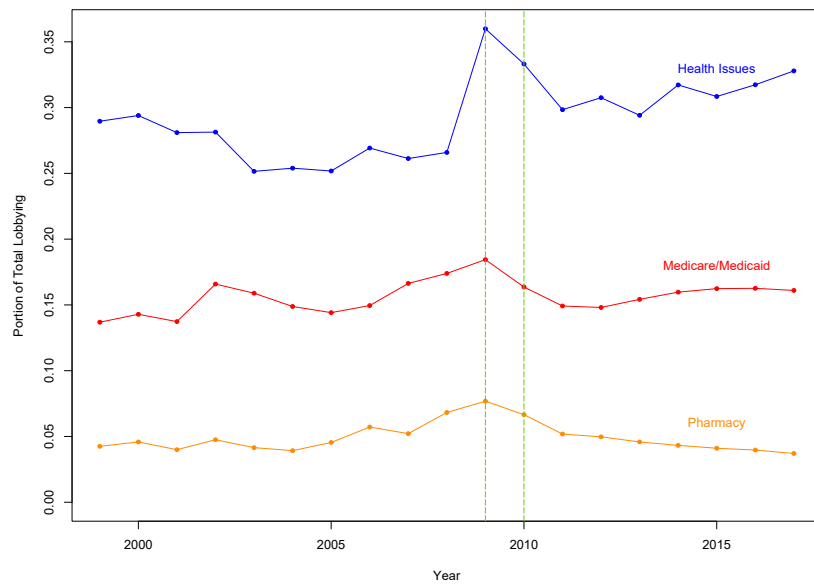


Figure 12: Lobbying on issues most relevant to the Affordable Act as percentage of total lobbying, 1999-2017. The vertical lines mark years 2009 and 2010, when the ACA was introduced and signed into law.

But the story is different when we plot lobbying on relevant issues. As Figure 12 shows, lobbying on the three most relevant issues (as percentage of total lobbying) jumped in 2009, most dramatically for Health Issues. For all three issues, the share of lobbying in 2009 is the highest among all years. And 2010 is the second-highest for Health Issues and third-highest for Pharmacy.²³ The same pattern holds if we plot total lobbying rather than percentage of lobbying by issues (see Figure 22 in appendix).

So we come to a similar conclusion as in the context of the Great Recession. Lobbying on the most relevant issues increased substantially during the legislative ferment of the ACA, but the increase was due to redirection of lobbying to relevant issues rather than to greater overall lobbying by affected industries. We add that the pattern we have documented of increased lobbying on relevant issues in response to the Great Recession and the ACA debate is also present in response to other landmark events. For example, lobbying on both the Defense and Homeland Security issues jumped following 9/11/2001, and lobbying on Intelligence and Surveillance jumped in concord with the FISA Amendments Act of 2008 and Edward Snowden’s revelations about mass surveillance in 2013.

8.3 The New Tech’s Lobbying

Another question to be taken up from Section 6 pertains to the computer and information technology industry. We noted that no representative of the industry appeared in the list of all-time top twenty spenders, and only Google appeared in the annual top tens (for the last four years). More generally, we want to investigate the truth of the impression that the new tech boys started out being uninterested in politics but have gradually overcome their West Coast distaste of Washington. For this purpose we selected Amazon, Apple, Facebook, Google, Microsoft, and Twitter—six tech companies with great cultural cachet that are constant targets of public and media attention. Facebook and Twitter are unquestionably

²³ Lobbying on the “Constitution” issue also jumped dramatically in 2010.

the most prominent newcomers; the others, being the top four tech firms by revenue (as attested by their position in the Fortune 500), provide a nice benchmark for comparison. Apple and Microsoft are the old new tech (founded in the 1970s); Amazon and Google are the middle-aged new tech (founded in the 1990s); and Facebook and Twitter are the young new tech (founded in the 2000s).

Figure 13 plots the six tech giants' lobbying expenditures over two decades. It reveals six different stories. Microsoft, the oldest of the bunch (founded 1975), was the only one already established as a substantial spender on congressional lobbying at the beginning of our data. It spent \$6.6 million in 1999 and remained the leader of the pack for more than a decade, often outspending its closest rival by around ten to one (indeed by about fifty to one and twenty-five to one in the first couple of years). Microsoft lost its top spot only in 2011, when it was surpassed by Google. It was number two to Google from 2011 to 2015, but was overtaken by Amazon in 2016 and by Facebook too in 2017. Since 1999, Microsoft's spending has generally risen, albeit with some ebbs and flows, but the fluctuations have not been dramatic. Indeed, of the six firms, Microsoft's spending has been one of the most consistent, with the lowest ratio of maximum to minimum annual spending and the second-lowest dispersion index (after Twitter). Surprisingly, perhaps, Microsoft's greatest spending occurred not during the great antitrust investigations of the early 2000s but in 2013. Overall, then, Microsoft has been a strong and steady spender. The decline of its position relative to the other tech giants was the result not so much of fluctuations in its own spending but of the dramatic rise in the others' spending.

Apple, the other member of the tech old guard, has an entirely different story. Though founded around the same time as Microsoft (1976), Apple was not a big spender on lobbying in the beginning years of our data. It started at \$190,000 in 1999 and did not reach the million-dollar mark until 2005. Up until 2013, Apple's annual spending was often at the same level as Amazon's, a company founded two decades later. Apple's spending has risen

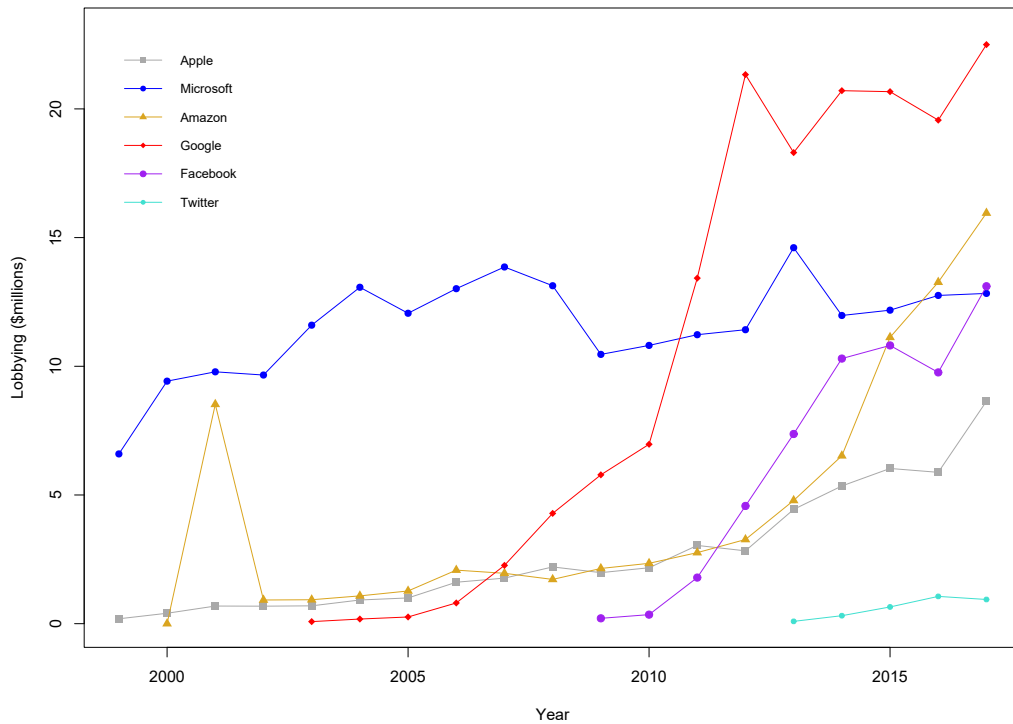


Figure 13: Lobbying trends for six tech giants, 1999-2017

steadily over two decades, but the rise has been slow. Though the pace of increase picked up in 2013 and then again in 2017, Apple never took any dramatic jumps in spending. The newcomers did take such dramatic jumps, and they left Apple in the dust. Since 2012, Apple has been near the bottom of the pile, sitting above only Twitter. Consistently over two decades, then, Apple has shown relatively little interest in lobbying. Apple’s relatively modest lobbying is especially noteworthy in light of its great wealth. It is second from the bottom in lobbying but has often been first in revenue since 2010.

The stories of the middle-aged tech giants, Amazon and Google, are similar in outline: They started out spending little or nothing on lobbying, but they eventually took dramatic leaps that made them the top two spenders. But the two companies’ stories differ in detail. Amazon, founded in 1994, did not spend any money on lobbying Congress until 2001. (It registered in 2000 but did not spend anything that year.) It started out with a bang, spending \$8.5 million in 2001 and almost catching Microsoft as the top spender, before

dropping down to below \$1 million in 2002.²⁴ Setting aside the 2001 blip, Amazon started out mildly interested in lobbying, with steadily-but-slowly-rising spending, comparable to Apple's, during 2002-2013. But it dramatically ramped up its spending beginning in 2015. Amazon surpassed Microsoft in 2016 to become second to Google in 2016 and 2017. (Given the importance of the Internet sales tax issue to Amazon's business model, much of Amazon's lobbying probably occurs at the state rather than federal level, so it's likely that our numbers significantly understate Amazon's overall domestic lobbying.)

