TESTING POLITICAL ANTITRUST

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Observers fear that large corporations have amassed too much political power. The central fact that animates this concern is growing economic concentration—the rise in the market share of a small number of top firms. These firms are thought to use their enhanced economic power to capture the government and undermine democracy by lobbying. Many scholars and activists have urged the use of antitrust law to combat this threat, leading a "political antitrust" movement that advocates explicit incorporation of political considerations into antitrust enforcement. Political antitrust has sparked great debate not only in academic circles but also among policymakers.

But the debate has been largely data-free; there is little systematic evidence on whether increased economic concentration leads to democratic harms in established democracies. This Article seeks to fill that gap, bringing systematic data analysis to bear on the issue for the first time. We make three contributions. First, we create a comprehensive dataset on lobbying of the federal government, capturing nearly one million records over the past two decades. This data was drawn from the reports required by the Lobbying Disclosure Act as compiled by In Song Kim, to which we contributed by refining the coding, improving the matching between lobbying reports and industry and firm data, and adding new data. Second, we use our dataset to map lobbying patterns, focusing on the connection between economics and politics. Third, we empirically test some postulates of political antitrust.

Our findings do not support the political antitrust movement's central hypothesis that there is an association between economic concentration and the concentration of lobbying power. We do not find a strong relationship between economic concentration and the concentration of lobbying expenditure at the industry level. Nor do we find a significant difference between top firms' and other firms' allocation of additional revenues to lobbying. And we find no evidence that increasing economic concentration has appreciably restricted the ability of smaller players to seek polit-

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ical influence through lobbying. Ultimately, our findings show that the political antitrust movement's claims are not empirically well-supported in the lobbying context. Our findings do not allay all concerns about transformation of economic power into political power, but they show that such transformation is complex and nuanced, and they counsel caution about reshaping antitrust law in the name of protecting democracy.

INTRODUCTION

Economists have documented a substantial increase in industry concentration—the market share held by a small number of firms—in many sectors of the U.S. economy over the past few decades.[1] Growing concern about this trend has led to greater scrutiny of possible links between the economic and political power of firms. Scholars and advocates alike are particularly concerned about a "Medici vicious circle" where economic power begets political power, which begets more economic power.[2] Many have accordingly sounded alarms about the dangers of monopoly for democracy.[3] Some are calling for reforms of antitrust law to consider the political implications of greater market power,[4] hearkening to the historical origins of

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[1] *See* Jan De Loecker, Jan Eeckhout & Gabriel Unger, *The Rise of Market Power and the Macroeconomic Implications*, 135 Q.J. ECON. 561, 565 (2020) (finding that since 1980 there has been a "reallocation of economic activity toward high-markup, large firms"); David Autor, David Dorn, Lawrence F. Katz, Christina Patterson & John Van Reenen, *The Fall of the Labor Share and the Rise of Superstar Firms*, 135 Q.J. ECON. 645, 645–46 (2020) (providing evidence that industries are becoming "increasingly dominated by superstar firms"); Germán Gutiérrez & Thomas Philippon, *Declining Competition and Investment in the US* 1 (Nat'l Bureau of Econ. Rsch., Working Paper No. 23583, 2017), https://www.nber.org/system/files/working_papers/w23583/w23583.pdf [https://perma.cc/8NKB-S9AJ]; Esteban Rossi-Hansberg, Pierre-Daniel Sarte & Nicholas Trachter, *Diverging Trends in National and Local Concentration* 1 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25066, 2018), https://www.nber.org/system/files/working_papers/w25066/w25066.pdf [https://perma.cc/V84P-PJC8] (finding that national markets are becoming more concentrated, though local markets are becoming less concentrated).

[2] Luigi Zingales, *Towards a Political Theory of the Firm*, 31 J. ECON. PERSPS. 113, 114 (2017). This terminology is a reference to the Medici dynasty that controlled the Florentine Republic. *See id.* at 115.

[3] *See, e.g.*, BARRY C. LYNN, CORNERED: THE NEW MONOPOLY CAPITALISM AND THE ECONOMICS OF DESTRUCTION 243–44 (2010); Lina Khan, *The New Brandeis Movement: America's Antimonopoly Debate*, 9 J. EUR. COMPETITION L. & PRAC. 131, 131 (2018); DAVID DAYEN, MONOPOLIZED: LIFE IN THE AGE OF CORPORATE POWER 12 (2020) (asserting that "[m]onopoly screws up politics" and "economic power readily converts into political power"); *see also Anti-Monopoly Reading List*, THE OPEN MARKETS INSTITUTE, https://www.openmarketsinstitute.org/reading-list [https://perma.cc/4TKN-VUGM] (a list prepared by the Open Markets Institute, a leading exponent of the new antimonopoly movement); *see generally* Naomi R. Lamoreaux, *The Problem of Bigness: From Standard Oil to Google*, 33 J. ECON. PERSPS. 94 (2019) (providing an overview and historical context for the antimonopoly debate).

[4] *See, e.g.*, TIM WU, THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE 127–39 (2018) (outlining a "neo-Brandeisian agenda" to "revive the antitrust laws" as part of "the struggle for democracy now," and concluding that "[b]y providing checks on monopoly and limiting private concentration of economic power, the antitrust law can . . . free the political process from invisible government"); ZEPHYR TEACHOUT, BREAK 'EM UP: RECOVERING OUR FREEDOM FROM BIG AG, BIG TECH, AND BIG MONEY 5–6 (2020) (stating that "monopolies are lining the pockets of most Democratic and Republican candidates to make sure they look the other way," and urging antitrust and "anti-monopoly" reforms to "reshape our politics and win back our freedom"); DAYEN, *supra* note 3, at 2, 6–8 (2020) (criticizing "the still-dominant faction of antitrust scholars,

the antitrust movement.[5] Under this "neo-Brandeisian" view, antitrust should broaden its focus beyond consumer welfare and concern itself with the implications of growing market power for citizens' political and other freedoms.[6]

Politicians of different stripes have echoed these concerns. Democratic leaders warn that "concentrated market power leads to concentrated political power."[7] Republicans have joined, condemning big business for its intrusion into politics.[8] And the Federal Trade Commission (FTC), under the leadership of Lina Khan, vows to pursue an antitrust agenda guided by "the belief that some corporations . . . have grown so large that their monopolistic practices are . . . threatening the future of democracy."[9]

In decrying the influence of economic concentration on politics, these scholars, advocates, and politicians have focused on lobbying. Tim Wu has cautioned that "because political influence—lobbying—requires organization, financial resources, time, and yields rewards that are not limited to those who put in the effort," it follows that "the small and organized will dominate the large and disorganized."[10] Zephyr Teachout has warned that "widespread lobbying threatens the political culture and the principle of equal representation that under-

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academics, and policymakers, who look at the world and see no concentration problem worth their attention," for their exclusive focus on consumer welfare as measured by prices). For overviews, see Lamoreaux, *supra* note 3; Gerald Berk, The New Brandeisians: Rethinking Antitrust in the Open Markets Institute (June 5, 2018) (unpublished manuscript) (on file with author).

[5] A concern about the political power of large firms was one of many considerations that led to enactment of the Sherman Antitrust Act in 1890. *See* HANS B. THORELLI, THE FEDERAL ANTITRUST POLICY: ORIGINATION OF AN AMERICAN TRADITION 227 (1955); Richard Hofstadter, *What Happened to the Antitrust Movement?*, *in* THE PARANOID STYLE IN AMERICAN POLITICS AND OTHER ESSAYS 188, 199–200 (1965); Robert Pitofsky, *The Political Content of Antitrust*, 127 U. PA. L. REV. 1051, 1060–65 (1979); Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 50 Hastings L.J. 871, 902–07 (1999).

[6] *See, e.g.*, Khan, *supra* note 3; WU, *supra* note 4; TEACHOUT, *supra* note 4; Berk, *supra* note 4.

[7] U.S. House of Reps. Democratic Leadership, *Crack Down on Corporate Monopolies & the Abuse of Economic and Political Power*, BETTER JOBS, BETTER WAGES, BETTER FUTURE, A BETTER DEAL, https://abetterdeal.democraticleader.gov/the-proposals/crack-down-on-abuse-of-power [https://perma.cc/G8LJ-TVHB].

[8] *See, e.g.*, Ben Casselman & Jim Tankersley, *Looking for Bipartisan Accord? Just Ask About Big Business*, N.Y. TIMES (May 14, 2021), https://www.nytimes.com/2021/05/14/business/economy/big-business-politics-economy.html [https://perma.cc/JRG3-U8F5]. For more on the attitude of politicians toward political antitrust, see *infra* notes 64–66 and accompanying text.

[9] Paul Alexander, *Lina Khan's Tight Timetable for Tackling Big Tech*, BULWARK (July 14, 2022), https://www.thebulwark.com/lina-khans-tight-timetable-for-tackling-big-tech [https://perma.cc/N9NK-BT6X].

[10] WU, *supra* note 4, at 56.

girds democracy" by making "those in government . . . more likely to serve the interests of institutions and individuals with money, instead of representing the public."[11] And the House Democratic leadership has decried how large companies "deploy armies of lobbyists to increase their stranglehold on Washington."[12]

The concern that economic power can translate into political power seems sensible, and there is a rich social science literature on the role of money in politics.[13] But there is little systematic evidence linking increased economic concentration to democratic harms in established democracies. In particular, scholars have done little to empirically test the link between economic concentration and a more concentrated market in lobbying—a notable omission given the centrality of lobbying to businesses' political efforts[14] and to advocates' concerns.[15] In this Article, we begin to fill that gap.

We make three contributions. First, by adding and coding new data, and by substantially improving an existing dataset produced by In Song Kim,[16] we create an unprecedentedly accurate and comprehensive database of lobbying of the U.S. federal government from 1999 to 2017. Our dataset includes new, hand-coded data on the characteristics of each lobbying entity, such as whether it is a standalone organization or an organization of organizations, whether it operates for profit, and whether it is a government entity.[17] It also incorporates much cleaning and recoding of Kim's original dataset, which enables more accurate matching of lobbying expenditures to entities.[18] Our dataset, the culmination of years of work, can be used by scholars and journalists to investigate a variety of questions about law and political economy.

Second, we use our dataset to uncover important trends in lobbying and relate them to trends in market concentration. The fol-

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[11] Zephyr Teachout, *The Forgotten Law of Lobbying*, 13 ELECTION L.J. 4, 6 (2014) ("[T]he function of paid lobbyists is to make their clients *more* represented than the general public. They are hired as alchemists, to turn money into power . . . . When lobbying is protected and widespread, those in government are more likely to serve . . . institutions . . . with money . . . .").

[12] U.S. House of Reps. Democratic Leadership, *supra* note 7.

[13] We survey some of this literature in Section I.B.

[14] *See infra* Section I.B (showing that lobbying is the primary avenue of U.S. businesses' spending to influence politics).

[15] *See supra* notes 10–12 and accompanying text.

[16] *See* In Song Kim, *LobbyView: Firm-level Lobbying & Congressional Bills Database*, MASS. INST. TECH. (Aug. 30, 2018), https://web.mit.edu/insong/www/pdf/lobbyview.pdf [https://perma.cc/VP9U-29CP] (describing the database); *see also* LOBBYVIEW, https://www.lobbyview.org [https://perma.cc/MQ33-BCQU].

[17] *See infra* Section III.B.

[18] *See infra* Part II and Appendix, Section A.

lowing are among our most important findings: (1) The list of top spenders on lobbying has been remarkably stable over the past two decades; it has changed little in response to major events, legislative activity, or increasing industrial concentration.[19] (2) The overlap between economic and political elites is substantial but smaller than generally believed.[20] Specifically, the average annual overlap between the top 100 firms by lobbying expenditure and the top 100 firms by revenue is around 39%—so, at the very top, the economic and lobbying elites are less than 40% similar or, perhaps more significantly, more than 60% different.[21] This means that many of the richest firms are relatively uninterested in lobbying, and many lobbying powerhouses are not super rich. (3) By a variety of measures, the political lobbying market is less concentrated than economic markets.[22] Despite the general belief that American politics is dominated by the largest firms, we find that a degree of political pluralism remains alive and well, and political competition through lobbying is more intense than economic competition as measured by concentration.[23] Our focus is primarily descriptive, not causal, but the patterns we discover should be useful to policymakers and others interested in the connection between economics and politics. These results will hopefully lay a foundation for future theoretical and empirical work.

Our third contribution is to investigate the relationship between economic and political concentration. Neo-Brandeisians have argued that increasing economic concentration makes political coordination easier, leading to a more concentrated or "corrupted" politics where a few interests determine public policy.[24] An empirical implication of this argument is that economic concentration should be associated with a concentration of political influence. That is, as a small number of firms come to dominate the economic market, those firms should also come to dominate the marketplace for influence over politicians and public policy.[25]

Ideally, to test this claim, we would directly examine the relationship between economic concentration and the concentration of political influence. But political influence is impossible to measure directly across more than 42,000 participants in the lobbying process over two

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19 *See infra* Tables 3–4, Figure 4, and accompanying text.

20 *See infra* Figure 5 and accompanying text.

21 *Id.*

22 *See infra* Section III.D.2.

23 *Id.*

24 *See, e.g.*, Pitofsky, *supra* note 5, at 1056; WU, *supra* note 4, at 55–58. For a more detailed discussion of these claims see *infra* notes 49–63 and accompanying text.

25 WU, *supra* note 4, at 55–58; Pitofsky, *supra* note 5, at 1056.

decades. We therefore resort to indirectly measuring political concentration through the concentration of spending on lobbying. Just as economic concentration is measured by top firms' market share, we measure political concentration by top lobbies' share of lobbying expenditures.[26]

It makes sense to focus on lobbying expenditures for three reasons. First, as we will show, lobbying is the primary means through which businesses seek to influence U.S. politics.[27] The level of firms' lobbying far exceeds, for example, their campaign contributions.[28] Second, as we will explain in detail, there is an extensive empirical literature showing a causal relationship between spending on lobbying and policy benefits for the lobbying entity.[29] It follows from these two facts that lobbying is an appropriate context in which to measure economic influence on politics, and spending on lobbying is a good measure of political influence. Finally, it is appropriate to focus on lobbying because, as discussed, it has been a target of political antitrust advocates.[30]

Turning to our empirical analysis, we find no statistically significant positive correlation between economic and political concentration at the industry sector level; the correlation is negative (and, in some models, statistically significantly so).[31] Nor do we find a significant correlation between industry concentration and the share of industry revenue spent on lobbying, casting doubt on claims that greater economic concentration makes it easier for firms to coordinate their policy-influence activities.[32] At the firm level, we do not find any significant difference in the elasticity of lobbying expenditures to revenues between top firms in a sector and other firms.[33] That is, the percentage growth in lobbying in response to a given percentage growth in revenue is not significantly different between top firms and other firms in a sector. Moreover, the elasticities are below one. So, although lobbying does rise in firm size, the share of revenues allocated to lobbying falls as firms grow larger.[34] The finding of similar elasticities rules out the interpretation that larger firms get a greater policy return (a bigger bang for the buck) on lobbying. In a model where dominant firms have greater returns on lobbying, the elasticity

[26] *See infra* Section III.D.1 for a more thorough discussion of concentration measures.
[27] *See infra* Section I.B.
[28] *See infra* Section I.B.
[29] *See infra* Section I.B.
[30] *See supra* notes 10–12 and accompanying text.
[31] *See infra* Section IV.A.
[32] *See infra* Section IV.A.
[33] *See infra* Section IV.B.
[34] *See infra* Section IV.B.

of lobbying to revenue would not be the same between dominant firms and other firms.[35] Our sector- and firm-level findings show that the process of transforming economic power into political power by lobbying is far from automatic. While large firms are active in politics, so are many of their smaller competitors. Increasing economic concentration does not appear to have significantly impaired the ability of smaller players to seek political influence through lobbying.