Google, founded in 1998, began lobbying later than Amazon but ramped up its spending earlier. Google did not spend any money on lobbying Congress before 2003 and did not break the million-dollar mark until 2007. Since then, though, it has never been below second in spending. It took two dramatic leaps in 2011 and 2012, overtaking Microsoft as the top spender in 2011 and retaining that position by some distance since then. The difference between Google's maximum and minimum (non-zero) annual spending is the highest among the six companies, in both absolute and relative terms (the maximum being \$22.4 million, or 281 times, higher than the minimum).

Facebook, like Google, fits well the narrative of a Silicon Valley startup turned behemoth that started out Washington-shy but lost little time shedding its shyness. Launched in 2004, Facebook did not start lobbying Congress until 2009 and did not break the million-dollar mark until 2011. But its spending rose sharply afterwards, and it was among the top three for most of 2012-2017.

Twitter, the latest entrant, has spent by far the least on lobbying. Founded in 2006, it did not start spending money on lobbying Congress until 2013 and has surpassed the million-dollar mark only once, in 2016 (by a bare \$60,000). Twitter's lobbying has also

²⁴ Amazon's local peak of 2001 represents both the greatest annual rise (\$8.5 million) and the greatest annual fall (\$7.6 million) in the six companies' spending. We have not done much research into the 2001 Amazon blip and cannot pinpoint its source. We think it must have something to do with online sales taxes, but we don't know what happened in 2001 that was so dramatic. Perhaps it had to do with the rise of the Streamlined Sales Tax Project.

been consistent: Of the six companies, it has the lowest dispersion index and the second-lowest ratio of highest to lowest annual spending (after Microsoft). Unlike Google and Facebook, then, Twitter has retained its dislike for the Washington style of politicking. This is consistent with its general “good person” image. But it’s also consistent with its relatively low revenue. After all, Twitter’s cultural and political prominence is not accompanied by a comparable economic prominence. Twitter has never broken into the Fortune 500; the others are all in the top 50.

In sum, the narrative that new tech firms started out wary of Washington-style lobbying but quickly overcame their compunctions fits well the behavior of Amazon, Google, and Facebook. The narrative does not really apply to Microsoft, which was already a big player by the time the LDA went into effect. And it does not fit well the behavior of Apple and Twitter, which have shown relatively little interest in lobbying over the years.

8.4 Concentration Patterns by Industry

We continue our investigation of industry-specific lobbying patterns by analyzing lobbying concentration by sector. Figure 14 portrays political HHI for all 20 NAICS sectors for all 19 years under study. Almost all sectors spent all years in the “unconcentrated” region. We had already learned that the lobbying market as a whole is unconcentrated (recall Figure 7), and now we know that lobbying is also unconcentrated in almost all sectors. Only three sectors ever made it out of the unconcentrated region, and one of them (Construction) did so for only one year. Two sectors, Agriculture and Housing, spent quite a few years in the highly concentrated region. Agriculture was there every year until 2006 and then climbed down to the unconcentrated and moderately concentrated regions. Housing, by contrast, used to be unconcentrated or moderately concentrated but has become highly concentrated since 2012. The agriculture sector’s lack of lobbying competition interestingly complements its other characteristics discussed above, namely its lowermost position

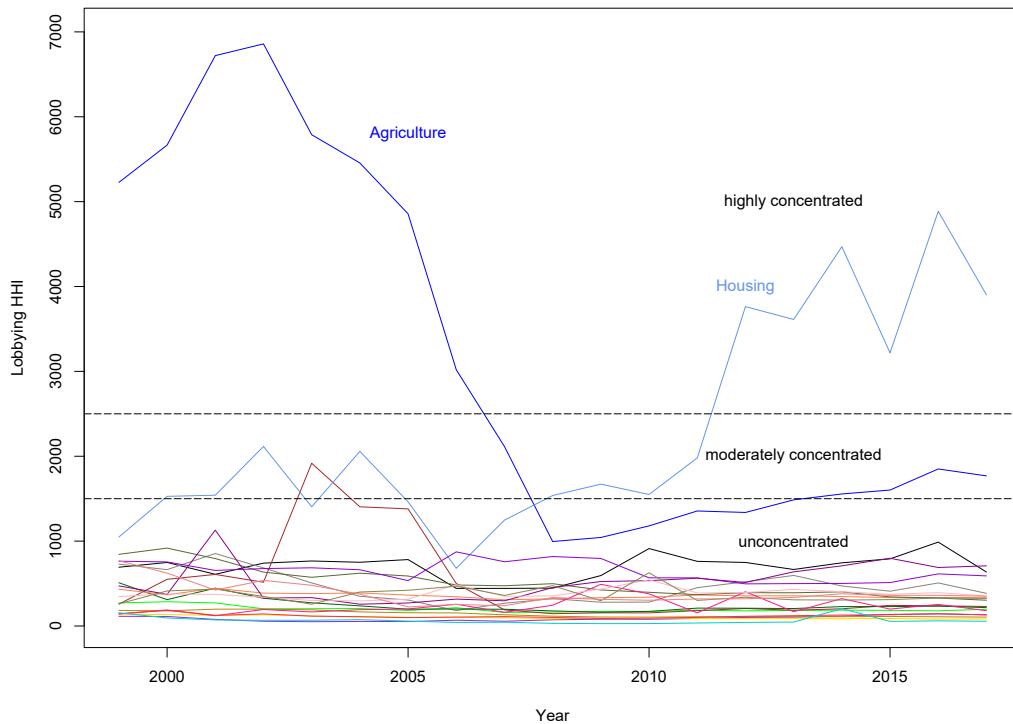


Figure 14: Patterns of lobbying concentration in all 20 NAICS sectors, 1999-2017

in aggregate lobbying and its lack of big spenders. The latter characteristics seemed to undermine the conventional wisdom about the power of the farm lobby, but we left open the possibility that the low spending is due to the absence of meaningful competition. Figure 14 is consistent with this conjecture, especially in the early years. It is also worth noting in this connection that the annual number of distinct lobbying entities in the Agriculture sector is the lowest of all sectors—with an annual average of 55 entities compared to an all-sector annual average of 427.²⁵ Agriculture’s total number of distinct lobbying entities is also the lowest among all sectors (see Table 7). In short, it appears that lobbying in the agricultural sector is done by a few entities who do not face much opposition and therefore do not need to spend a great deal to achieve their ends.

²⁵ However, Accommodation and Food Services also has very few lobbying entities (annual average of 67), and it is not nearly as concentrated as Agriculture.

9 Relation of Economic and Political Concentration

This section explores the connection between economic variables and political concentration. In particular, we are interested in discovering whether economic and political concentration are correlated. Advocates of reviving the political dimension of antitrust are concerned about such a correlation, worrying that economic concentration tightens the sphere of democratic contestation. These advocates have not articulated a precise theory of this relationship, but in the Formal Appendix we present a game-theoretic model that supplies a concrete theoretical foundation for the concern that economic concentration would increase political concentration. We investigate the relationship between economic variables and political concentration first at the sector level (section 9.1) and then at the firm level (section 9.2). A primary takeaway from our preliminary empirical analysis is that, contrary to the concerns voiced by the neo-Brandeisian movement and the predictions of the model in the Formal Appendix, economic concentration does not correlate with political concentration.

9.1 Sector-Level Regressions

We first explore the connection between political concentration and economic variables at the sector level. Our economic data comes from the U.S. Economic Census. In particular, we have used datasets prepared by Jan Keil from the Census data (see <https://sites.google.com/site/drjankeil/data>). Keil's datasets are extremely useful because they obviate the need for us to scrape the Census website or to download and collate Census data, and because he has calculated a reliable (lowerbound) estimate of the HHI for industries where the Census does not make the HHI available.

The good news about Census data is that it is very accurate. The bad news is that the Economic Census is taken not annually but once every five years, and the results from the

2017 Census have not been made fully available yet. To match our annual lobbying data with five-year Census data, we imputed the results for each Census year to all the years in our dataset that are closest to it. To wit, results from the 1997 Census are imputed to 1999; from the 2002 Census to all the years 2000-2004; from the 2007 Census to 2005-2009; and from the 2012 Census to 2009-2017 (with the recognition that, once the 2017 results are released, they will be imputed to years 2014-2017). This is far from ideal, but it might be the best we can do. The alternative of using Compustat’s concentration estimates does not seem palatable given Keil’s conclusion that they have a “vanishingly low correlation with the more comprehensive Census measure.” Another option is to use only the data for the years in which the Census was carried out. That would lose many observations (reducing the number from 218 to 34) but preserve greater accuracy.

There remains the problem of data unavailability. Keil’s dataset is missing sector-level revenue and concentration data for eight of the twenty NAICS sectors: (1) Agriculture, Forestry, Fishing and Hunting, (2) Construction, (3) Management of Companies and Enterprises, (4) Manufacturing, (5) Mining, Quarrying, and Oil and Gas Extraction, (6) Public Administration, (7) Retail Trade, (8) Transportation and Warehousing. We omit these sectors from our regressions.²⁶

We regress the concentration of political lobbying, as measured by the political HHI of a sector-year, on a number of economic and political covariates. We report a variety of specifications. The first models include only economic covariates and are reported in Table 9. The models suggest that there is a negative relationship between sector-year economic HHI and political HHI. Such a relationship may be consistent with Bombardini and Trebbi (2012)’s arguments that more of the lobbying of small firms in competitive indus-

²⁶There is no data at all for sectors (1)-(3) and (5)-(6). For the other three, Keil has data at levels finer than the sector level (that is, NAICS codes with three or more digits). Keil’s decision to aggregate the economic data at finer levels seems reasonable given the extremely broad definition of these three sectors, especially manufacturing, and we might do likewise for these sectors in future drafts. In addition to the eight missing sectors, Keil’s dataset is missing observations for the Utilities and Whole Trade sectors in 2002.

tries is carried out through trade associations. But the negative relationship is statistically significant only in model 4 where we include sector and year fixed effects and measure sector revenue in logs. We do find more consistent evidence of a negative correlation between industry revenue and political concentration, especially when we add fixed effects.

<i>Dependent variable: Political (lobbying) HHI</i>				
	(1)	(2)	(3)	(4)
revenue (billions)	-0.065** (0.028)		-0.218** (0.096)	
economic HHI	-0.993 (0.806)	-0.826 (0.825)	-4.507 (4.238)	-10.430** (4.944)
log(revenue)		-40.359 (40.193)		-886.211** (373.210)
constant	554.217** (230.461)	1,566.886 (1,090.076)	707.810*** (156.018)	24,228.600** (9,898.700)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	Yes	Yes
Observations	211	211	211	211
R ²	0.060	0.038	0.749	0.750
Adjusted R ²	-0.039	-0.063	0.706	0.707
Residual Std. Error	721.486 (df = 190)	729.613 (df = 190)	383.670 (df = 179)	383.115 (df = 179)
F Statistic	0.603 (df = 20; 190)	0.379 (df = 20; 190)	17.275*** (df = 31; 179)	17.342*** (df = 31; 179)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 9: Regressions of sector-year political HHI on sector-year economic variables

Next we include political as well as economic covariates. Table 10 reports results including sector-year lobbying expenses in millions and the number of lobbying entities in the sector. The latter variable is included due to the mechanical (negative) effect of the number of lobbies on the political HHI index. We once again find the negative effect of economic HHI on political HHI (models 1 and 2), but it is not robust to the inclusion of sector fixed effects (models 3 and 4).²⁷

The results also suggest that larger sectors have less concentrated lobbying, though this correlation is hard to interpret given the fairly arbitrary definitions of the sectors. More interesting is the association between the aggregate lobbying of a sector and the

²⁷ One potential problem with the estimates in Table 10 is that the amount spent on lobbying and the number of lobbying entities per sector are collinear (regressing the former (in millions of dollars) on the latter yields $\hat{\beta} = 0.35, p < 0.01, R^2 = 0.6$). But the negative relationship between economic and political HHI persists if we include only one of these two covariates (either one), though the relationship is not statistically significant across all specifications.

concentration of those expenditures. Using the column 4 estimate, the model predicts that, at the average level of lobbying, a ten percent increase in annual lobbying expenditures is associated with a 162 point increase in the political HHI.

<i>Dependent variable: Political (lobbying) HHI</i>				
	(1)	(2)	(3)	(4)
revenue (billions)	-0.088*** (0.026)		-0.253** (0.098)	
lobbying (millions)	1.574*** (0.568)		1.728 (1.068)	
economic HHI	-3.608*** (0.965)	-5.350*** (1.233)	-7.516 (4.666)	-5.847 (4.195)
lobbying entities	-1.388*** (0.236)	-1.832*** (0.306)	0.058 (0.422)	-0.729** (0.356)
log(revenue)		-93.898** (40.980)		-955.596*** (317.455)
log(lobbying)		395.249*** (106.865)		1,623.184*** (187.612)
constant	900.636*** (214.457)	-3,297.087** (1,584.373)	797.733*** (163.436)	95.004 (8,926.166)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	Yes	Yes
Observations	211	211	211	211
R ²	0.245	0.237	0.754	0.825
Adjusted R ²	0.157	0.147	0.708	0.793
Residual Std. Error	649.765 (df = 188)	653.447 (df = 188)	382.346 (df = 177)	322.204 (df = 177)
F Statistic	2.778*** (df = 22; 188)	2.651*** (df = 22; 188)	16.439*** (df = 33; 177)	25.337*** (df = 33; 177)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 10: Regressions of sector-year political HHI on sector-year economic variables and sector-year lobbying expenditures.

Despite the limitations of analyzing political concentration at the sector-level, a few of our findings are noteworthy. The most important is the apparent negative correlation between political and economic HHI, which would suggest the possibility that more competitive sectors have more concentrated political activity. As noted above, one plausible explanation is that of Bombardini and Trebbi (2012), who show that on trade policy lobbying, the smaller firms in competitive industries tend to be represented by trade associations.

If this were true, the relationship would be an artifact of our inability to assign trade association expenditures to the constituent firms. We will be able to assess the plausibility of this explanation when we add data on whether lobbying is done by individual firms or associations, which will show us whether the proportion of association-directed lobbying is in fact higher in more competitive industries than in less competitive industries. Another possibility is that small firms in less competitive industries lobby harder (than they do in more competitive industries) to offset the advantages of the dominant firms. There are certainly qualitative examples especially from the tech industry where smaller firms mobilize to take on giants like Microsoft or Google. But it is not clear that this can be sustained as an equilibrium, because the large firms would clearly have incentives to countermobilize. A third possibility is that there are diminishing returns to lobbying so that large firms engage in relatively less political activity than small firms. In the next section, we shed some light on the plausibility of these mechanisms by disaggregating the model down to the firm level.

The second notable finding is the positive correlation between total political expenditures and political HHI (controlling for the number of lobbying firms).²⁸ The implication is that the most politically active sectors are those where that activity is most concentrated. This correlation may reflect a pattern where the marginal dollar of sectoral political expenditure comes from its largest lobbies and perhaps suggests increasing returns to political activity in concentrated industries. We explore these possibilities in the next section as well.

²⁸The relationship persists with roughly the same magnitude and with statistical significance at the 99 percent confidence level even if we exclude the number of lobbying firms from the model when we include sector fixed effects. If we do not include sector fixed effects, the coefficient becomes statistically significant in the opposite direction.

9.2 Firm-Level Regressions

As noted above, the sectoral patterns considered in the last section imply a number of patterns of behavior for individual firms as a function of their size and position in the industry. Moreover, one concern about the previous section’s analysis is that the results may be artifacts of how firm-level lobbying decisions are aggregated into industry-level measures. This is especially concerning given the issues we flagged about sector definitions.²⁹

To deal with these issues, we now disaggregate to the firm-level. In doing so, we can more directly assess the relationship between firm size and lobbying. Moreover, we ask whether the relationship between firm size and lobbying is stronger for large firms than for small firms. If that is true, then market concentration (defined at whatever level) would tend to be associated with greater concentration in political advocacy. But if the relationship between firm size and advocacy were much stronger for smaller firms, an increase in market concentration might lead to a less concentrated allocation of political expenditures, in line with the pattern found in the last section (although the pattern was not always statistically significant).

So the main goal for this section is to estimate the responsiveness of lobbying to firm revenue and to determine whether the responsiveness varies by firm size. To this end, we gathered firm-level economic data from Compustat for all the years under study (1999-2017) and matched the observations to our lobbying data at the year-firm level.³⁰

We used the following linear model:

²⁹The results of this section are subject to revision following a pending data update.

³⁰We matched first using the gvkey, a unique identifier used by Compustat, and then also using fuzzy matching on firm names. We lost many observations when we matched: If we had economic data for all the entities in our lobbying dataset for all 19 years under study, the number of observations in our regressions would be approximately eight times what it is now.