These findings, combined with our findings about the (non-)overlap of economic and political elites and the relative concentration of economic and political markets, suggest that the wave of advocacy for incorporating political considerations into antitrust may have gotten ahead of the data. The neo-Brandeisians' arguments are premised on a hypothesized relationship between economic and political concentration that is intuitively plausible but, as we find, empirically unsupported, at least in the important area of lobbying.

Of course, there are other plausible channels for converting economic power into political power, including campaign contributions, the revolving door between politics and industry, public relations campaigns, and "structural power" derived from the dependency of policymakers on business investment and employment.[36] Although we surprisingly find little correlation between economic and lobbying concentration, we do not suggest that monopoly is politically innocuous. Future research may uncover political harms of increased economic concentration that would be redressable through reformed antitrust doctrine. But the fact remains that the oft-hypothesized link between economic concentration and democratic harms in established democracies does not currently rest on systematic evidence, and our first effort to bring data to bear on the question found little evidence of such a link in the lobbying context. Moreover, the latest research suggests that different avenues of political influence-seeking are often complements, not substitutes, so it seems unlikely that our findings on lobbying are indicative of firms pursuing other avenues instead.[37]

It is important to note that our findings do not necessarily scuttle the agenda of antitrust reform in general or of the neo-Brandeisian

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[35] *See infra* Section IV.B and Appendix, Section H.

[36] *See, e.g.*, Zephyr Teachout & Lina Khan, *Market Structure and Political Law: A Taxonomy of Power*, 9 DUKE J. CONST. L. & PUB. POL'Y 37, 43–53 (2014) (identifying lobbying along with campaign contributions, the revolving door, supporting policy research, influence over employees and contractors, and the dynamics of "too big to fail" as mechanisms of economic influence over politics).

[37] *See* In Song Kim, Jan Stuckatz, & Lukas Wolters, *Strategic and Sequential Links Between Campaign Donations and Lobbying* 13 (Mass. Inst. of Tech. Pol. Sci. Dep't Rsch. Paper No. 2021-2, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3937466 [https://perma.cc/MT28-MHN7].

movement in particular. There is longstanding debate between those who favor greater antitrust enforcement and adherents of the Chicago School, ascendant since the 1970s, which sees aggressive antitrust enforcement as counterproductive.[38] To the extent this battle has been joined over the question of *political* antitrust—that is, whether antitrust should explicitly incorporate political considerations into doctrine and enforcement—our findings question the reform agenda. But we do not think the political angle is necessary for the viability of reformist critiques. Many elements of the neo-Brandeisian agenda—tougher merger review, a willingness to bring big cases against major companies, greater reliance on breakups as a remedy, returning to "protection of competition" as the central goal of antitrust law, and others[39]—may be advocated as a matter of sound *economic* policy.[40] We take no position on that debate, and we certainly do not see our findings as vindicating the policy prescriptions of the Chicago School. Our focus is on the plank of the reform movement that advocates explicit incorporation of political considerations into antitrust doctrine and enforcement, which we call political antitrust.

This Article proceeds as follows. Part I situates our work in the literature, examining the debate around political antitrust and the literature on lobbying. Part II briefly describes our dataset and its sources.[41] Part III explores and analyzes lobbying trends, focusing, in turn, on aggregate expenditures, the composition of lobbies, the patterns of economic and political concentration, and the patterns of lobbying by industry and issue, including big tech's lobbying. Part IV presents our empirical estimates of the relationship between economic and political concentration using industry- and firm-level regressions.

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[38] The Chicago School's academic capstone is ROBERT H. BORK, THE ANTITRUST PARADOX (1978). For overviews see, for example, Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925 (1979) (giving a sympathetic account that downplays differences with other schools); Edmund W. Kitch, *The Fire of Truth: A Remembrance of Law and Economics at Chicago, 1932–1970*, 26 J.L. & ECON. 163 (Edmund W. Kitch ed., 1983) (providing some key participants' informal recollections). For critiques see, for example, Herbert J. Hovenkamp & Fiona Scott Morton, *Framing the Chicago School of Antitrust Analysis*, 168 U. PA. L. REV. 1843 (2020) (arguing that the Chicago School's initial success was attributable to its intellectual merit but its staying power is due to politics); HOW THE CHICAGO SCHOOL OVERSHOT THE MARK: THE EFFECT OF CONSERVATIVE ECONOMIC ANALYSIS ON U.S. ANTITRUST (Robert Pitofsky ed., 2008) (collecting critical views).

[39] *See* WU, *supra* note 4, at 127–39 (enumerating these and others as elements of a "neo-Brandeisian agenda").

[40] *See, e.g.*, Carl Shapiro, *Antitrust in a Time of Populism*, 61 INT'L J. INDUS. ORG. 714, 735–37 (2018) (considering whether antitrust and competition policy reforms similar to those advocated by neo-Brandeisians can address rising economic concentration and high corporate profits).

[41] *See also infra* Appendix, Sections A–B, E–F (discussing data issues in detail).

The Conclusion provides a summary of important findings, a discussion of implications for political antitrust, and some thoughts on future research. For those who wish to probe further, the Appendix presents a more detailed discussion of data issues, alternative empirical analyses and robustness checks, and a formal model that provides a theoretical framework for interpreting our empirical results.

I
Economic Concentration, Political Implications

A. Political Antitrust

This Article intervenes in an intense policy debate about the role of antitrust law. The long-reigning paradigm has been the "consumer welfare standard," which holds that antitrust should concern itself exclusively with relatively immediate and concrete economic harm to consumers—such harms as higher prices, lower output, or worse quality.[42] For many critics, including the neo-Brandeisians, this focus is too narrow.[43] What is needed instead, they say, is a standard that directly addresses the broader social and political effects of economic concentration and anticompetitive practices.[44] Central to these arguments is a set of claims about the implications of market power for personal liberty, democracy, and the political power of private firms, which we call "political antitrust." There is no unitary theory of political antitrust, and the movement's political-economic ideas are not articulated with theoretical precision nor with sharp, falsifiable empirical predictions. Nevertheless, we will do our best to map the theories, tease out their empirical implications, and pinpoint which ones can be tested with our data.

Proponents of political antitrust trace their intellectual origins to the Jeffersonian tradition and to the work of Louis Brandeis.[45] But the

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[42] *See, e.g.*, Barak Orbach, *How Antitrust Lost Its Goal*, 81 Fordham L. Rev. 2253, 2254–55, 2272–75 (2013); *see also* Robert H. Bork, *Legislative Intent and the Policy of the Sherman Act*, 9 J.L. & Econ. 7, 7 (1966) (claiming that Congress, in enacting the Sherman Act, "intended the courts to implement . . . only that value we would today call consumer welfare"). Though Bork's claim about the legislative intent of the Sherman Act is no longer widely accepted, his focus on consumer welfare as the polestar of antitrust has been enduring. *See, e.g.*, Lande, *supra* note 5, at 889–94; Orbach, *supra* note 42, at 2255–56; Dayen, *supra* note 3, at 6–12; Wu, *supra* note 4, at 89–92; Teachout, *supra* note 4, at 8–9.

[43] *See, e.g.*, Dayen, *supra* note 3, at 6–12; Wu, *supra* note 4, at 89–92; Teachout, *supra* note 4, at 8–9.

[44] *See supra* note 43. *See generally* Lamoreaux, *supra* note 3 (providing an overview of the debate).

[45] *See generally* Louis D. Brandeis, Other People's Money and How the Bankers Use It (1914). Chapter VIII of this book, entitled "A Curse of Bigness," is where the neo-Brandeisians got this term.

contours of the current debate were drawn by Robert Pitofsky, who argued that:

> It is bad history, bad policy, and bad law to exclude certain political values in interpreting the antitrust laws. By "political values," I mean, first, a fear that excessive concentration of economic power will breed antidemocratic political pressures, and second, a desire to enhance individual and business freedom by reducing the range within which private discretion by a few in the economic sphere controls the welfare of all. A third and overriding political concern is that if the free-market sector of the economy is allowed to develop under antitrust rules that are blind to all but economic concerns, the likely result will be an economy so dominated by a few corporate giants that it will be impossible for the state not to play a more intrusive role in economic affairs.[46]

So, according to Pitofsky, there are three dangers from ignoring the political consequences of antitrust policy: (1) economic concentration will undermine democratic values through either the expansion of business power or a populist reaction against it; (2) citizens and consumers will have their choices dictated by large firms; and (3) the role of the state will have to expand to counterbalance the power of large firms.

Over the last forty years, many scholars have amplified Pitofsky's concerns—though, like Pitofsky, without bringing much in the way of data to support them.[47] Among the most prominent is Tim Wu, whose widely read monograph *The Curse of Bigness* decries a "new Gilded Age" and warns that increasing economic concentration "represents a profound threat to democracy itself."[48] He draws out the connection between economic and political concentration as follows:

> At some level the point is obvious: Private economic power is a rival to the power of elected governments, and firms may also seek to control politics for their own purposes. Increased industrial concentration predictably yields increased influence over political outcomes for corporations and business interests, as opposed to citizens or the public.[49]

Wu supports this claim by invoking the logic of collective action famously developed by Mancur Olson[50] to argue that concentration reduces the political collective action problem for an industry: "The more concentrated the industry, the fewer who need to coordinate,

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[46] Pitofsky, *supra* note 5, at 1051.

[47] *See supra* notes 3–4.

[48] WU, *supra* note 4, at 15.

[49] *Id.* at 55.

[50] MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1965).

and the fewer among whom the stakes need be divided."[51] So, "[t]he more concentrated the industry, the more corrupted we can expect the political process to be."[52] Pitofsky similarly draws on the Olsonian logic that a smaller number of actors should find it easier to coordinate politically (though without citing Olson).[53] These theoretical accounts suggest that as an industry becomes more concentrated, freeriding among firms should decline, and the industry should devote a larger share of its resources to politics. They also suggest that economic concentration should be accompanied by a concentration of political lobbying. We find no evidence to support either of these two propositions.[54]

Zephyr Teachout and Lina Khan further elaborate neo-Brandeisian concerns with the political implications of economic concentration.[55] Arguing that "antitrust . . . should be understood not solely as part of corporate law, but also as part of political law,"[56] the authors focus on two broad concerns. First, they argue that "[e]ver-increasing corporate size and concentration undercut democratic self-governance by disproportionately influencing governmental actors."[57] This is Pitofsky's first concern and Wu's main concern.[58] Second, they worry that concentration "imposes on citizens a form of private governance unaccountable to the public."[59] The argument, in line with Pitofsky's second concern, has two aspects: The decisions of larger companies have a bigger impact on citizens' lives than those of smaller firms, and larger firms are not held accountable for those decisions by either the market or the government.[60] In this Article, we address the claims that the influence of large firms is "disproportionate[]" to their size.[61] We also indirectly address the claim that large firms are too politically powerful to be held accountable by the government by comparing smaller and larger firms' patterns of lobbying. On both scores, we find no evidence that largeness confers an advantage that is disproportionate to size.

Teachout and Khan identify lobbying along with campaign contributions, the revolving door, supporting policy research, influence over

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51 WU, *supra* note 4, at 58.
52 *Id.*
53 *See* Pitofsky, *supra* note 5, at 1055.
54 *See infra* Section IV.A.
55 *See* Teachout & Khan, *supra* note 36, at 37.
56 *Id.* at 72.
57 *Id.* at 37.
58 *See* Pitofsky, *supra* note 5, at 1051; WU, *supra* note 4, at 55–58.
59 Teachout & Khan, *supra* note 36, at 37.
60 *Id. passim*.
61 *Id.* at 37.

employees and contractors, and the dynamics of "too big to fail" as mechanisms of economic influence over politics.[62] They are concerned both with the size of the firm relative to the entire economy and with its size relative to its markets.[63]

Unfortunately, in many of their examples, they do not distinguish between political powers conferred from sheer size and those from market concentration. Clearly, such a distinction is one of policy consequence: Should policy interventions target large firms operating in otherwise competitive markets, or should the focus be on firms that dominate their industries? Our analysis will not have much to say about this normative question, but we will be able to distinguish the relationship between firm size and lobbying from that between industry concentration and lobbying.

The idea of political antitrust has had a broad impact. Politicians of the left, along with those of the center and right, have warned of the dangers of rising economic concentration for democracy.[64] Political antitrust made its way into the 2016 Democratic Party platform, which declared: "We support the historic purpose of the antitrust laws to protect competition and prevent excessively consolidated economic and political power, which can be corrosive to a healthy democracy."[65] That language, however, was not repeated in 2020. The 2020 platform lists higher prices, as well as several other ills associated with market concentration, such as harming workers, increasing racial inequality, and constricting innovation—but, notably, not effects on democracy.[66] Today the Biden Administration's FTC, headed by Lina Khan, pursues an antitrust policy grounded in neo-Brandeisian con-

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[62] *Id.* at 43–53.

[63] *Id.* at 40.

[64] *See, e.g.*, *Senator Elizabeth Warren Delivers Remarks on Reigniting Competition in the American Economy*, ELIZABETH WARREN (June 29, 2016), https://www.warren.senate.gov/newsroom/press-releases/senator-elizabeth-warren-delivers-remarks-on-reigniting-competition-in-the-american-economy [https://perma.cc/AAD7-HBHW] ("Concentration threatens our markets, threatens our economy, and threatens our democracy."); U.S. House of Representatives Democratic Leadership, *supra* note 7 ("[B]ecause concentrated market power leads to concentrated political power, these [large] companies deploy armies of lobbyists to increase their stranglehold on Washington."); *Trump Says Amazon Has 'A Huge Antitrust Problem*,' CNBC (May 13, 2016, 4:04 PM), https://www.cnbc.com/2016/05/13/trump-says-amazon-has-a-huge-antitrust-problem.html [https://perma.cc/2SYD-W6HF] (quoting then-President Trump as saying that Amazon has "a huge antitrust problem" and that Jeff Bezos, former Amazon CEO and current owner of the Washington Post, is "using the *Washington Post* for power so that the politicians in Washington don't tax Amazon like they should be taxed"). *See generally* Daniel A. Crane, *Antitrust's Unconventional Politics*, 104 VA. L. REV. ONLINE 118 (2018) (describing the present political moment in antitrust and putting it in historical context).

[65] 2016 DEMOCRATIC PARTY PLATFORM 11 (2016).