Some of the attrition is attributable to the fact that many of the entities in our lobbying dataset are not firms but associations of firms or other types of entities (see discussion in § 6), in which case the dropping of the observations is not a problem for our purposes. But the attrition is also attributable to the fact that Compustat has data only for publicly traded firms. In future drafts, we may incorporate data from BvD on private firms (BvD has more data than Compustat, but the quality of the data is lower). We will also attempt to improve our fuzzy matching.

$$\log(\ell_{it}) = \beta_1 \log(s_{it}) + \beta_2 (\log(s_{it}) \times \text{top}_{ijt}) + \alpha_j + \theta_t + \varepsilon_{it} \quad (1)$$

where i indexes firms, j indexes sectors (two-digit NAICS codes), and t indexes years. ℓ_{it} is the amount of firm i 's lobbying in year t . s_{it} measures firm i 's economic performance in year t . We used six different measures of economic performance: revenue, sales, EBIT, EBITDA, pre-tax income, and income before extraordinary items. The results we got from these six measures are substantially identical, so we only report the results based on revenue. The variable top_{ijt} is an indicator for whether firm i was among the top four firms in economic performance in industry j in year t . α_j and θ_t are industry and year fixed effects, respectively, while ε is the error term. For our purposes, the key estimates are $\hat{\beta}_1$, the elasticity of firm size to political activity, and $\hat{\beta}_2$, the change in the elasticity for the industries' largest firms. As modeled, the growth rate of lobbying expenditures is a function of the growth rate of sales times the elasticity of lobby expenditure to sales. So if the industry is concentrating and political concentration is responsive to economic concentration, lobby expenditures will concentrate so long the elasticity for the top firms is not substantially below that of small firms. Also when sales are concentrating, the extent of lobby concentration will be higher when the elasticities are larger.

The main results are presented in Table 11. The first column presents the baseline estimate of the elasticity of lobbying expenditure to firm revenue with sector-level fixed effects. That estimate is 0.49. This implies that, at average levels of firm revenue and lobbying, for every one percent increase in firm revenue, political advocacy expenditures rise only about half a percent. Column 3 provides the estimate when we include firm fixed effects in place of sector fixed effects. It is substantially larger at 0.7 but well less than 1.0. Thus, while lobbying expenditures grow in firm size, the share of revenues allocated

to lobbying falls as firms get bigger. It might be useful to compare these results to those of Bonica and Rosenthal (2015) who estimate the elasticities of campaign contributions for the members of the Forbes 400. They estimate elasticities of approximately 1.0 suggesting that wealthy donate a roughly proportionate share of their wealth to political candidates and parties.

The next question is the elasticity of lobbying behavior to increased revenues for the largest firms in a given sector. From column 2, we can see that the coefficient on the interaction of the top-four indicator and revenues is close to a precise zero. In column 4, we find that the top firms have lower elasticities than smaller firms, but the difference is only -0.01 and it is statistically significant only at a 90-percent level. So we cannot reject the null hypothesis that the top four firms in each industry grow their political advocacy at the same rate as other firms in response to increased revenues. The substantive results are nearly identical when we use other measures of firm size.

<i>Dependent variable: log(lobbying)</i>				
	(1)	(2)	(3)	(4)
log(revenue)	0.49*** (0.01)	0.49*** (0.01)	0.70*** (0.02)	0.71*** (0.02)
log(rev) × topfour		0.004 (0.01)		-0.01* (0.01)
constant	-4.85*** (0.33)	-4.85*** (0.33)	-3.96*** (1.53)	-4.05*** (1.54)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	Yes	Yes	No	No
Firm fixed effects?	No	No	Yes	Yes
Observations	76,324	76,324	76,324	76,324
R ²	0.07	0.07	0.56	0.56
Adjusted R ²	0.07	0.07	0.53	0.53
Residual Std. Error	5.83 (df = 76282)	5.83 (df = 76281)	4.15 (df = 71124)	4.15 (df = 71123)
F Statistic	147.04*** (df = 41; 76282)	143.55*** (df = 42; 76281)	17.62*** (df = 5199; 71124)	17.62*** (df = 5200; 71123)

Note:

* p<0.1; ** p<0.05; *** p<0.01

Table 11: Regressions of Lobbying on Revenue and Firm Size

These results imply a fairly modest impact of market concentration on political concentration. The change in lobbying behavior in response to revenue increases seems to be the same for large and small firms. So in a concentrating industry, the lobby expenditures of large firms are growing relative to small firms only to the extent to which the top firms

are growing faster economically.³¹

In other words, any effect of market concentration on lobbying concentration is a revenue effect, not a direct concentration effect. And even the revenue effect is relatively small. These results imply that, within an industry, lobby four-firm concentration ratios will increase at a lower rate than the corresponding sales concentration ratios.

The results from this section are also helpful for interpreting the sector-level patterns in the preceding section. First, the firm-level results do not support interpretations of the sectoral patterns that depend on differences of behavior by the large and small firms within a sector. Second, if, across industries, market concentration is higher where revenues are lower, the positive correlation between revenues and lobbying concentration in this section is not inconsistent with the negative correlation between market concentration and lobbying concentration in the preceding section (with the caveat, of course, that the correlations are not always statistically significant).

10 Discussion and Conclusions

This paper has provided a preliminary look at the pattern of concentration in the political marketplace and its relationship to economic concentration. Although the work is preliminary and descriptive, we think it sheds light on important issues related to the political activities of firms and the relationship between economic and political power. Several points stand out:

- The set of the most politically active firms is quite stable. The top lobbies have varied very little over time or in response to the emergence of new issues.

³¹An important caveat is warranted here. The estimated correlations are for those firms who choose to lobby. The correlation for non-lobbying firms is zero. So the ultimate impact of economic concentration on political concentration will depend on how firm size affects political behavior on the extensive margin. However, note that a firm is included as long as it lobbied in *any* of the years under study (with a lobbying amount of zero for years of not lobbying), so our regressions do account for some extensive-margin effects.

- The overlap between economic and political elites is substantial but smaller than expected. Though there are many firms that belong to both the set of 100 richest firms and the set of 100 top lobbies, there are about twice as many firms that belong to one set but not the other.
- Important events affect lobbying in that relevant issues make up a larger portion of all lobbying in the times surrounding the events than in other times. However, the level of lobbying by affected industries does not change much in response to important events. It appears that greater lobbying on relevant issues is due to the channeling of lobbying money from other issues rather than to increased expenditures by affected industries or entities.
- The story of West Coast tech firms starting off as Washington-shy but gradually shedding their shyness to become lobbying powerhouses holds up for Amazon, Google, and Facebook. It does not hold up for Apple and Twitter, which have been relatively indifferent to lobbying in the years under study.
- Political markets are far less concentrated than associated economic markets.
- At the industry sector level, there is a negative correlation between political and economic concentration. But it is not very robust and may be an artifact of how firms are classified by sector.
- We do not find a substantial difference between top firms and other firms in the relationship between firm revenue and lobbying. That fact combined with relatively low elasticity of lobbying expenditure to firm size suggests a modest association between economic and political concentration.

Taken together, these findings suggest that the process of transforming economic power into political power is far from automatic. While large firms are very active in politics,

so are many of their smaller competitors. Thus, at least within sectors, there remains a degree of political pluralism. Increasing economic concentration does not appear to have appreciably tightened the sphere of political contestation through lobbying.

But our work to date has very little to say about political competition across sectors. The changing allocation of resources across sectors and the resulting changes in political power may be more consequential for the nation's political economy than the within-sector shifts we focus on. For example, many authors have recently argued that the emergence of the finance industry and the consolidation of commercial banking, investment banking, and insurance into megabanks have distorted financial regulation by eliminating cross-sectoral political competition (see Johnson and Kwak (2010), Zingales (2012), ch. 4, and McCarty, Poole and Rosenthal (2013).) Similarly, the political competition among tech giants may pale in importance compared to the competition between Amazon and traditional retailers and that between Google and old media advertisers. We hope to probe these questions more deeply in future work.

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Appendix

Cleaning and Recoding of LobbyView Data

In order to use the LobbyView data for our purposes, we had to clean and sometimes recode it. First, we standardized the naming of entities. In the original data, the same entity is often called by various names; for example, the R.J. Reynolds Tobacco Company goes by 23 different names and the Biotechnology Innovation Organization by 14 different names. These are extreme examples, but the multiplication of entity names is ubiquitous. Our standardization makes it easier both to aggregate the behavior of entities and to match names to bvdids—an essential step in producing accurate measures of concentration. Second, we needed to achieve more accurate matching of names to bvdids. Many bvdids are missing in LobbyView and many are incorrect. A specific issue is that there are many foreign bvdids mistakenly assigned to American firms with similar names.

The data cleaning was extremely time-consuming. After some experimentation, we settled on a process of machine-assisted manual coding. First, we used fuzzy matching based on Levenshtein distance to connect entity names in LobbyView with entity names that we have pulled from Orbis (BvD’s proprietary online database). The method prepopulated names and bvdids for many of the observations. Then, we reviewed all observations manually to choose between multiple suggested matches when there is more than one machine-suggested match, to make sure that the machine-suggested match is accurate when there is a unique machine-assisted match, and to find matches when there is no machine-assisted match. We believe the process provides a good balance between accuracy and efficiency.

Here are some statistics that illustrate the effects of our cleanup:³²

- The number of unique entity names in LobbyView is 67,842 whereas the number of

³² The numbers are based on the entire dataset, rather than the dataset cut short at 2018 that we have used for most of our analyses, because we did the cleanup for the entire dataset.

unique entity names we have recorded is 42,584. This means that 37 percent of the entity names in LobbyView were duplicates which we have now corrected.

- The number of unique bvdids recorded in LobbyView is 34,874 whereas the number of unique bvdids we have recorded is 31,871.
- The number of observations with a missing bvdid in LobbyView is 137,553 whereas the number of observations with a missing bvdid in our dataset is 124,183. So we have reduced bvdid missingness by 10 percent.
- The previous two bullet points, however, understate the extent of our corrective work on bvdids. That is because we not only supplied some previously missing bvdids but also changed some mistakenly assigned bvdids—either by supplying a correct bvdid in place of a mistaken one or, when the correct bvdid could not be found, by replacing a mistaken bvdid with a missing value. Taken together, we changed the bvdid for 173,127 observations (18 percent of all observations).

Issues with Spending Data

There are two important two issues lobby spending data: (1) double counting, (2) missingness. The first issue arises because filers may amend their reports (e.g., to add or delete names of lobbyists, or to change the reported spending amount). These amended reports are added to, rather than deleting and replacing, the original files available on the U.S. Senate’s website. Consequently, including both the original and the amended reports results in double counting. This lack of attention to double counting is a serious issue afflicting previous studies based on OpenSecrets data (<https://www.opensecrets.org/>). After discussions with Kim and independent checking, we are satisfied that the double-counting issue has been fixed in LobbyView.

The second issue is that the expenditure amount is missing for more than 22 percent of observations (211,427 out of 956,148 pre-2018 observations). Looking closely into lobbying reports, we have determined that missing expenditures are of two kinds: genuine missing values and zeros. Certain kinds of lobbying reports—in particular, registration statements and their amendments—do not call for the reporting of any expenditures. So the NA in the expenditure field for these observations is not a genuine NA but rather a zero. This covers about 40 percent of the missing values (83,949 observations). For the remainder, it appears that missing values occur when the lobbying expenditure was below the threshold that triggers the requirement to report a specific amount under the Lobbying Disclosure Act. This threshold was \$10,000 before the 2007 amendments to the Act, effective 2008, and \$5,000 afterwards. (Another caveat is that the Lobbying Disclosure Act requires not exact reports but simply a “good faith estimate” that is “rounded to the nearest \$20,000” before the amendments or “the nearest \$10,000” afterwards.)

In our judgment, the best way to address the missingness problem is to treat the amount for registration and registration amendment report types as real zeros and to impute an estimated amount for the below-threshold reports. We chose to impute missing values as the midpoint of the range between zero and the reporting threshold—that is, \$5,000 for pre-2008 observations and \$2,500 for other observations. The analyses reported in the paper are based on this approach. But we also imputed the maximum and minimum of the below-threshold range (the minimum being equivalent to treating all missing values as zeros), and we show those results in Figures 15–16. They show that the choice of the amount to impute does not significantly affect spending trends.

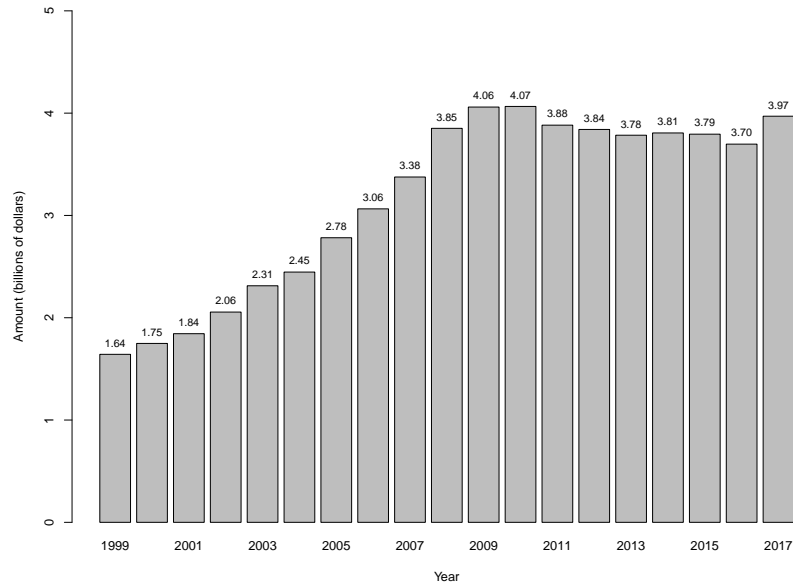


Figure 15: Lower-bound estimate for lobbying expenditures. The approach is to take spending data at face value (treat all NAs as zero). Aggregate sum: \$60,022,919,756. Annual maximum: \$4,065,498,268. Annual minimum: \$1,642,245,185. Annual median: \$3,696,995,274. Annual mean: \$3,159,101,040.

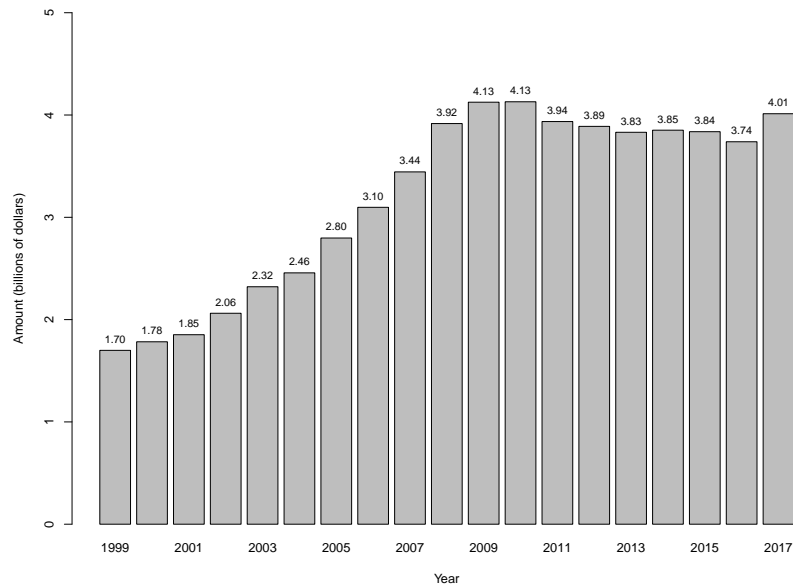


Figure 16: Upper-bound estimate for lobbying expenditures. The approach is to assume the highest possible amount for below-threshold lobbying expenditures (that is, \$10,000 for pre-2008 observations and \$5,000 for other observations). Aggregate sum: \$60,781,949,756. Annual maximum: \$4,129,493,268 (year 2010). Annual minimum: \$1,699,405,185. Annual median: \$3,738,515,274. Annual mean: \$3,199,049,987.

Alternative Similarity Scores

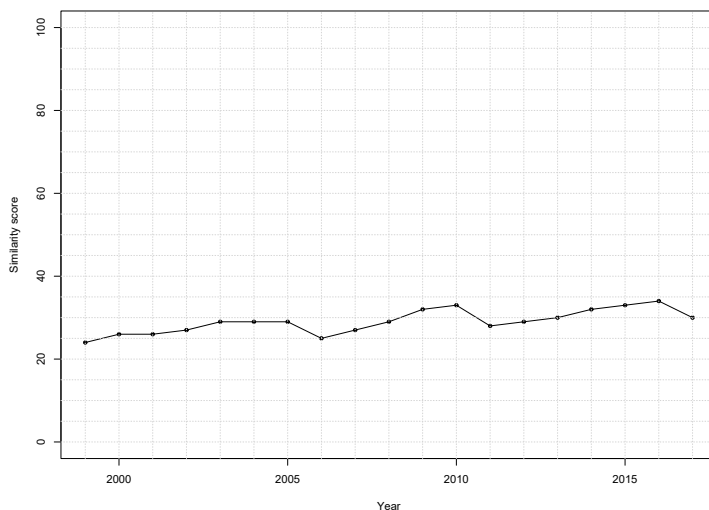


Figure 17: Similarity scores, defined as the number of firms in the top 100 lobbying spenders that are listed in the top 100 firms in the Fortune 500. By contrast to Figure 5, which looks at the top 100 lobbies that are not associations, this figure looks at the top 100 among all lobbies. As expected, similarity scores are lower than in Figure 5. They range from a low of 24 to a high of 34, with an annual mean of 29.05, median of 29, and mode of 29.