[66] 2020 DEMOCRATIC PARTY PLATFORM 25 (2020).

cerns, including those about the political implications of firm size or market concentration.[67]

The political antitrust movement has been subject to a number of criticisms.[68] The broadest of these is that even if economic concentration generates political harms, antitrust law provides an inappropriate set of tools for dealing with them.[69] Activating the "political content" of antitrust would raise serious questions about administrability, forcing judges and regulators to make difficult tradeoffs between allocative efficiency and political regulation.[70] Moreover, critics charge that political antitrust would create new avenues for interest group capture.[71] As Herbert Hovenkamp writes, "refocusing antitrust policy so as to make political theory the driver will return us to repeated cycles of special interest capture and protected local monopoly."[72] Critics are concerned about a policy of small-business protectionism pursued for political or emotional ends rather than on the basis of principled competition policy.[73] To Hovenkamp and other critics, the experience of enforcing the Robinson-Patman Act, legislation cham-

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[67] *See* Alexander, *supra* note 9 ("Khan . . . has used the FTC to advance a theory growing in popularity in certain business and legal circles: the belief that some corporations—and in particular Big Tech companies—have grown so large that their monopolistic practices are destroying American capitalism and threatening the future of democracy.").

[68] *See, e.g.*, Herbert Hovenkamp, *Whatever* Did *Happen to the Antitrust Movement?*, 94 NOTRE DAME L. REV. 583 (2018) [hereinafter Hovenkamp 2018]; Herbert Hovenkamp, *Is Antitrust's Consumer Welfare Principle Imperiled?*, 45 J. CORP. L. 65 (2019) [hereinafter Hovenkamp 2019]; D. Daniel Sokol, *Antitrust's "Curse of Bigness" Problem*, 118 MICH. L. REV. 1259 (2020); Elyse Dorsey, Geoffrey A. Manne, Jan M. Rybnicek, Kristian Stout & Joshua D. Wright, *Consumer Welfare & the Rule of Law: The Case Against the New Populist Antitrust Movement*, 47 PEPP. L. REV. 861 (2020).

[69] *See, e.g.*, Shapiro, *supra* note 40, at 716.

[70] *See id.* ("[A]sking the courts to approve or block mergers based on the political power of the merging firms would undermine the rule of law while inevitably drawing the judicial branch into deeply political considerations."); Hovenkamp 2019, *supra* note 68, at 92–93 (concluding that the tradeoffs required by the neo-Brandeisian approach to antitrust would be too difficult to manage); Sokol, *supra* note 68, at 1261 ("Injecting political tradeoffs into antitrust can have negative repercussions.").

[71] *See* Hovenkamp 2019, *supra* note 68, at 90–92 (pointing out that one of the neo-Brandeisians' "legislative darlings," the Robinson-Patman Act, was a significant example of legislative capture by a special interest group); Sokol, *supra* note 68, at 1274 ("[A]dministrative agencies are rife with capture concerns."); Shapiro, *supra* note 40, at 716 (warning that corruption could ensue if the DOJ and FTC considered political power when evaluating mergers).

[72] Hovenkamp 2019, *supra* note 68, at 90.

[73] *See* THOMAS K. MCCRAW, PROPHETS OF REGULATION 83–108 (1984) (detailing the development of Brandeis's antitrust philosophy, arguing that he was "much less a man of thought than of action," that he "focus[ed] on the small businessman rather than on the consumer," and that "a deep-seated antipathy toward bigness clouded his judgment"); Dorsey et al., *supra* note 68, at 871–73 (arguing that emotionally-driven labeling of large corporations as "bad" resulted in "a rudderless analysis").

pioned by the United Wholesale Grocers Association, validates these concerns.[74] Finally, First Amendment rights of speech and petition embodied in the Noerr-Pennington doctrine may preclude antitrust reforms designed to explicitly incorporate political considerations, depending on how the reforms are executed.[75]

Notably, these criticisms speak to problems of legal implementation rather than the empirical soundness of neo-Brandeisians' underlying concerns. In this Article, by contrast, we interrogate some of political antitrust's empirical claims. To our knowledge, the only other work to do so is Daniel Crane's *Fascism and Monopoly*.[76] Crane addresses the need for political antitrust in an extensive review of the evidence linking high levels of economic concentration in Weimar Germany with the rise of Adolph Hitler. He argues that there is little evidence that the Weimar monopolies assisted Hitler in winning the chancellorship, but he suggests that Hitler made deliberate and effective use of economic concentration in consolidating his power and preparing for military aggression.[77] Thus he finds a link between economic and political power, but one in which government exploits big business rather than the other way around.[78] This finding seems consistent with current European historical scholarship, which tends to deemphasize the unique role of big business in enabling Hitler's rise

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[74] *See* Hovenkamp 2019, *supra* note 68, at 90–92 (describing the Robinson-Patman Act as "one of the strongest instances of legislative capture by a special interest group in the entire body of antitrust law"); Sokol, *supra* note 68, at 1276–80 (detailing how the Act ultimately harmed consumer interests). *See generally* D. Daniel Sokol, *Analyzing Robinson-Patman*, 83 GEO. WASH. L. REV. 2064 (2015) (exploring the history and caselaw of the Robinson-Patman Act, and detailing how problems of industry capture and general ineffectiveness plagued its enforcement).

[75] The Noerr-Pennington doctrine immunizes the use of the political process for anticompetitive ends from antitrust liability. *See, e.g.*, E.R.R. Presidents Conf. v. Noerr Motor Freight, Inc., 365 U.S. 127, 135–36 (1961) ("[N]o violation of the [Sherman] Act can be predicated upon mere attempts to influence the passage or enforcement of laws. . . . [W]here a restraint upon trade or monopolization is the result of valid governmental action, as opposed to private action, no violation of the Act can be made out."); United Mine Workers v. Pennington, 381 U.S. 657, 670 (1965) ("Joint efforts to influence public officials do not violate the antitrust laws even though intended to eliminate competition. Such conduct is not illegal, either standing alone or as part of a broader scheme itself violative of the Sherman Act."). *See generally* PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶ 201a (Supp. 8 2022) ("Monopolists or collaborators are privileged to pursue their private and selfish objectives through legislation, adjudication, or executive and administrative machinery. This right is founded in our Constitution but can also be independently derived from statutory interpretation of the antitrust laws.").

[76] Daniel A. Crane, *Fascism and Monopoly*, 118 MICH. L. REV. 1315 (2020).

[77] *Id.* at 1337–51.

[78] *Id.* at 1337–64.

to power.[79] Moreover, Crane suggests that the conventional consumer welfare approach would have prevented the extreme concentration of Weimar industry without any need for the intervention of political antitrust.[80] Our work differs from Crane's in employing a quantitative-empirical, rather than a historical, approach. Further, we probe the correlation between economic and political concentration in the context of a well-established democracy, rather than in a fragile one like the Weimar Republic.

B. The Impact of Lobbying

To examine the political implications of economic concentration, we study spending on lobbying. We do not claim that lobbying is the only context in which to empirically evaluate political antitrust, nor that our results necessarily carry over to other contexts. However, as discussed, lobbying has been a main focus of political antitrust advocates.[81] Moreover, we show in this Section that lobbying is a primary way for businesses to influence politics, and that the concentration of lobbying expenditure is a useful proxy for the concentration of lobbying influence.

We follow John de Figueiredo and Brian Kelleher Richter in defining lobbying as

> [T]he transfer of information in private meetings and venues between interest groups and politicians, their staffs, and agents. Information takes the theoretical representation of a message and, in practice, may have many forms: statistics, facts, arguments, messages, forecasts, threats, commitments, signals, or some combination thereof.[82]

Our focus, then, is on the expenditures made to further these activities. Notably, though, we are not focused on campaign contributions. Nor are we concerned principally with the revolving door (although implicit or explicit promises of future employment can be part of lobbying). Elected officials value the information provided through lobbying, as it helps promote both their policy and reelection objectives. For example, lobbying can provide officials with technical

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[79] *See* JÜRGEN KOCKA, CAPITALISM: A SHORT HISTORY 166–67 (Jeremiah Riemer trans., 2016) (noting that "it has become rare to chalk up the rise and triumph of German and Italian fascism to the supporters of a monopolistic bourgeoisie" and that the "wide spectrum of society identifying with the regime makes it is [sic] easy to see through the exculpatory simplification ascribing liability for the triumph of National Socialism and its catastrophic consequences entirely to the account of the capitalists").

[80] Crane, *supra* note 76, at 1365–69.

[81] *See supra* notes 10–12 and accompanying text.

[82] John M. de Figueiredo & Brian Kelleher Richter, *Advancing the Empirical Research on Lobbying*, 17 ANN. REV. POL. SCI. 163, 164 (2014).

policy information, which helps them craft higher-quality policy proposals.[83] Lobbying may also provide information about the preferences over policy alternatives of important political constituencies such as managers, shareholders, and customers, and about the actions these constituencies might take if their preferences are or are not enacted into law.[84]

Although lobbying is just one of many possible kinds of political activity, it is the predominant one, in terms of total expenditure, undertaken by U.S. business firms. As discussed below, we find that federal lobbying expenditures were slightly less than $4 billion in 2017.[85] Of this, $3.22 billion was spent by businesses or associations (the associations being principally associations of businesses like trade associations).[86] By comparison, the total amount of money contributed to federal candidates in 2016 was $3.1 billion.[87] But only $352 million of that came from political action committees associated with business, with the bulk of the rest coming from individuals, ideological organizations, and labor unions. Even when we add an additional $135 million of outside spending by business organizations, campaign expenditure pales in comparison to lobby expenditure. (We do not include another $857 million of outside spending as much of that money was given in an individual capacity and not necessarily to further a corporate political strategy.) Note that even if we exclude lobbying by associations, the amount spent on lobbying by for-profit businesses alone in 2017 was $2.31 billion, which still significantly exceeds campaign contributions.

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[83] *See* Jan Potters & Frans van Winden, *Lobbying and Asymmetric Information*, 74 PUB. CHOICE 269, 270 (1992); David Austen-Smith, *Information and Influence: Lobbying for Agendas and Votes*, 37 AM. J. POL. SCI. 799, 799–800 (1993); David Austen-Smith & John R. Wright, *Counteractive Lobbying*, 38 AM. J. POL. SCI. 25, 28 (1994).

[84] *See* KEN KOLLMAN, OUTSIDE LOBBYING: PUBLIC OPINION AND INTEREST GROUP STRATEGIES (1998) (detailing how interest groups use lobbying to signal the popularity and salience of certain policy positions).

[85] *See infra* Figure 1 and accompanying text.

[86] Calculations are based on our dataset; see *infra* Section III.B for entity classifications.

[87] The figures on campaign contributions in this paragraph are based on our calculations using the following sources (all from Open Secrets): *Elections Overview (2016)*, OPEN SECRETS, https://www.opensecrets.org/elections-overview?cycle=2016 [https://perma.cc/FX7W-8UWT] (last visited May 29, 2022); *Industry Breakdown (2016)*, OPEN SECRETS, https://www.opensecrets.org/political-action-committees-pacs/industry-breakdown/2016?t0-search=sector [https://perma.cc/YLM4-6PTV] (last visited May 29, 2022); *All Disclosed Outside Spending by Spenders' Industries (2016)*, OPEN SECRETS, https://www.opensecrets.org/outside-spending/spenders-industries/2016 [https://perma.cc/X8BN-TF3L] (last visited May 29, 2022); *see also* Federico Huneeus & In Song Kim, *The Effects of Firms' Lobbying on Resource Misallocation* (Cent. Bank of Chile, Working Paper No. 920, 2021), https://web.mit.edu/insong/www/pdf/misallocation.pdf [https://perma.cc/QHX7-S3T2] (compiling a dataset covering all firm-level lobbying activities from 1999–2018).

Federico Huneeus and In Song Kim report some other stylized facts about lobbying that are worth keeping in mind. First, only a small percentage of U.S. firms (10% of public companies in 2017) lobby the federal government.[88] Given that those who lobby are larger and that lobbying expenditure increases with firm size (a fact supported by our analysis), there is naturally a substantial degree of concentration of political activity in large firms. Our question, however, is how this level of political concentration compares to economic concentration and whether it is exacerbated by increases in economic concentration. Second, Huneeus and Kim report that most congressional bills are lobbied by only one or two interest groups.[89] Thus, within narrow policy domains, there is clearly a high level of political concentration. But the low number of lobbying entities per bill also suggests that most lobbying is conducted in pursuit of entity-specific benefits. Consequently, we are on firm ground in looking at the spending of individual entities without addressing how much of that effort is countervailed by the spending of other entities.[90]

One apparent limitation of our analysis is that we do not address the effectiveness of lobbying. It may thus appear that we talk about political influence when all we have measured is political effort. In particular, we do not directly establish that the concentration of lobbying expenditures leads to greater policy benefits for high-spending firms relative to low-spending firms. But such a relationship is suggested by a rich literature showing that lobbying provides direct policy benefits.

First, the literature shows that lobbying increases the probability of legislative success. Nathan Grasse and Brianne Heidbreder find that lobbying expenditures are correlated with bill passage in the Wisconsin state legislature, especially on less salient issues.[91] Karam Kang finds in a study of the energy sector that lobbying expenditures increase the probability of enactment of legislative proposals lobbied on, though the magnitude of the effect is small. But she finds that the

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[88] Huneeus & Kim, *supra* note 87, at 9.

[89] *Id.* at 15.

[90] *But see* Austen-Smith & Wright, *supra* note 83, at 25–26 (arguing that interest groups mostly lobby politicians who are unfavorably predisposed to their position and that when they lobby politicians who are favorably disposed, they do so in order to counteract opposing groups' lobbying).

[91] Nathan Grasse & Brianne Heidbreder, *The Influence of Lobbying Activity in State Legislatures: Evidence from Wisconsin*, 36 LEGIS. STUD. Q. 567 (2011). In attempting to gather the best evidence from the literature on the effectiveness of lobbying, we discuss some literature bearing on lobbying of state governments as well as the federal government.

return on investment in lobbying activities is substantial, averaging over 130%.[92]

The literature also indicates that lobbying is correlated with measurable policy gains. In a sample of all U.S. firms with public financial statements, Brian Kelleher Richter, Krislert Samphantharak, and Jeffrey Timmons find that increasing lobbying expenditures by 1% lowers effective tax rates in the range of 0.5 to 1.6 percentage points.[93] Raquel Alexander, Stephen Mazza, and Susan Scholz find that firms lobbying for the cash repatriation tax holiday (as part of the 2004 American Jobs Creation Act) gained tax savings of $220 per dollar of lobbying expense.[94] Jeffrey Drope and Wendy Hansen show in a study of the U.S. antidumping law that "the winners of antidumping cases tend to outspend the losers."[95] Also in the antidumping context, Seung-Hyun Lee and Yoon-Suk Baik show that firms that spend more on lobbying receive greater benefits from the government.[96] Giovanni Facchini, Anna Maria Mayda, and Prachi Mishra find that more H-1B work visas are allocated to sectors in which business interests lobby more.[97]

Several papers have focused on the impact of lobbying by financial and real estate interests in the lead-up to the Great Recession and its aftermath. Deniz Igan, Prachi Mishra, and Thierry Tressel find that mortgage lenders that lobbied more intensively took on more risk in the lead-up to the financial crisis and were more likely to be bailed out.[98] Similarly, Benjamin Blau, Tyler Brough, and Diana Thomas find that lobbying firms received money from the Troubled Asset Relief Program (TARP) earlier and in greater amounts than similar firms that did not lobby.[99] The authors report that the financial return to lobbying was in the order of $500 for every dollar spent.[100] Frank

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[92] *Id.* at 290–91, 294.