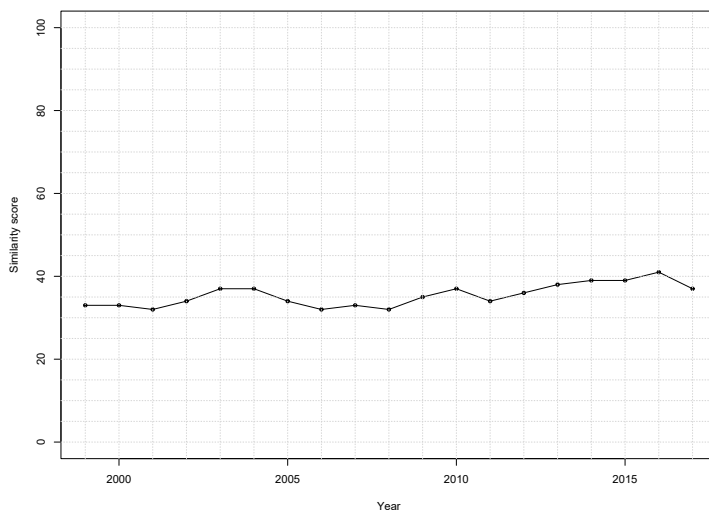


Figure 18: Similarity scores, defined as the number of firms in the top 100 lobbying spenders that are listed in the top 100 firms in the Fortune 500. By contrast to Figure 5, which looks at the top 100 lobbies that are not associations, this figure looks at the top 100 lobbies that are for-profit entities. As expected, similarity scores are higher than in Figure 5. They range from a low of 32 to a high of 41, with an annual mean of 35.4, median of 35, and mode of 37.

Alternative Figures for Lobbying and Landmark Events

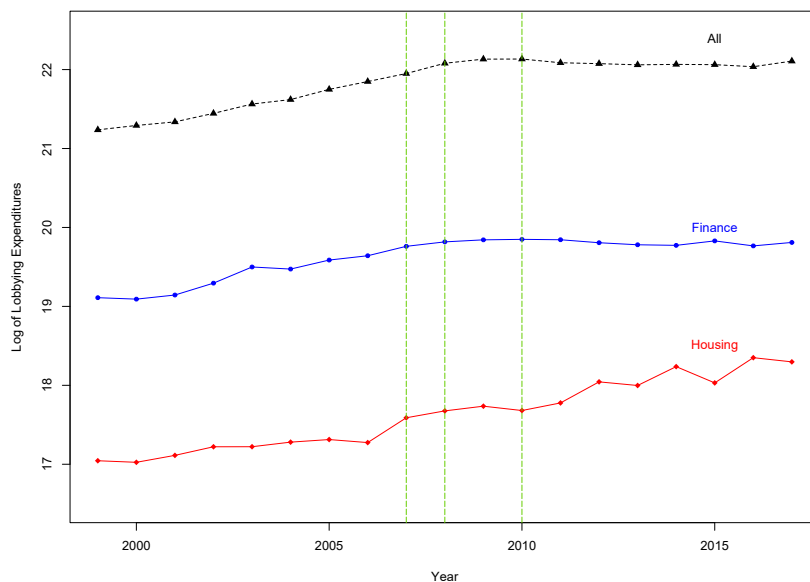


Figure 19: Log of lobbying expenditures in the finance and housing sectors, 1999-2017. The vertical lines in the mark the years 2007, 2008, and 2010, for the beginning of the subprime mortgage crisis, the beginning of the Great Recession, and the signing of the Dodd-Frank Act.

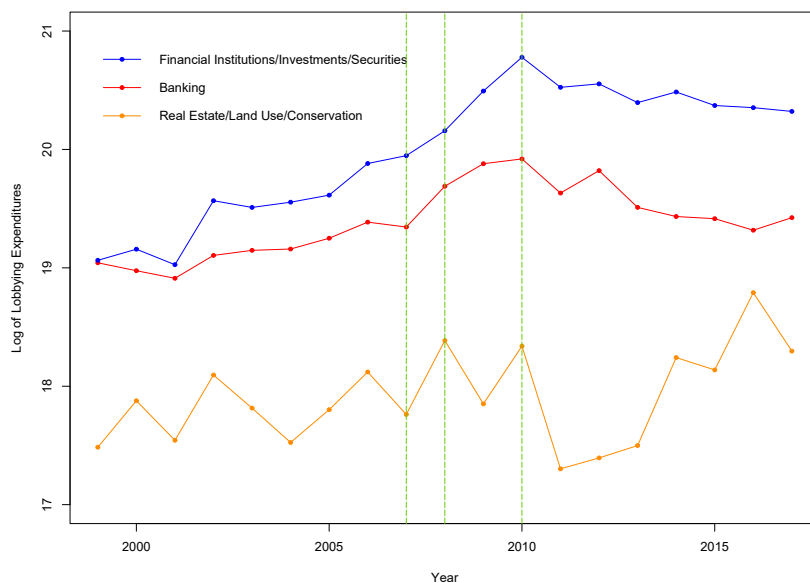


Figure 20: Log of lobbying expenditures on issues related to finance and housing, 1999-2017. The vertical lines in the mark the years 2007, 2008, and 2010, for the beginning of the subprime mortgage crisis, the beginning of the Great Recession, and the signing of the Dodd-Frank Act.

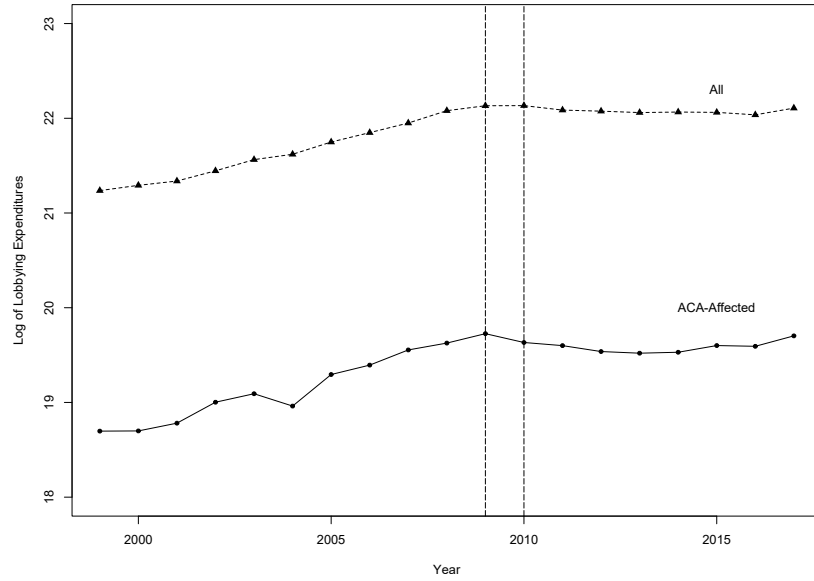


Figure 21: Log of lobbying expenditures by entities most affected by the Affordable Act (see footnotes 21-21 and accompanying text for definition), 1999-2017. The vertical lines mark the years 2009 and 2010, when the ACA was introduced and signed into law.

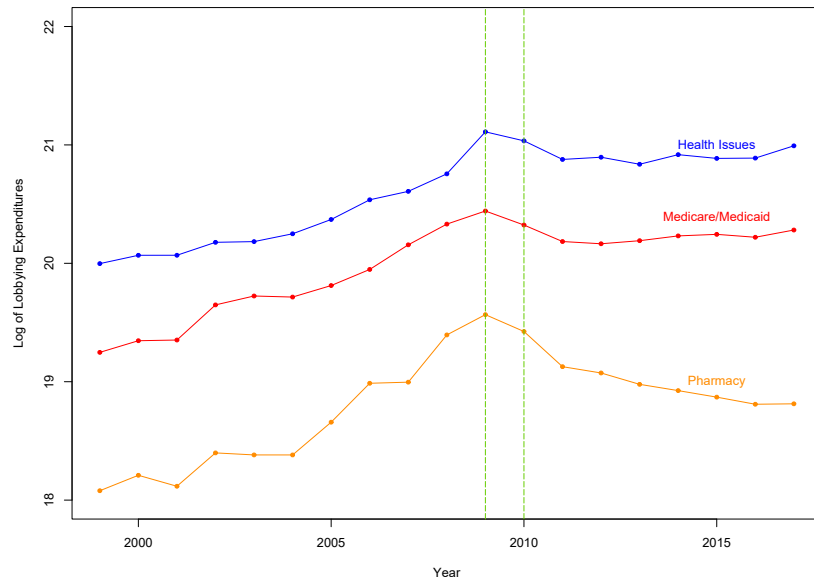


Figure 22: Log of lobbying expenditures on issues most relevant to the Affordable Act, 1999-2017. The vertical lines mark years 2009 and 2010, when the ACA was introduced and signed into law.

Subsidiaries

There is an important question of whether or not to code subsidiaries under their parent's name. The question presents a tradeoff. On the one hand, one is inclined to code subsidiaries under the parent company's name in order to track the real source of money and elevate substance over form; on the other hand, one is inclined to code subsidiaries separately, especially for firms spanning multiple industries, so as to keep separate track of moneys going into different industries and economic activities. The balance we have struck is to choose the subsidiary's name if the subsidiary is in a different industry than the parent (according to NAICS codes), but to choose the parent's name if they are in the same industry. This practice is qualified by the proviso that if there was economic data (most importantly, a NAICS code) in the BvD database for one entity (parent or subsidiary) but not the other, we chose the entity with data.