[93] Brian Kelleher Richter, Krislert Samphantharak & Jeffrey F. Timmons, *Lobbying and Taxes*, 53 AM. J. POL. SCI. 893, 900 (2009).

[94] Raquel Alexander, Stephen W. Mazza & Susan Scholz, *Measuring Rates of Return on Lobbying Expenditures: An Empirical Case Study of Tax Breaks for Multinational Corporations*, 25 J. L. & POL. 401, 403–04 (2009).

[95] Jeffrey M. Drope & Wendy L. Hansen, *Purchasing Protection? The Effect of Political Spending on US Trade Policy*, 57 POL. RSCH. Q. 27, 35 (2004).

[96] Seung-Hyun Lee & Yoon-Suk Baik, *Corporate Lobbying in Antidumping Cases: Looking into the Continued Dumping and Subsidy Offset Act*, 96 J. BUS. ETHICS 467, 473 (2010).

[97] Giovanni Facchini, Anna Maria Mayda & Prachi Mishra, *Do Interest Groups Affect US Immigration Policy?*, 85 J. INT'L ECON. 114, 120 (2011).

[98] Deniz Igan, Prachi Mishra & Thierry Tressel, *A Fistful of Dollars: Lobbying and the Financial Crisis*, 26 NBER MACROECONOMICS ANN. 195, 197 (2012).

[99] Benjamin M. Blau, Tyler J. Brough & Diana W. Thomas, *Corporate Lobbying, Political Connections, and the Bailout of Banks*, 37 J. BANKING & FIN. 3007, 3016 (2013).

[100] *See id.* at 3017.

Yu and Xiaoyun Yu find that lobbying firms evade fraud detection for a longer period of time and are less likely to be detected by regulators than non-lobbying firms.[101] Jin-Hyuk Kim finds using an instrumental-variable approach that lobbying has significant positive effects on firms' equity returns.[102] Matthew Hill, Wayne Kelly, Brandon Lockhart, and Robert Van Ness likewise find that lobbying expenditures are correlated with excess stock returns, even after controlling for PAC contributions.[103]

A challenge in estimating the effect of lobbying on outcomes comes from the fact that firms employ many other political strategies to influence policy, so it is difficult to isolate the specific effect of lobbying. It is noteworthy, therefore, that two studies show the effects of lobbying by focusing on entities that are precluded from using other political activities. John De Figueiredo and Brian Silverman find that university lobbying expenditures correlate with higher levels of earmarked spending.[104] Kishore Gawande, Pravin Krishna, and Michael Robbins find that lobbying by foreign firms is associated with reductions in tariff and non-tariff barriers.[105] Since universities and foreign firms cannot make campaign contributions, these effects must work primarily through lobbying.

Overall, then, the rich literature on the effects of lobbying validates our focus on lobbying expenditures as a reasonable proxy for political influence in an important arena of political advocacy.

II
DATA

We now describe our data and sources. To avoid repetition, we will keep this Part brief and allow the data to unfold through the analysis in Parts III and IV. We discuss more granular data issues in the Appendix.

We have two primary data sources. The first is In Song Kim's LobbyView, a massive project that has gathered and coded all lob-

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101 Frank Yu & Xiaoyun Yu, *Corporate Lobbying and Fraud Detection*, 46 J. FIN. & QUANTITATIVE ANALYSIS 1865, 1880 (2011).

102 Jin-Hyuk Kim, *Corporate Lobbying Revisited*, 10 BUS. & POL., no. 3, 2008, at 16–17.

103 Matthew D. Hill, G. Wayne Kelly, G. Brandon Lockhart & Robert A. Van Ness, *Determinants and Effects of Corporate Lobbying*, 42 FIN. MGMT. 931, 932 (2013).

104 John M. De Figueiredo & Brian S. Silverman, *Academic Earmarks and the Returns to Lobbying*, 49 J.L. & ECON. 597, 598 (2006).

105 Kishore Gawande, Pravin Krishna & Michael J. Robbins, *Foreign Lobbies and U.S. Trade Policy*, 88 REV. ECON. & STAT. 563, 563 (2006).

bying reports filed with Congress pursuant to the Lobbying Disclosure Act.[106]

Congress passed the Lobbying Disclosure Act (LDA) in 1995.[107] 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.[108] The LDA instituted two major requirements. First, it required professional lobbyists to register with the Secretary of the Senate and the Clerk of the House of Representatives.[109] Second, it required lobbyists to 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.[110] 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.[111]

The most significant amendment to the LDA was the Honest Leadership and Open Government Act of 2007.[112] This amendment changed the reporting requirement from semiannual to quarterly, increased the penalties for noncompliance, and created an audit process to review lobbying registrations.[113] Lobbying reports filed pursuant to the LDA are the main source of our data.

Kim provided us a dataset comprising almost a million (972,005) lobbying reports filed between 1999 and 2018. (The 2018 data was incomplete, so the analysis in this Article 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 that can be matched to firm financial data provided by Compustat (gvkey) and

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106 *See Advancing Data Science Research in Interest Group Politics*, LobbyView, https://www.lobbyview.org [https://perma.cc/TJ2L-8XBM] (describing the datasets available on lobbyist spending); Kim, *supra* note 16 (introducing the LobbyView database and describing how it works).

107 2 U.S.C. §§ 1601–14.

108 *See* H.R. Rep. No. 104-339, pt. 1, at 1 (1995) (describing the Act as strengthening the public's confidence in government by replacing an existing patchwork of laws).

109 U.S.C. § 1603(a)(1).

110 2 U.S.C. § 1604.

111 For an example of a lobbying report, see *Lobbying Report*, U.S. House of Representatives (Oct. 19, 2016, 1:21 PM), https://disclosurespreview.house.gov/ld/ldxmlrelease/2016/Q3/300832611.xml [https://perma.cc/X42G-KCR8].

112 Honest Leadership and Open Government Act of 2007, Pub. L. No. 110-81, 121 Stat. 735.

113 *See* 2 U.S.C. §§ 1602–06, 1613, 1614 (noting the amended sections).

Bureau van Dijk (bvdid).[114] Because most lobbying entities are not publicly listed companies and do not have gvkeys, the bvdids are more useful in matching economic data such as an entity's revenue and its industry classification. Finally, the LobbyView dataset contains lobbying issue codes assigned by Congress. We have significantly improved the LobbyView dataset by cleaning and standardizing entity names and bvdids, an effort we describe in greater detail in the Appendix, Section A.

Our second data source comes from gathering and hand-coding 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 III.B, where we explore the composition of lobbying entities.

III
Lobbying Trends over Two Decades (1999–2017)

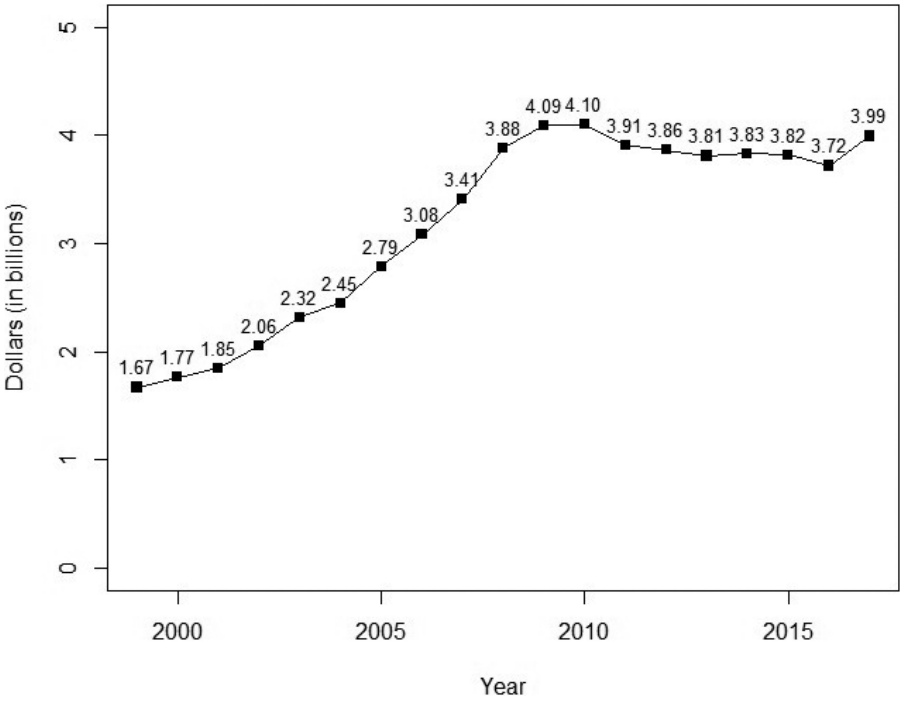
A. Spending Trends

The total expenditure on lobbying the federal government from 1999 to 2017 (inclusive) was $60.4 billion. The annual aggregate expenditure ranged from a low of $1.7 billion in 1999 to a high of $4.1 billion in 2010. The median is $3.7 billion, and the mean (i.e., annual average) is $3.2 billion. The standard deviation is around $888 million, and the dispersion index is 247,027,063.[115] Figure 1 shows aggregate lobbying expenditures by year.

[114] Both databases are available through the Wharton Research Data Service. *See The Global Standard for Business Research*, Wharton Rsch. Data Serv., https://wrds-www.wharton.upenn.edu [https://perma.cc/2CPP-5BVL].

[115] For a discussion of alternative ways to measure lobbying expenditures, and a demonstration that the same trends hold for all measures, see *infra* Appendix, Section B.

FIGURE 1. SPENDING ON LOBBYING THE FEDERAL GOVERNMENT, 1999–2017



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 billion and $4.1 billion.

Second, the economic downturn of the Great Recession in 2008 was not accompanied by a downturn in lobbying. To get more purchase on this point, and more generally to get a better grasp of the relationship between lobbying and national economic trends, we next look at lobbying data in relation to GDP.[116]

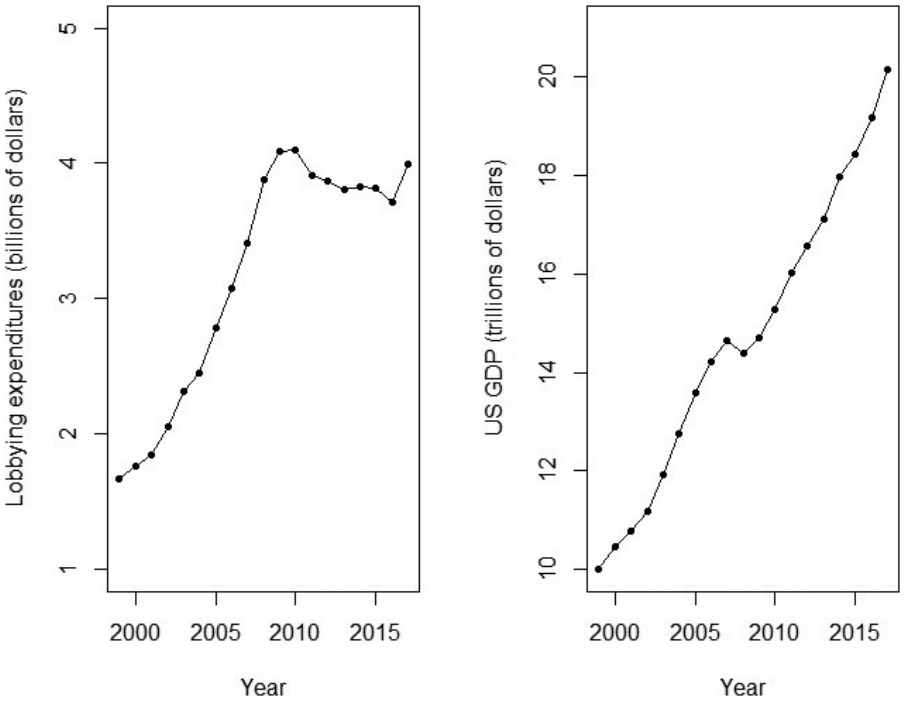
Although lobbying expenditures are large, they are tiny compared to GDP. Lobbying expenditures stood at 0.0002 (0.02%) of GDP for sixteen of the nineteen years under study and at 0.0003 of

[116] The GDP numbers come from the Bureau of Economic Analysis of the U.S. Department of Commerce, aggregated by the Federal Reserve Bank of St. Louis. *Gross Domestic Product (GDP)*, FED. RSRV. BANK OF ST. LOUIS, https://fred.stlouisfed.org/series/GDP [https://perma.cc/ZD29-N4JR].

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 expenditures side by side. 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. However, their trends diverged during the second decade: GDP declined from 2008 to 2009 before continuing its rise at roughly the pre-recession rates, whereas lobbying continued to rise until 2010 and plateaued thereafter.

FIGURE 2. LOBBYING EXPENDITURES ($ BILLIONS) AND U.S. GDP ($ TRILLIONS), 1999–2017



Linear regressions of lobbying expenditures on GDP confirm this visual impression. 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. However, examining the pre-Recession (1999–2007) and post-Recession (2008–2017) periods separately shows that the relationship breaks down in the second period. Only in the pre-Recession period is the correlation positive and statistically significant; during that period,

almost the entire variance in lobbying is explained by GDP. Results are similar if we extend the first period to 2008 or 2009.

More important for our purposes is how these trends in political activity match up with trends in market concentration. Beyond the fact that both lobbying and economic concentration are generally rising, the connections are not clear. For example, De Loecker and colleagues find that markups grew dramatically over the 1980s and 1990s and then leveled off in the 2000s before climbing rapidly in the last decade.[117] Connecting this to the lobbying expenditures shown in Figure 1, price markups were stable as lobbying grew, and markups rose as lobbying stagnated. The lobbying trends better match the trends in economic concentration (as measured by the median and mean Herfindahl-Hirschman Index), which grew rapidly between 1995 and 2010 before leveling off.[118]

B. The Composition of Lobbies

The list of participants in lobbying is remarkably diverse. It includes large and small companies, 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, domestic and foreign government entities, United Nations organizations, universities, schools and school districts, sports leagues and teams, individuals, and even a dog (Boo).[119] Some are well-known and expected—Amazon, Wal-Mart, Koch Industries, AIPAC, NRA, U.S. Chamber of Commerce, American Medical Association. Others are less familiar—the American Mushroom Institute, the American Dehydrated Onion and Garlic Association, the U.S. Association of Reptile Keepers, the California Sea Urchin Commission.[120] This Section describes our efforts to classify lobbying entities along a number of dimensions and get a sense of their relative contributions.

A prominent question is whether firms lobby individually or collectively, for example through a trade association. This is a question of major importance because it implicates the perennial issue of collec-

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[117] *See* De Loecker et al., *supra* note 1, at 575 (finding that the average markup in 2016 is 61% over marginal cost, compared to 21% in 1980).