Challenges in Grouping Data by Industry

There are four difficulties with using NAICS codes for industry definition. First, any industry definition that is based on the nature of the underlying economic activity is bound to be arbitrary around the borders, especially for finer levels of industry definition. For example, it may be difficult to decide whether a stone mining company is in the Crushed and Broken Limestone Mining and Quarrying industry (212312), the Crushed and Broken Granite Mining and Quarrying industry (212313), or the Other Crushed and Broken Stone Mining and Quarrying industry (212319). Similarly, who knows whether some shipping company should be classified in Freight Transportation Arrangement (488510) or Packing and Crating (488991) or any number of other plausible choices. If the firm itself is given the final say, strategic considerations such as minimizing legal exposure or promoting favorable public relations are bound to guide its choice, which is unlikely to promote consistent

classification across firms. Even absent any strategic considerations, different firms might classify the same activities differently given the difficulty of distinguishing them at finer levels of granularity.

Such a recognition was presumably what led antitrust law to abandon ontological market definitions in favor of purpose-driven definitions. The “hypothetical monopolist” test, used in analyzing mergers and monopolization, defines a “relevant market” by asking whether a hypothetical monopolist controlling a market in a set of products would find it profitable to impose a small but significant nontransitory increase in price (SSNIP) on at least one of the products in the set. (“Small but significant” is typically defined as a 5 percent increase, and “nontransitory” typically means a price increase lasting for more than a year.) If the answer is yes, then the market is considered a relevant market; if no, then the analysis moves on to a broader set of products that is a superset of the original set. The narrowest market that satisfies the definition is considered the relevant market. (See § 4.1 of the DOJ-FTC Horizontal Merger Guidelines (2010) for more details.) It would be nice if scholars in political economy had recourse to a likewise systematic classification that is not dependent on arbitrary judgment calls about the degree of similarity in firms’ products.

This is a genuine conceptual difficulty, but not one that should detain us for present purposes. There is no obvious or widely accepted alternative to NAICS.³³ And all the important recent studies of industrial concentration, as well as all the data we could find, are linked to NAICS codes (or their predecessors, Standard Industrial Classification (SIC) codes). So there does not seem to be any getting around the use of NAICS classifications. What we could do to minimize the effect of fine line drawings in industry definition is to pick classifications at a greater level of generality—e.g., two-digit rather than six-digit NAICS codes—a point that we will come back to.

³³The Hoberg-Phillips classification system is more systematic (see <https://hobergphillips.tuck.dartmouth.edu/> and the papers cited therein). But it does not seem sufficiently widely accepted, or linked to a wide enough range of entities, to be of much use to us.

The second through fourth difficulties are practical rather than conceptual. The second difficulty is the lack of an authoritative repository of NAICS code assignments. As the U.S. Census Bureau explains, “There is no central government agency with the role of assigning, monitoring, or approving NAICS codes for establishments. Individual establishments are assigned NAICS codes by various agencies for various purposes using a variety of methods.” The Census Bureau itself assigns NAICS codes, but these codes are unfortunately inaccessible to researchers because the law “prohibits the U.S. Census Bureau from releasing information on a specific business including NAICS codes.”³⁴ The most comprehensive repository of NAICS codes that we have found is the Bureau Van Dijk (BvD), which provides codes not only for publicly listed companies but also for many trade and industry associations, nonprofit organizations, private companies, and governmental entities. Although BvD is remarkably comprehensive, its choice of NAICS code is sometimes questionable. In the course of cleaning Kim’s data and finding bvdids, we have reviewed many entities’ industry classification and have found several of indefensible classifications.³⁵

The third difficulty is the presence of trans-industry entities. As discussed in Section 6, many lobbying entities, including some of the top spenders, are associations whose work is not directed to any specific industry (e.g., the U.S. Chamber of Commerce, the Business Roundtable, and the Institute for Legal Reform). It is difficult to decide what NAICS code is appropriate for these entities. Sometimes BvD chooses a clearly inappropriate code; for example, the Business Roundtable, a membership association of top CEOs that lobbies on a range of policy issues and is one of the top spenders (see Table 3), is classified under Vocational Rehabilitation Services (624310). But even when a defensible code is chosen (e.g., BvD chooses Business Associations (813910) for the U.S. Chamber of Commerce),

³⁴See the Census Bureau’s NAICS FAQ webpage, <https://www.census.gov/eos/www/naics/faqs/faqs.html#q10>.

³⁵Although bvdids are supposed to be unique entity identifiers, BvD sometimes assigns more than one bvdid to a single entity (in which case the different bvdids are often associated with slightly different variations of the entity’s name). In these instances, we reviewed the different assignments and chose the one associated with better data—e.g., a better NAICS classification or more revenue data.

the choice communicates nothing about the nature of the activity targeted by the lobbying.

The fourth difficulty is the presence of giant conglomerates. Companies like General Electric and Amazon have a hand in so many activities that a single NAICS code, even one that is well-chosen for the primary or original focus of the business, cannot capture the range of objectives pursued by their lobbying. The fourth difficulty, unlike the third, applies in the economic context as well as in political lobbying. The latter three difficulties are serious and, unfortunately, will distort our industry-specific estimates of spending and concentration. But we have taken measures to minimize their distortive impact:

(1) We used more general NAICS codes—that is, fewer than the full six digits. For most purposes we used two-digit codes, augmented as necessary with higher-digit codes. This practice avoids the arbitrariness of the distinctions at finer levels of industry definition. It also helps mitigate errors in BvD’s NAICS assignment by ensuring that the sector is correctly identified as long as BvD’s assignment is in the right ballpark (but not if it is wildly inappropriate, as in the Business Roundtable example mentioned above). Another advantage of using a lower number of digits is that it obviates having to work around changes in the NAICS classification over the years. The codes are updated every five years, the relevant years for us being 1997, 2002, 2007, 2012, and 2017. There have been many changes in the six-digit codes since 1997, but there have been fewer changes in the four- and three-digit codes and none at all in the two-digit codes.

(2) We manually reviewed and fixed BvD’s NAICS classifications for the top 100 spenders in each year of our data, accounting for 42 percent of all lobbying expenditures. This took care of the Business Roundtable misclassification mentioned above, as well as many others.

(3) We crafted bespoke industry definitions for specific problems that eluded capture by NAICS codes—e.g., for industries most affected by the Affordable Care Act and for the top firms in the computer and information technology sector.

(4) We could use BvD’s “secondary” NAICS codes. For example, BvD’s primary code for Wal-Mart is 445110 (Supermarkets and Other Grocery (except Convenience) Stores), but it has seven different secondary codes, including 452210 (Department Stores) and 452311 (Warehouse Clubs and Supercenters). Thousands of entities have secondary NAICS codes; some, like Exxon and Chevron, have more than ten. Assuming they are reasonably assigned, as they have been for Wal-Mart, these secondary codes could ameliorate the problem of assigning all of a conglomerate’s spending to one industry. We could instead apportion the spending, equally or through some other apportionment formula, among the different NAICS codes. We have corrected the first secondary NAICS code for the top 100 spenders in all years of our data, and we could make use of secondary codes in future drafts.

Formal Appendix

We present a political economic model to supply a concrete theoretical foundation for the apparent neo-Brandeisian belief that increasing economic concentration leads to increasing political (lobbying) concentration.

Model

Two firms interact politically and economically in a two-stage game. In the first stage, the firms lobby a policymaker (e.g., Congress or a regulatory agency) over a range of policies that affect the conditions of economic production, following which the policymaker chooses a policy. In the second stage, the firms engage in production under the established policy. Specifically, play of the game is as follows.

First stage. Two firms lobby the policymaker for a policy $r \in [0, 1]$. The lobbying takes the form of a menu auction (Bernheim and Whinston (1986)), meaning that the firms (indexed by i) credibly and simultaneously announce lobbying schedules $f_i : [0, 1] \rightarrow \mathbb{R}^+$ for each policy in the range of possible policies. The policymaker's payoff g is an increasing function of $f \equiv \sum_i f_i$, meaning the policymaker is intrinsically indifferent as to the choice of policy and chooses whatever policy maximizes the amount of lobbying. In this framework, lobbying is a form of influence-buying, in accord with the neo-Brandeisian notion of using economic assets to gain political influence.