[118] *See* Gutiérrez & Philippon, *supra* note 1, at 2. For an explanation of HHI, see *infra* note 147 and accompanying text.

[119] *See* Nolan McCarty & Sepehr Shahshahani, Entity Data (May 29, 2022) (unpublished data) (on file with author) (listing all entities participating in lobbying).

[120] *Id.*

tive action, going back at least to the work of Olson.[121] However, as far as we know, very little work has been done to collect data on the question. To our knowledge, the only precise attempt at classifying the associational status of lobbying entities was by Matilde Bombardini and Francesco Trebbi,[122] who hand-coded 3,466 unique entities on this score for the period 1999–2001.[123] We have hand-coded 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 hand-coded various other characteristics of lobbying entities, as summarized in Table 1.

TABLE 1. CLASSIFICATION OF LOBBYING ENTITIES

Variable	Description
Association	= 1 if the entity is an organization of organizations (e.g., a trade association) = 0 if the entity is a standalone organization, individual, or an organization of individuals
Profit	= 1 if the entity is for-profit = 0 if the entity is not for-profit
Government	= 1 if the entity is government-affiliated (including state and local governments in the U.S., foreign governments, and Native American nations) = 0 if the entity is not government-affiliated
Native	= 1 if the entity is a Native American tribe or a subdivision of one = 0 if the entity is not a Native American tribe or a subdivision of one
Public-private	= 1 if the entity is a public-private entity = 0 if otherwise
State-university	= 1 if the entity is a state university or college = 0 if the entity is not a state university or college
Individual	= 1 if the entity is an individual (a real person) = 0 if the entity is not an individual
Union	= 1 if the entity is a labor union = 0 if the entity is not a labor union
PAC	= 1 if the entity is a political action committee (PAC) = 0 if the entity is not a political action committee (PAC)
Agent	= 1 if the entity is the agent doing the lobbying rather than the principal on whose behalf the lobbying was done = 0 if the entity is not an agent lobbying on behalf of a principal

121 *See* OLSON, *supra* note 50, at 1–2 (arguing that the common assumption that groups of individuals will act to further their common interests is unfounded).

122 *See* Matilde Bombardini & Francesco Trebbi, *Competition and Political Organization: Together or Alone in Lobbying for Trade Policy?*, 87 J. INT'L ECON. 18, 20 (2012) (describing the authors' methodology for coding lobbying entities for associational status).

123 Federico Huneeus and In Song Kim 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.'" Huneeus & Kim, *supra* note 87. We found that this proxy is not very accurate. Our hand-coding of the dataset uncovered more than triple the number of associations than we got from Huneeus and Kim's proxy (5,015 instead of 1,587 distinct associations). According to our hand-coding, Huneeus and Kim's scheme missed 3,747 associations and mistakenly counted 319 non-associations as associations.

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 is coded as 0 for "profit"; 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 rule applies to business leagues, chambers of commerce, real estate boards, and the like. The primary virtue of this method of classification is its clarity. 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 pro-management advocacy organizations as for-profit but pro-labor organizations as nonprofit). Our coding logic also aligns with the Internal Revenue Code: trade associations, business leagues, chambers of commerce, and the like are exempt from taxation.[124]

In our coding scheme, it is important to distinguish for-profit status and association status. All associations are nonprofits, but not all nonprofits are associations.[125]

The "native," "public-private," and "state-university" categories are subsets of the "government" category—that is, if an entity is coded as 1 for one of the three, then it must have taken 1 for "government" as well. Finally, the "agent" variable keeps track of mistakes whereby the agent doing the lobbying (e.g., a law 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% of unique entities and only about 0.2% of spending in the dataset.

To our knowledge, we are the first to collect data on these measures. Our dataset is hand-coded, and we are highly confident of its accuracy.

Table 2 reports the contribution of different types of entities to lobbying. The second and third columns show both aggregate numbers and shares (in parentheses). The final column provides the ratio of

124 *See* 26 U.S.C. § 501(c)(6).

125 For example, the ACLU, AIPAC, NRA, and Rotary Foundation are all nonprofits but not associations.

spending share to number-of-entities share for each category. In other words, it shows the ratio of each category's per capita spending to total per capita spending. This ratio communicates the average intensity of lobbying by entities within each category. Values above 1 signify that the entities in a group spent more on lobbying than the average entity, while numbers below 1 signify lower-than-average spending.[126]

TABLE 2. DIFFERENT ENTITY TYPES' LOBBYING OF THE FEDERAL GOVERNMENT, 1999–2017

Type of Entity	Number of Entities (share of total)	Spending [$b] (share of total)	Spending Share to Entity Share 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

As expected, most lobbying entities are for-profit firms. They account for around 59% of lobbying entities and around 58% of total spending. Conveniently, the spending-to-entity ratio of for-profit firms is around 1, so the spending-to-entity ratio for other types is benchmarked not just to the global average but also to the majority category's average.

Associations account for only 12% of lobbying entities. But their spending per entity is higher than average, accounting for 22% of total spending with a spending-to-entity ratio of 1.88. As the next Section will show, associations are overrepresented in the top tier of lobbies (meaning, say, the annual or overall top ten or top twenty lobbies).

An underappreciated fact about lobbying in the United States is the extent of intergovernmental lobbying.[127] We find that almost 11%

[126] Because the numbers in parentheses in the second and third columns are rounded, the fourth column may seem a bit off, but in fact it is accurate. Moreover, since these categories are not exhaustive and most are not mutually exclusive, the shares in the second and third columns need not add up to 1.

[127] *See* Jennifer M. Jensen, *Intergovernmental Lobbying in the United States: Assessing the Benefits of Accumulated Knowledge*, 50 STATE & LOC. GOV'T REV. 270, 271 (2018) (discussing the scope of the literature on intergovernmental lobbying); Mary A. Kroeger, *Bureaucrats as Lawmakers*, 47 LEGIS. STUD. Q. 257, 261 (2022) (discussing how and why executive agencies lobby the legislature to codify their current practices).

of all lobbying entities are government-affiliated. Most of these are state, local, and municipal entities in the United States, but foreign governments and UN organizations are also present. 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% of total lobbying entities, and their spending-to-numbers ratio is greater than the average for government-related entities.

It is 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, individuals' involvement is not part of standard journalistic or academic accounts. Thus, the fact that 2% 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% of all lobbying spending, with individuals being the category with the lowest spending-to-entities ratio. Considering 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 political action committees is also minor, constituting only 0.2% of lobbying entities and 0.03% of spending. But these numbers should be interpreted with caution because, in coding the PAC variable, we were 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.

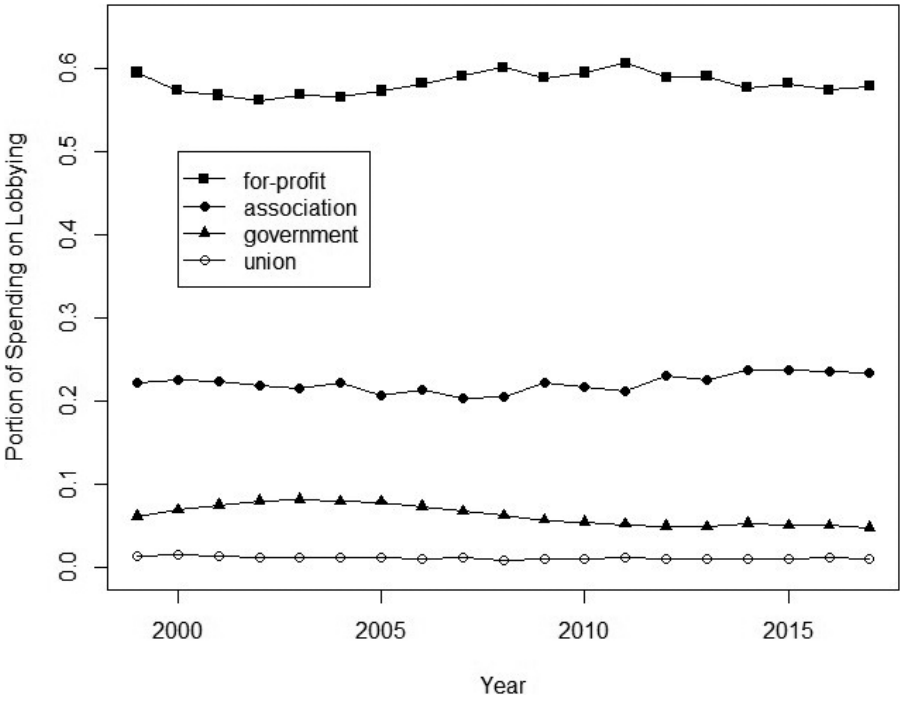
Finally, we gathered data on the lobbying of unions. The conventional wisdom is that union influence has been declining since the last quarter of the twentieth century.[128] Our findings that unions constitute only 0.4% of lobbying entities and 1% of all spending show, consistently with the conventional wisdom, that they are not much of a force in lobbying. Note, though, that the spending-to-entities ratio of unions is the highest among all types of entities; unions' per capita spending is three times the average. Thus, unions punch above their

[128] *See, e.g.*, Michael Wallerstein & Bruce Western, *Unions in Decline? What Has Changed and Why*, 3 ANN. REV. POL. SCI. 355, 358 (2000) (noting that out of all industrialized democracies, only Finland and Sweden enjoyed union density growth during the 1980s); John S. Ahlquist, *Labor Unions, Political Representation, and Economic Inequality*, 20 ANN. REV. POL. SCI. 409, 413 (2017) (noting that the time between 1984 and 2000 is understood to be a period of union weakness and decline).

weight in numbers, but their spending is still miniscule compared to associations or for-profit entities.

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 the 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 about their declining influence, though perhaps their decline was complete by the beginning time point of our data.

FIGURE 3. DIFFERENT ENTITY TYPES' LOBBYING OF THE FEDERAL GOVERNMENT, 1999–2017



C. *The Big Spenders*

We now focus on 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 entities, and four are associations. Indeed, 52% of the top twenty's spending was by nonprofit entities and 28% by associations.

Among all associations, and indeed among all entities, the U.S. Chamber of Commerce is by far the most dominant. It has spent close to a billion dollars over two decades and has outspent the second top spender by more than two to one. Indeed, the difference in spending between the Chamber and the second top spender is greater (in absolute and relative terms) than the difference between the second and twentieth top spenders. If anything, the Chamber's dominance is understated because regional Chambers of Commerce and 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.

TABLE 3. TOP TWENTY SPENDERS ON LOBBYING THE FEDERAL GOVERNMENT, 1999–2017
(spending, in millions of dollars)

Rank	Name	Spending ($m)
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

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 (and non-representation) of different industries. Some industries that are well-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, USTelecom, National Association of Broadcasters), oil and gas (Exxon Mobil, Southern Company, Chevron), and defense (United Technologies, Boeing, Northrop Grumman, Lockheed Martin).

TABLE 4. ANNUAL TOP TEN SPENDERS ON LOBBYING THE FEDERAL GOVERNMENT, 1999–2017
(spending, in millions of dollars, in parentheses)

Year	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
1999	AT&T (25.1)	Altria (20.0)	Chamber of Comm. (18.5)	Merck & Co (15.3)	Am. Hospital Assoc. (11.9)
2000	Bus. Roundtable (23.7)	General Electric (18.9)	AT&T (18.6)	Chamber of Comm (17.6)	Altria (15.2)
2001	AT&T (24.1)	General Electric (17.7)	Chamber of Comm. (17.0)	Edison Electric Inst. (16.0)	PhRMA (15.9)
2002	Inst. Legal Reform (22.9)	Chamber of Comm. (22.0)	AT&T (21.9)	PhRMA (20.0)	Altria (18.3)
2003	AT&T (23.6)	PhRMA (22.5)	Freddie Mac (22.3)	AARP (21.0)	General Electric (19.9)
2004	Chamber of Comm. (29.6)	AT&T (27.0)	Inst. Legal Reform (26.2)	General Electric (20.0)	Verizon (19.7)
2005	AARP (37.0)	AT&T (28.2)	General Electric (26.4)	Inst. Legal Reform (21.5)	Verizon (21.1)
2006	Chamber of Comm. (46.1)	AT&T (28.8)	Inst. Legal Reform (28.3)	Verizon (25.6)	PhRMA (24.2)
2007	Chamber of Comm. (32.1)	PhRMA (30.1)	Verizon (26.0)	General Electric (25.2)	Amgen (24.6)
2008	Chamber of Comm. (63.7)	Exxon Mobil (31.6)	Inst. Legal Reform (31.1)	Verizon (30.8)	PhRMA (28.3)
2009	Chamber of Comm. (125.4)	PhRMA (35.2)	General Electric (32.5)	Exxon Mobil (30.0)	Verizon (29.5)
2010	Chamber of Comm. (102.6)	General Electric (48.1)	PG&E (46.2)	Inst. Legal Reform (33.3)	PhRMA (29.8)
2011	Chamber of Comm. (46.5)	General Electric (34.0)	AT&T (26.9)	PhRMA (26.9)	Comcast (26.8)
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)
2013	Chamber of Comm. (55.1)	Nat'l Assoc. of Realtors (38.9)	Comcast (25.7)	PhRMA (25.5)	NCTA (25.4)
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)
2015	Chamber of Comm. (64.5)	Nat'l Assoc. of Realtors (37.8)	General Electric (26.0)	PhRMA (25.9)	Boeing (25.0)
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)
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)

TABLE 4. ANNUAL TOP TEN SPENDERS ON LOBBYING THE FEDERAL GOVERNMENT CONTINUED, 1999–2017
(spending, in millions of dollars, in parentheses)

Year	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10
1999	Lockheed Martin (11.7)	Boeing (10.0)	Bus. Roundtable (10.0)	General Electric (9.8)	AMA (9.2)
2000	Edison Electric Inst. (14.5)	Lockheed Martin (11.6)	Verizon (11.3)	PhRMA (10.7)	Merck & Co (10.6)
2001	Verizon (14.1)	Am. Hospital Assoc. (12.4)	Bus. Roundtable (11.7)	Lockheed Martin (11.7)	Northrop Grumman (11.5)
2002	General Electric (16.4)	AMA (14.9)	Verizon (14.7)	Edison Electric Inst. (14.5)	Northrop Grumman (14.2)
2003	Inst. Legal Reform (19.6)	AMA (17.7)	Verizon (17.4)	Altria(16.8)	Am. Hospital Assoc.(13.8)
2004	Altria (17.5)	USTelecom (15.5)	Freddie Mac (15.3)	Northrop Grumman (14.6)	PhRMA (14.2)
2005	AMA (20.0)	PhRMA (19.6)	Freddie Mac (19.1)	USTelecom (18.6)	Altria(17.7)
2006	AARP (23.2)	General Electric (21.9)	AMA (20.2)	USTelecom (20.0)	NCTA (19.1)
2007	AT&T (24.0)	Inst. Legal Reform (23.5)	AMA (22.6)	AARP (19.6)	Altria (19.1)
2008	PG&E (28.2)	AARP (28.0)	General Electric (23.8)	AT&T (23.0)	Northrop Grumman (22.1)
2009	Pfizer (26.3)	Chevron (23.0)	Inst. Legal Reform (23.0)	NCTA (21.8)	AT&T (21.7)
2010	United Technologies (28.8)	FedEx (28.4)	Verizon (26.1)	NCTA (23.3)	AMA (22.9)
2011	United Technologies (25.9)	NCTA (24.1)	Inst. Legal Reform (23.9)	Verizon (23.9)	Nat'l Assoc. of Realtors (22.7)
2012	United Technologies (24.6)	NCTA (24.4)	AT&T (23.5)	Verizon (22.9)	Comcast (21.9)
2013	United Technologies (25.2)	Verizon (24.2)	Inst. Legal Reform (23.1)	Northrop Grumman (22.1)	AT&T (22.0)
2014	PhRMA (23.6)	NCTA (22.8)	Nat'l Assoc. of Broadcasters (21.4)	Google (20.7)	Verizon (20.5)
2015	Inst. Legal Reform (24.2)	Comcast (23.6)	Bus. Roundtable (22.7)	AMA (22.2)	Google (20.7)
2016	Comcast (21.6)	Am. Hospital Assoc. (19.9)	Boeing (19.8)	AMA (19.6)	Google (19.6)
2017	Comcast (23.4)	AT&T (22.8)	Google (22.5)	AMA (21.9)	Boeing (20.1)

However, other industries that are considered politically powerful and are common targets of the antimonopoly movement are not well-represented—namely agriculture, the information technology

industry, and finance.[129] Despite the lore of the farm lobby,[130] there are no agricultural firms or organizations in the top ten for any year nor 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, except for the government-sponsored Freddie Mac, there are no organizations from the finance industry in any of the annual top tens 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, especially in agriculture, though this is questionable given the apparent unimportance of counteractive lobbying across *all* industries.[131] Or it could be that spending in these industries is spread among different organizations. Or 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 that the tech industry has only recently become politically active, and its lobbying stature will grow in time. As we shall see in the following Parts, where we discuss industry-specific spending in greater depth, some of these explanations are well-suited to certain industries. Whatever the explanation, the relative lack of representation for three industries that are common targets of the antimonopoly movement 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

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[129] *See, e.g.*, TEACHOUT, *supra* note 4 (singling out "big ag, big tech, and big money").

[130] *See generally* JOHN MARK HANSEN, GAINING ACCESS: CONGRESS AND THE FARM LOBBY, 1919–981 (1991) (chronicling the influence of the farm lobby over the twentieth century); David M. Herszenhorn, *Farm Subsidies Seem Immune to an Overhaul*, N.Y. TIMES (July 26, 2007), https://www.nytimes.com/2007/07/26/washington/26farm.html [https://perma.cc/A94H-7CWJ] (explaining the persistence of farm subsidies notwithstanding their inefficiency); Dan Morgan, Sarah Cohen & Gilbert M. Gaul, *Powerful Interests Ally to Restructure Agriculture Subsidies*, WASH. POST (Dec. 22, 2006), https://www.washingtonpost.com/archive/politics/2006/12/22/powerful-interests-ally-to-restructure-agriculture-subsidies/9ce44462-fab1-44ed-a4f9-20b6f3934772 [https://perma.cc/HZZ9-AMGX] (same).

[131] *See supra* notes 89–90 and accompanying text (noting that most congressional bills are lobbied by only one or two interest groups).

spot and outspends its closest rival by a large margin, including a nearly four-to-one margin in 2009.

The strong presence of associations in lobbying raises interesting questions about firms' (or other entities') decision to lobby collectively rather than individually.[132] A few explanations, not necessarily mutually exclusive, may be suggested. As noted, freeriding is a perennial problem in lobbying for favorable government policy because such policies are often "public goods" that will be provided both to those who lobbied and those who did not. Associations counter the freeriding tendency by pooling the resources of many potential beneficiaries. They attract such resources by providing *non*-public goods—benefits such as information, networking, contacts, and technical and logistical assistance that are conferred exclusively on members.[133] Once established, these associations may also reduce the costs of collective action by solidifying cooperative norms of behavior or making it easier to monitor shirking.[134] Or it could be that associations operate as "long coalitions" bringing together diverse entities that may not have a shared interest in lobbying on any one bill but mutually benefit from sticking together over a series of bills over time—a sort of "I will help you now so you will help me later" dynamic.[135] This long-coalition explanation may be particularly apt for trans-industry associations. Or it could be that associations function as a way for small entities to pool their strength against large rivals.[136] In future

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132 *See supra* notes 121–23 and accompanying text (discussing the collective action problem in the context of lobbying).

133 *See* OLSON, *supra* note 50, at 132, 145.

134 On the role of norms in reducing the problems of collective action, see ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 35–37 (1990).

135 In political science, a "long coalition" refers to a long-term banding together of otherwise diverse groups in the hopes that they can achieve a stable majority and that each member's benefits from receiving support from other coalition members will outweigh its costs of supporting them over the long run. *See, e.g.*, Kathleen Bawn & Frances Rosenbluth, *Short Versus Long Coalitions: Electoral Accountability and the Size of the Public Sector*, 50 AM. J. POL. SCI. 251, 251–52 (2006) (describing the differences between parties representing narrow interests versus those representing a long coalition); Hans Noel, *Which Long Coalition? The Creation of the Anti-Slavery Coalition*, 19 PARTY POL. 962, 962 (2012) (describing long coalitions as the leading view of why political parties form). *See generally* Thomas Schwartz, *Parties*, 32 CONST. POL. ECON. 462, 462 (2021) (arguing that political parties in legislatures are best thought of as long coalitions); JOHN H. ALDRICH, WHY PARTIES?: THE ORIGIN AND TRANSFORMATION OF POLITICAL PARTIES IN AMERICA (1995) (interpreting U.S. political parties as long coalitions).

136 *See* Bombardini & Trebbi, *supra* note 122, at 19 (suggesting that firms who lobby as a trade association obtain greater protection than those who lobby individually. *But see infra* notes 200–02 and Table 11 and accompanying text (showing that associations are not more salient in less concentrated industries, which tends to undermine the interpretation of associations as coalitions of the weak).

work, we intend to further explore the role of associations in lobbying and adjudicate among competing explanations.

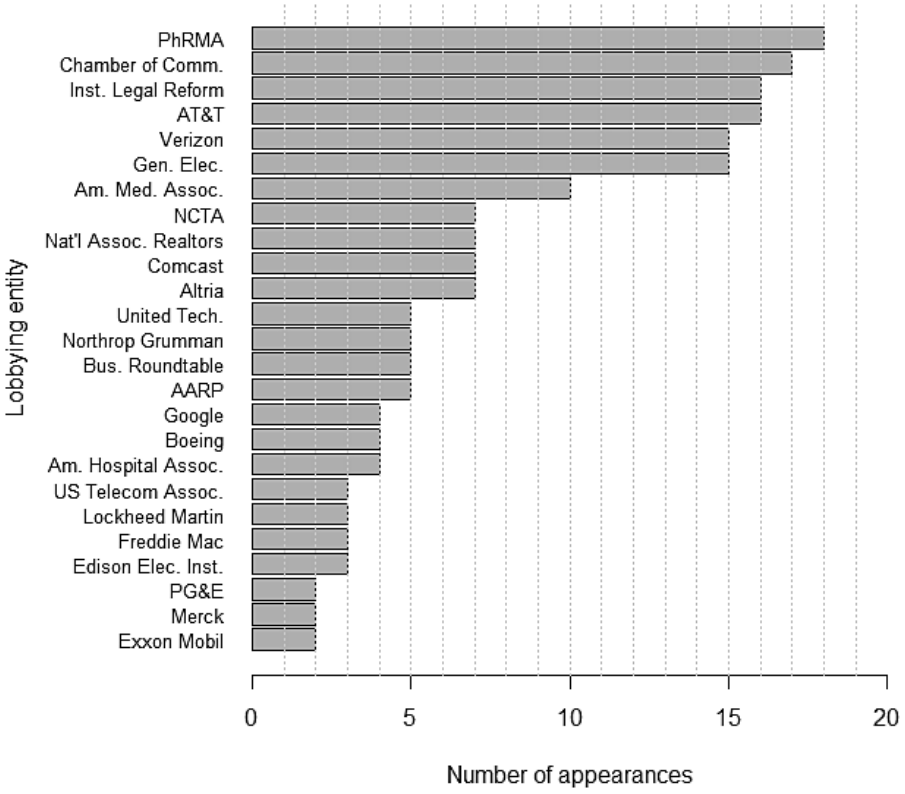
Overall, our tally of top spenders shows that for-profit businesses and those advocating on their behalf are responsible for the lion's share of the top dollar going into lobbying. Of all the entities in Tables 3 and 4, the only ones that are not businesses or organizations advocating on behalf of businesses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

Table 4 also shows how the composition of the big spenders group changes in response to landmark legislation and other political shocks. 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.[137]

This brings us to the most striking feature of the big spenders group—its stability over two decades. Only thirty distinct entities (out of a maximum possible of 190) made it to the top ten list from 1999 to 2017. Of these, twenty-five appeared on the list more than once. Figure 4 shows the repeat appearances. Pharmaceutical Research and Manufacturers 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, twenty-nine entities appeared in the top 100 every single year.

[137] We revisit the question of how lobbying responds to policy shocks below at Section III.E.2.

FIGURE 4. REPEAT APPEARANCES ON ANNUAL LISTS OF TOP TEN LOBBYING SPENDERS, 1999–2017



We now take advantage of the new data we have gathered to shed light on the characteristics of top lobbies. As noted, four of the top twenty lobbies are associations, and they are responsible for 28% of the top group's spending. The lobbying is divided almost equally between for-profit and not-for-profit entities, with for-profit entities claiming eleven of the top twenty spenders and 48% of their spending.[138] 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 of the lobbies and a quarter of the spending. For-profit entities represent 72% of the entities and about 64% of the spending, indicating lower per capita spending than nonprofits. Only two government-affiliated entities, Fannie Mae and Freddie Mac, are represented in the top 100.

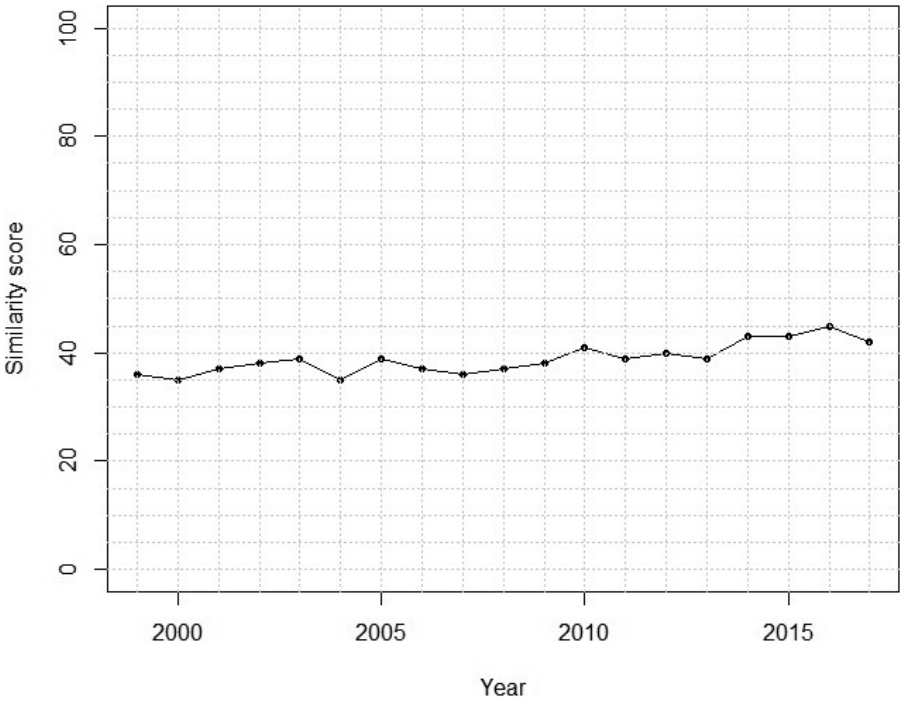
[138] As previously noted, all associations are nonprofits, but not all nonprofits are associations. *See supra* note 125 and accompanying text.

We conclude this Section by gauging the overlap between economic and political (lobbying) elites. To do so, 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.[139] 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 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 35 in 2000 and 2004 to a high of 45 in 2016, with an annual mean of 38.9 and median of 39.[140]

[139] 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 year $t + 1$. *See Methodology for Fortune 500*, FORTUNE, https://fortune.com/franchise-list-page/fortune-500-methodology-2022 [https://perma.cc/FSC5-USVC] (noting that revenues are reported from prior fiscal year).

[140] For purposes of calculating similarity scores, we limited the list of top 100 lobbies to those that are *not associations*. Because only standalone firms, and not associations, can appear in the Fortune 500, restricting the comparison to standalone entities on the lobbying side results in a more meaningful measure of overlap between economic and political elites. In the Appendix we calculate similarity scores in two alternative ways—by looking at the top 100 among *all* lobbies (Figure 17) and 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 40.7%.

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



It is evident that the overlap between economic and political elites 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 almost 40% similar—or, perhaps more significantly, more than 60% different (so the number of firms that belong to one group but not the other is three times the number of firms that are in both groups). This means that many high-earning firms are relatively uninterested in lobbying, and many lobbying powerhouses are not generators of substantial revenue.

Finally, we note the absence of a time trend. Though concentration has been on the rise since 2000, the slope of the rise was different in different years between 2000 and 2010, and concentration fell slightly after 2010.[141] These differences, however, did not much affect the overlap between the nation's largest firms and lobbies. The absence of a correlation between the level of economic concentration and the extent of overlap between economic and political elites does not seem to square well with the claims of political antitrust. After all,

[141] *See* Gutiérrez & Philippon, *supra* note 1, at 2.

the idea that the entrenchment of economic power in certain firms makes them into bastions of political power[142] suggests that increasing economic concentration should be accompanied by an increasing overlap between economic and political elites.[143] That this did not happen does not seem consistent with a straightforward story of transforming economic clout into political clout, as the political antitrust movement would have it.[144] We turn to sharper tests of the movement's claims later in the Article.[145]

D. Patterns of Economic and Political Concentration

1. Challenges in Measuring Political Concentration

The preceding discussion of top spenders leads naturally to asking how much of the total spending they contribute. This question can be answered using 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 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 m firms, HHI is given by $10{,}000\Sigma_{i=1}^{m} s_i^2$. 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.[146] The Department of Justice (DOJ) and the FTC, which use HHI when evaluating mergers for compliance with antitrust law, classify markets into three categories: "unconcentrated" (HHI

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[142] *See supra* notes 24–25 and accompanying text (noting neo-Brandeisian claims that increasing economic concentration enables more concentrated political influence).

[143] That is, when economic power is more dispersed, so should be political influence, such that different firms cycle in and out of being in the political elite. But as certain firms' economic power becomes entrenched, the same firms should consistently dominate politics.