Second stage. The firms simultaneously choose production levels q_i . The inverse demand (price) function is $\theta - q_1 - q_2$. Each firm has a constant marginal cost of production given by rk_i , where r is the policy chosen in the first stage and k_i is a firm-specific component of the production cost. Each firm's payoff in the second stage is therefore given by its profit $\pi_i = (\theta - q_1 - q_2)q_i - rk_i$. We assume that $k_2 > k_1 > 0$, meaning that firm 1 is

the lower-cost producer.³⁶ We also assume that $\theta > 4k_2$, a simple incentive-compatibility condition to ensure positive production for both firms in equilibrium. Net payoffs (n_i) from the game consist of second-stage profits minus first-stage lobbying expenditures, i.e., $n_i(r) = \pi_i(r) - f_i(r)$.

The solution concept for the second stage (a Cournot duopoly model) is Nash equilibrium, denoted (q_1^*, q_2^*) and yielding profits (π_1^*, π_2^*) . For the first stage, as is common for menu auctions, we focus on Truthful Nash equilibria. A Truthful Nash equilibrium (f_1^*, f_2^*, r^*) is a Nash equilibrium where each f_i^* is truthful relative to r^* , where truthfulness is defined as follows: f_i is truthful relative to r^* iff, for all $r \in [0, 1]$, either (1) $n_i(r) = n_i(r^*)$ or (2) $n_i(r) < n_i(r^*)$ and $f_i(r) = 0$. In other words, denoting $\pi_i^*(r^*) - f_i^*(r^*)$ by n_i^* , truthful lobbying strategies take the form $f_i(r) = \max\{0, \pi_i^*(r) - n_i^*\}$. Intuitively, truthful strategies require that a firm's lobbying for different policies reflect the value of those policies to the firm, subject to the constraint that a firm cannot lobby a negative amount. (See, e.g., Bernheim and Whinston (1986) and Shahshahani (2018) for discussion of the desirable properties of this refinement.) Now we solve for the subgame perfect equilibrium of the game.

Equilibrium

Solving backward: In the second stage, for any choice of r , the firms choose q_i to maximize π_i given q_j . This yields

$$q_1^* = \frac{\theta + r(k_2 - 2k_1)}{3} \quad \text{and} \quad q_2^* = \frac{\theta + r(k_1 - 2k_2)}{3}$$

³⁶ The interpretation of k_i is general; it can encompass efficiencies due to superior production technology but also those due to preexisting market position or regulatory favors. So the model should not be taken to presuppose the view that increasing concentration is due to the emergence of “superstar firms” that generate greater value.

Note that $q_1^* \geq q_2^* > 0$. These production levels yield profits

$$\pi_1^* = \left(\frac{\theta + r(k_2 - 2k_1)}{3} \right)^2 = q_1^{*2} \quad \text{and} \quad \pi_2^* = \left(\frac{\theta + r(k_1 - 2k_2)}{3} \right)^2 = q_2^{*2}$$

Note that $\pi_1^* \geq \pi_2^* > 0$.

In the first stage, firms choose lobbying levels for r in light of $\pi_i^*(r)$ calculated above. Denoting $\pi^* \equiv \pi_1^* + \pi_2^*$, the policy chosen by the policymaker must meet the condition $r^* \in \underset{r}{\operatorname{argmax}} \pi^*$.³⁷ This implies that $r^* = 0$. Now consider each firm's preferred policy. Denoting the choice of r that maximizes $\pi_i^*(r)$ as r_i^* , we have

$$r_2^* = 0 \quad \text{and} \quad r_1^* = \begin{cases} 0 & \text{for } k_2 < 2k_1 \\ 1 & \text{for } k_2 > 2k_1 \end{cases}$$

These quantities yield a unique first-stage Truthful Nash equilibrium for each set of parameter values k_i .³⁸ For $k_2 \leq 2k_1$,

$$f_1^*(r) = 0 \quad \forall r$$

$$f_2^*(r) = 0 \quad \forall r$$

$$r^* = 0$$

³⁷ Proof: Suppose for contradiction that $r^* \notin \operatorname{argmax} \pi^*$. Let $r_0 \in \operatorname{argmax} \pi^*$. Because contribution menus are truthful relative to r^* , we have that $f_i(r_0) \geq \pi_i^*(r_0) - \pi_i^*(r^*) + f_i(r^*) \quad \forall i$. Summing over i yields $f(r_0) \geq \pi^*(r_0) - \pi^*(r^*) + f(r^*) > f(r^*)$, which implies that $r^* \notin \operatorname{argmax} f(r)$, so r^* cannot be chosen in equilibrium, a contradiction.

³⁸ In deriving the equilibrium, we make use of Corollary 1 to Theorem 2 in Bernheim and Whinston (1986).

For $k_2 > 2k_1$,

$$\begin{aligned}
 f_1^*(r) &= \max \left\{ 0, \frac{r^2(k_2 - 2k_1)^2 + 2\theta r(k_2 - 2k_1)}{9} \right\} \\
 f_2^*(r) &= \max \left\{ 0, \frac{r^2(k_1 - 2k_2)^2 + 2\theta r(k_1 - 2k_2) + (k_2 - 2k_1)^2 + 2\theta(k_2 - 2k_1)}{9} \right\} \\
 r^* &= 0
 \end{aligned}$$

Comparative Statics

We now consider the effect of economic concentration on lobbying concentration. For a fixed k_1 , we take k_2 as the measure of economic concentration.³⁹ And we take the share of equilibrium lobbying done by the highest-spending lobby as the measure of lobbying concentration. Formally, defining $\tilde{f}_i(r^*) \equiv f_i^*(r^*) + \delta$ and denoting by j the firm that lobbies the most, we define lobbying concentration as $\lim_{\delta \rightarrow 0} \tilde{f}_j(r^*) / (\tilde{f}_1(r^*) + \tilde{f}_2(r^*))$.⁴⁰

As the neo-Brandeisians suspect, political concentration increases in economic concentration (Figure 23). When the market is relatively unconcentrated ($k_2 < 2k_1$), the firms agree over the choice of policy, so they lobby nothing and the policymaker chooses the policy that is optimal for them. (Note that, in equilibrium, the policymaker must resolve indifference over r in favor of $r \in \operatorname{argmax} \pi^*$.) In this case, the lobbying market is perfectly egalitarian and the top lobby lobbies just as much as the other lobby. But when the market is relatively concentrated ($k_2 > 2k_1$), the firms' preferred policies diverge. As a result, lobbying increases both in absolute amount and in concentration. Indeed, the

³⁹ The more natural measure $q_\ell^*/(q_1^* + q_2^*)$, where ℓ denotes the firm with the greater production level, would not work because production levels are equilibrium quantities determined after lobbying takes place. What we need to vary instead is a primitive of the model. Given that the difference in k_i is the sole reason for the divergence of production levels, and hence of market shares, between the two firms, $k_2 - k_1$ is the quantity that can appropriately be interpreted as economic concentration.

⁴⁰ This construction is equivalent to the natural measure $f_j^*(r^*) / (f_1^*(r^*) + f_2^*(r^*))$ except for the degenerate case where $f_1^*(r^*) + f_2^*(r^*) = 0$, in which case the natural measure is not well-defined and the limit definition yields 1/2. One way to motivate δ is by observing that firms must pay some trivial amount (e.g., a registration fee) to enter the lobbying sphere, even if they don't end up lobbying.

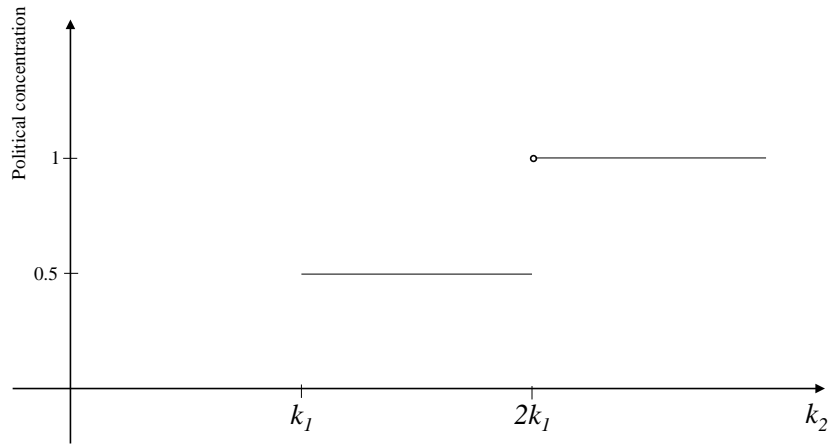


Figure 23: Relationship between economic and political concentration

top lobby bears the entire burden of lobbying for the policy that is chosen in equilibrium. In this model, economic concentration increases lobbying concentration by increasing the divergence between the firms' preferred policies.

The drastic and discontinuous effect of k_2 on lobbying concentration is an artifact of the fact that the firms' preferred policies are exactly the same in one case ($k_2 < 2k_1$) and polar opposites in the other case ($k_2 > 2k_1$), such that each firm's most-preferred policy is the other firm's least-preferred policy. But the broader intuition would still hold if the second-stage economic game were such that increasing concentration caused a gradual divergence in the firms' preferred policies. In that case, lobbying concentration would increase gradually in economic concentration.