[144] *See, e.g.*, DAYEN, *supra* note 3, at 12 ("[E]conomic power readily converts into political power.").

[145] *See infra* Part IV.

[146] *See generally* Volker Nocke & Michael D. Whinston, *Concentration Thresholds for Horizontal Mergers*, 112 AM. ECON. REV. 1915, 1918–19 (2022).

below 1,500), "moderately concentrated" (HHI between 1,500 and 2,500), and "highly concentrated" (HHI above 2,500).[147]

These measures of concentration are not free of difficulty when applied in the economic context. Defining the relevant market is the main complication, a problem that carries over to the political context.[148] Assuming the relevant market is properly defined, however, these measures capture the extent to which the market is controlled by a few firms rather than many firms. The same is not unambiguously true when we move from the economic to the political lobbying context. In our view, there are three distinct challenges in measuring concentration in the latter context.

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. This is 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 entity 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.[149] Fortunately, Huneeus and Kim show that

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147 U.S. Dep't of Just. & Fed. Trade Comm'n, Horizontal Merger Guidelines § 5.3, at 19 (2010), https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf [https://perma.cc/73DU-V6XF].

148 *See infra* Appendix, Section F.

149 One 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, which notes that concentration may not correlate with market power.

most congressional bills are lobbied by only a handful of firms.[150] So this challenge may not be quantitatively important.

The other two challenges cut in the opposite direction. The second issue is the 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.[151] There are countervailing considerations that lessen the incentive to sit out and freeride—for example, policies have private-good aspects which participation will help secure, and participation induces the perception of many diverse voices supporting one's preferred policy—but at bottom we must acknowledge that the freeriding incentive exists and likely reduces lobbying by a nontrivial extent. Our primary concern is that freeriding will dampen participation, especially by smaller firms, and therefore overstate 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 above. One can argue 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 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.

These three issues have the potential to bias our measures in either direction. The first concern suggests that our measure understates political concentration, while the other two suggest that we might overstate it. But given the low overlap in the policy targets of firm lobbying, we expect the first issue to be small.[152] The upward bias of the second and third issues is also not pressing, given that we measure political concentration to be quite low.[153] Thus, thinking of the measures as upper bounds would not change any of our conclusions. These difficulties also should not affect the time trends in concentration. We cannot think of any good reasons why the respective weight

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150 *See* Huneeus & Kim, *supra* note 87, at 15 ("Most congressional bills are lobbied by only one or two interest groups.").

151 *See* OLSON, *supra* note 50, at 11.

152 *See supra* note 150 and accompanying text.

153 *See infra* Section III.D.2 (finding that political concentration has been lower than economic concentration in the last two decades).

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.

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 in trying to enact conflicting policies. But the time of federal government officials, and floor time in the House and Senate, are scarce resources over which different lobbies compete. Moreover, 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.

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 an economic market, the DOJ-FTC Horizontal Merger Guidelines would easily classify it as "unconcentrated"; 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."[154]

TABLE 5. MEASURES OF CONCENTRATION OF LOBBYING EXPENDITURES, 1999–2017

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

Bear in mind, though, that this is an enormous market. With 42,066 entities, the size of the unified political lobbying market is comparable to some sectors or subsectors of the economy—that is, areas defined by a two- or three-digit NAICS code.[155]

[154] One might object that comparing political and economic concentration measures is like comparing "apples 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 in Section IV.B.

[155] For example, according to the 2017 County Business Patterns series of the U.S. Census, the total number of establishments (note that the number of *establishments* reported by the CBP is slightly larger than the number of *firms* analyzed in this study) is

Moreover, the "unconcentrated" label does not imply that the distribution of spending on lobbying is relatively equal among various participants in the political process. The distribution can be put in perspective by comparison to the statistics often cited when lamenting the great levels of income and wealth inequality in the United States. Today, the top 1% of households have a 13% share of total income (after taxes and transfers), and the top 20% have a 48% share.[156] By comparison, over the years of our data, the top 1% of entities were responsible for 54% of the entire spending on lobbying, and the top 20% of entities were responsible for 93%. This is far more unequal even than the distribution of wealth, of which the top 1% of households have 39% and the top 10% have 78%.[157]

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 GDP produced by the top firms listed in the Fortune 500. Figure 6 compares four-, eight-, twenty-, fifty-, hundred-, and five-hundred-firm concentration ratios in politics and economics.[158] According to all of these measures, politics has been considerably less concentrated than economics over the past two decades (47% less concentrated for four-firm ratios, 42% less concentrated for eight-firm ratios, 35% less concentrated for twenty-firm ratios, about 30% less concentrated for fifty- and hundred-firm ratios, and 16% less concentrated for five-hundred-firm ratios).

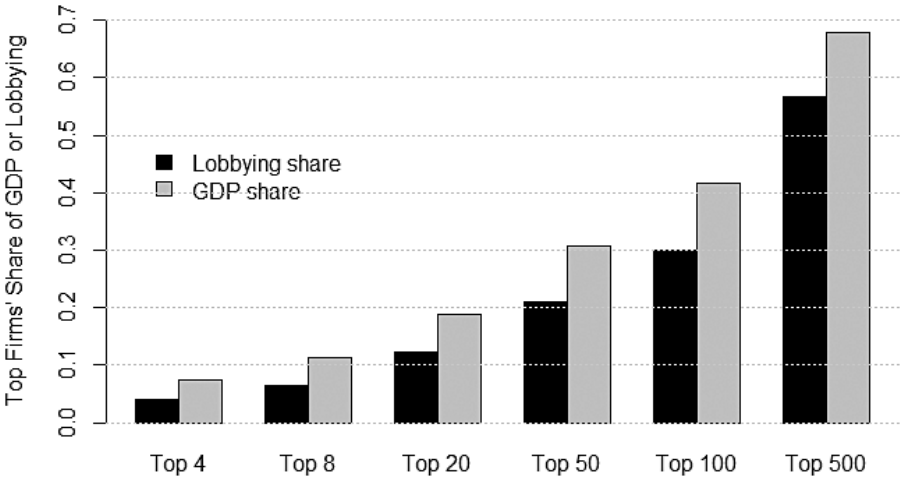
23,363 in the Agriculture, Forestry, Fishing and Hunting sector (NAICS code 11) and 25,732 in the Mining, Quarrying, and Oil and Gas Extraction sector (NAICS code 21). Of course, there are sectors that have many more or many fewer establishments—e.g., respectively, Construction (NAICS code 23) with 715,641 establishments or Utilities (NAICS code 22) with 18,965 establishments. *See infra* Appendix, Section F (discussing NAICS codes).

156 *See* CHAD STONE, DANILO TRISI, ARLOC SHERMAN & JENNIFER BELTRÁN, CTR. ON BUDGET & POL'Y PRIORITIES, A GUIDE TO STATISTICS ON HISTORICAL TRENDS IN INCOME INEQUALITY 12 (2020), https://www.cbpp.org/sites/default/files/atoms/files/11-28-11pov_0.pdf [https://perma.cc/8CMV-GSF5] (providing income and wealth statistics based on data from the Congressional Budget Office).

157 *See id.* at 14.

158 The 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 nineteen n-firm concentration ratios. For politics, by contrast, one can compute the aggregate ratios.

FIGURE 6. TOP LOBBIES' SHARE OF LOBBYING EXPENDITURES COMPARED TO TOP FIRMS' SHARE OF GDP



We next examine lobbying concentration trends 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 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 right-hand 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 7. HHI FOR MARKET IN LOBBYING THE FEDERAL GOVERNMENT, 1999–2017

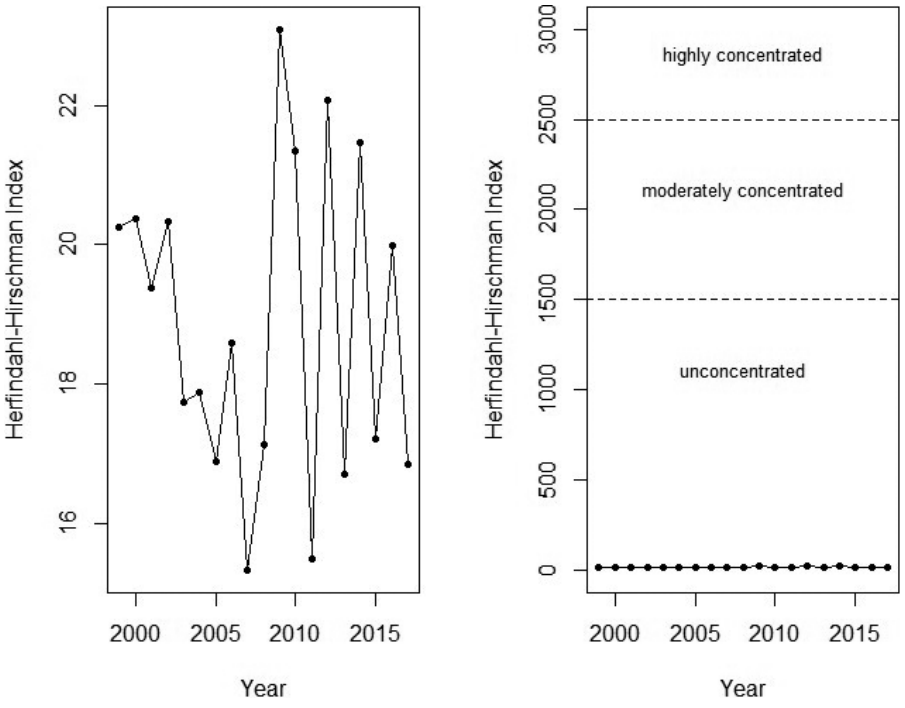


Figure 8 plots the trends in lobbying concentration alongside economic concentration. To see the levels of concentration both at the very top and a bit farther down, we have plotted both the four-firm and hundred-firm concentration ratios. Some interesting patterns emerge. First, the national economic market was more concentrated than the national market for lobbying the federal government, as measured by both four-firm and hundred-firm concentration ratios, every year. Averaging over the years, the economic four-firm concentration ratio is about 65% (three percentage points) greater than the political ratio, and the economic hundred-firm concentration ratio is about 27% (nine percentage points) greater than the political ratio. Note that our finding that the political lobbying market is less concentrated than the economic market is not an artifact of our treatment of associations as unitary entities because such treatment *increases* our estimates of political concentration. Breaking associations up into constituent entities would only widen the gulf between estimates of political and economic concentration. Second, there is greater variation in levels of economic concentration than political concentration, especially 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.[159]

FIGURE 8. FOUR- AND HUNDRED-FIRM CONCENTRATION RATIOS IN ECONOMICS AND POLITICS, 1999–2017

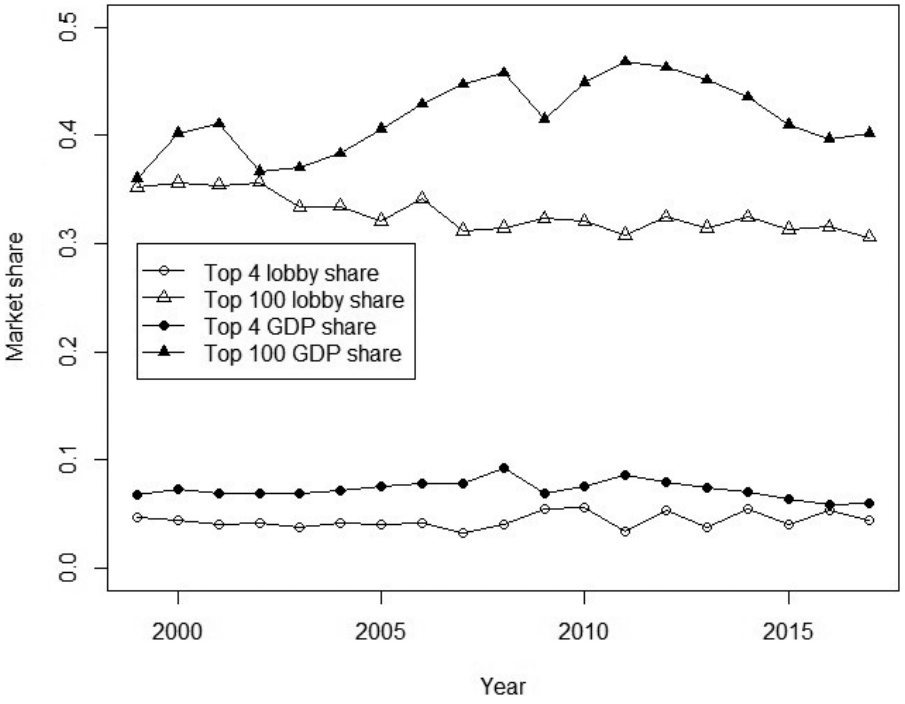


TABLE 6. DISPERSION STATISTICS FOR POLITICAL AND ECONOMIC CONCENTRATION RATIOS, 1999–2017

	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

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 1% decrease in lobbying expenditure, but the correlation is far from statistically significant ($p > 0.6$).

[159] Using a linear model, regressing the economic four-firm ratio on the political four-firm ratio yields, and regressing the economic hundred-firm ratio on the political hundred-firm ratio yields.

E. Patterns of Lobbying by Industry and Issue

We now analyze lobbying by industry. Our industry definitions are based on codes assigned by the North American Industry Classification System (NAICS). NAICS codes start with two-digit numbers, which are very general descriptions of an industry, and become more specific as they go through three-, four-, five-, and finally six-digit codes.[160] 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.[161] 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).[162]

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 hand-coding the NAICS information corresponding to 42% of the entire spending amount over all years of our data. 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 were in fact issues relevant to that sector, ruling out obvious coding mistakes.[163]

A wide cross-section of the economy is represented in our 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

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160 *See* OFF. OF MGMT. & BUDGET, EXEC. OFF. OF THE PRESIDENT, NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM 16–18 (2022) [hereinafter NAICS MANUAL], https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf [https://perma.cc/H6YU-B5ML] (specifying the meaning of each type of code).

161 *Id.*

162 *Id.* at 25.

163 *See infra* Appendix, Section F.

granular levels (four-, five-, and six-digit NAICS codes), and because more granular definitions are sensitive to changes in NAICS classification over the years,[164] we will conduct the analysis based on two-digit (sector-level) codes.[165]

1. Spending Patterns by Industry

Table 7 shows descriptive statistics by sector. Sectors are ordered by Lobbying Expenditure.

TABLE 7. LOBBYING BY DIFFERENT SECTORS OF THE ECONOMY, 1999–2017

Sector	Number of Entities	Spending ($m)	Portion of Spending	Spending per Entity ($m)
Manufacturing	4637	13871.4	0.251	3.0
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	0.048	3.9
Health Care and Social Assistance	2470	2459.0	0.044	1.0
Transportation and Warehousing	916	2314.5	0.042	2.5
Mining, Quarrying, and Oil and Gas Extraction	396	1890.0	0.034	4.8
Public Administration	1828	1456.3	0.026	0.8
Educational Services	1493	1384.0	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

All twenty sectors of the economy recognized by NAICS are well-represented in federal lobbying. The large numbers for the top

164 *See infra* Appendix, Section F.

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

two sectors, especially Manufacturing, are probably due to their broad definition. At the bottom, Agriculture accounts for just 0.3% 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 III.C, stands in some tension with widespread lore about the farm lobby's strength. 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.[166] On the other hand, as noted, the number of entities lobbying on any given bill is very small (one or two entities for most bills), so the unimportance of countervailing lobbying is not unique to Agriculture.[167] 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 in perspective by viewing it alongside their economic characteristics. The economic data, taken from the 2017 U.S. Economic Census, includes 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 nineteen-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.

166 The 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. *See, e.g.*, B. Douglas Bernheim & Michael D. Whinston, *Menu Auctions, Resource Allocation, and Economic Influence*, 101 Q.J. ECON. 1 (1986) (discussing the concept of "menu auctions," in which bidders bid on a "menu" of options); Sepehr Shahshahani, *The Role of Courts in Technology Policy*, 61 J.L. & ECON. 37 (2018) (applying the "menu auctions" concept to lobbying on technology policy following court decisions).

167 *See supra* note 89 and accompanying text.

TABLE 8. ECONOMIC AND POLITICAL CHARACTERISTICS OF SECTORS, 1999–2017

Sector	Number of Total Entities	Number of Lobbying Entities	Revenue ($m)	Lobbying ($m)	Portion of Revenue Spent on Lobbying	Portion of Entities Lobbying
Wholesale Trade	297,379	236	8,734,807	47.7	0.00001	0.00080
Manufacturing	248,599	1266	5,587,964	730.1	0.00013	0.00510
Retail Trade	647,480	164	4,949,602	56.5	0.00001	0.00030
Finance and Insurance	236,950	517	4,340,011	341.3	0.00008	0.00220
Health Care and Social Assistance	651,135	742	2,527,903	129.4	0.00005	0.00110
Construction	700,952	179	1,999,110	19.0	0.00001	0.00030
Professional, Scientific, and Technical Services	810,213	898	1,844,781	161.2	0.00001	0.00110
Information	79,418	361	1,582,098	281.2	0.00018	0.00450
Administrative and Support	347,192	336	950,894.9	52.8	0.00006	0.00100
Accommodation and Food Services	539,119	67	938,237.1	17.5	0.00002	0.00010
Transportation and Warehousing	184,735	322	895,225.4	121.8	0.00014	0.00170
Real Estate and Rental and Leasing	309,393	156	674,147	49.6	0.00007	0.00050
Utilities	5,886	290	577,100.5	138.9	0.00024	0.04920
Other Services (except Public Administration)	494,666	1242	544,127.7	456.1	0.00084	0.00250
Mining, Quarrying, and Oil and Gas Extraction	19,250	115	408,792.8	99.5	0.00024	0.00600
Arts, Entertainment, and Recreation	129,547	167	265,620	15.2	0.00006	0.00130
Management of Companies & Enterprises	29,319	95	121,526.1	36.6	0.00030	0.00320
Educational Services	70,954	535	65,718.4	72.8	0.00111	0.00750

The last two columns report, respectively, a sector's lobbying expenditure 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 the expense ratio and 0.005 for the participation ratio; that is to say, on average two ten-thousandths (0.02%) of a sector's annual revenue is spent on federal lobbying, and five of every one thousand firms (0.5%) in a sector participate in lobbying. The expense ratio is comparable to the ratio of lobbying expenditures to GDP reported in Section III.A, which was 0.0002 for most years.

A sector's revenue rank is not always similar to its lobbying rank. Some sectors, like Manufacturing and Finance, appear toward the top in both Tables 7 and 8; 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 at the middle or bottom of the lobbying table. By contrast, Other Services (except Public Administration) is second in lobbying but fourteenth in revenue.

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 thousandths of a cent of additional lobbying, which is to say that a 1% change in annual revenue is associated with a 0.25% 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 1% change in the number of firms is associated with a 0.16% change in the number of lobbies. All correlations are far from statistically significant.

2. Lobbying and Policy Shocks

We continue the analysis of sector-wide spending patterns by returning to a question from Section III.C. There we noted that the position and spending of big lobbies 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 can now examine whether lobbying is responsive to policy shocks, such as crises and new legislative activity, not just for the big spenders but for others as well. We tackle the question in two ways—by looking at relevant industries and relevant issue areas.

a. The Great Recession and Related Events

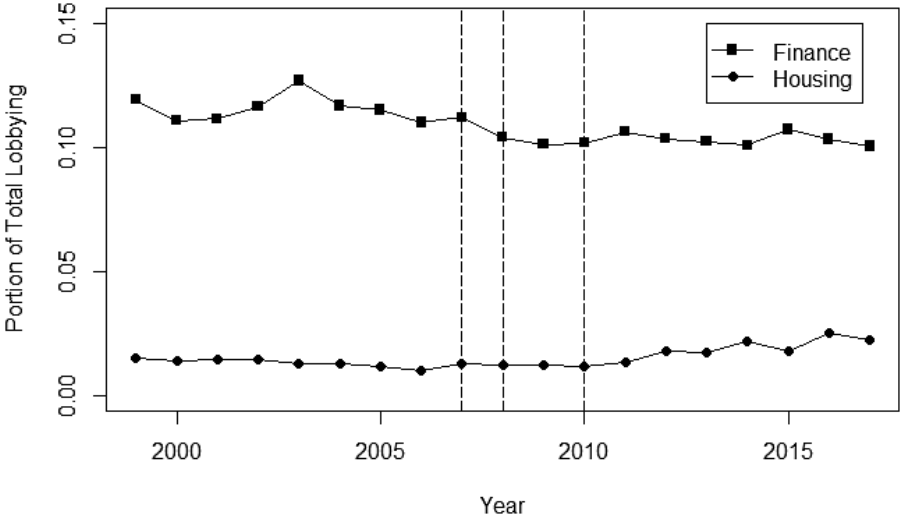
First, consider the subprime mortgage crisis, the ensuing Great Recession, and the enactment of the Dodd-Frank Act in 2010. Figure 9 shows how lobbying by the finance and housing sectors responded to these important events by plotting the percentage of total lobbying attributable to these sectors over the years.[168] As the figure shows,

[168] 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." NAICS MANUAL, *supra* note 154, at 56, 58.

these sectors' lobbying was not particularly responsive to landmark events that greatly affected them. 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. 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 dramatic as the importance of the events of 2007–2010 would have led one to expect.[169]

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.



Another approach to gauging the relationship between lobbying and landmark events is to look not at industries but at issues. As mentioned in Part II, LDA reports include information on the issues lobbied.[170] We can exploit this information to see whether there was a surge in lobbying on relevant issues during landmark events. Figure 10

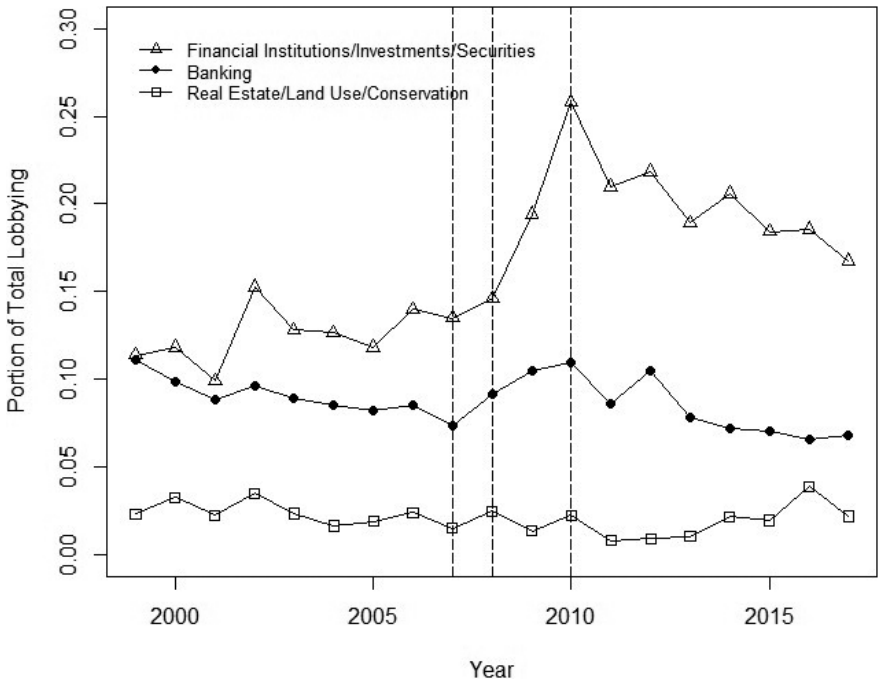
[169] Figure 9 shows the percentage of lobbying by the Finance and Housing sectors, rather than their raw lobbying expenditures, so that one can assess the *relative* impact on these sectors of landmark events pertaining to them. But, as Figure 19 in the Appendix shows, plotting aggregate lobbying expenditures does not change the conclusion that lobbying in neither sector was particularly responsive to the dramatic events of 2007–2010.

[170] The Act specifies seventy-nine issue areas. *See Lobbying Issue Codes*, CONG., https://lda.congress.gov/LD/help/default.htm?turl=documents%2FAppCodes.htm [https://perma.cc/4DRF-4CWC]; *see also Lobbying Disclosure Electronic Filing: Lobby Registration and Reporting System User Manual*, CONG. (Mar. 31, 2019), https://

shows the annual portion of total lobbying on the issues most relevant to the Great Recession (namely, "Financial Institutions/Investments/Securities," "Banking," and "Real Estate/Land Use/Conservation"). The housing issue, 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 large 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).[171]

FIGURE 10. LOBBYING ON 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.



lda.congress.gov/ld/help/ld_user_guide.pdf [https://perma.cc/2SGL-F7C4]. The issue areas are not exclusive; a single lobbying report may be marked with multiple issues.

171 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 during the Great Recession whereas lobbying on housing did not.

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

b. The Affordable Care Act

Next, we explore the responsiveness of lobbying to the legislative ferment surrounding the Affordable Care Act (ACA), which was 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"),[172] all entities with six-digit NAICS code 524114 ("Direct Health and Medical Insurance Carriers"),[173] and relevant major professional and advocacy organizations.[174]

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.[175]

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[172] 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.

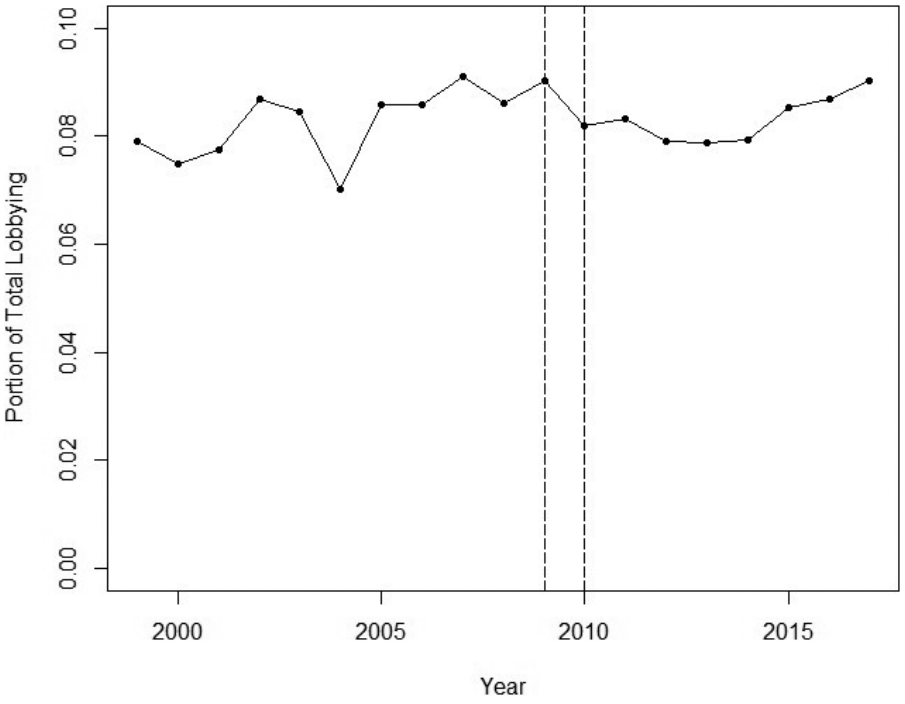
[173] This includes major health insurance companies and organizations such as America's Health Insurance Plans, Aetna, Anthem, Blue Cross Blue Shield Association, Centene, Cigna, Health Care Service Corporation, and UnitedHealth. The same caveat about corrected coding applies.

[174] 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.

[175] *See infra* Figure 21.

FIGURE 11. LOBBYING BY ENTITIES MOST AFFECTED BY THE AFFORDABLE CARE ACT AS PERCENTAGE OF TOTAL LOBBYING, 1999–2017

See footnotes 172–174 and accompanying text for related definition. The vertical lines mark the years 2009 and 2010, when the ACA was introduced and signed into law, respectively.

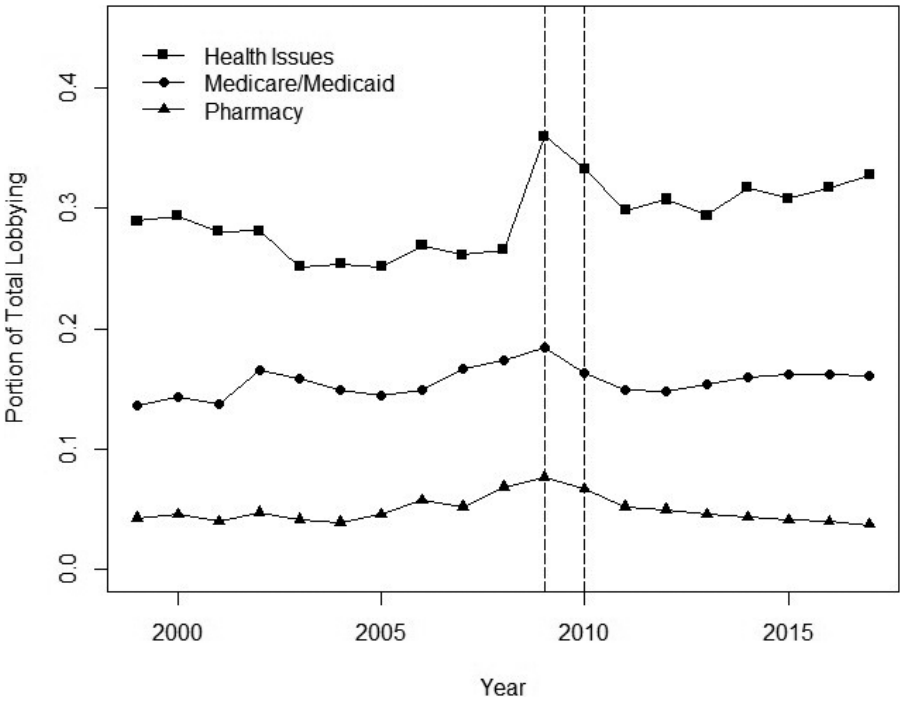


But the story is different when we plot lobbying on relevant issues. As Figure 12 shows, lobbying on the three most relevant issues (as percentage of total lobbying) jumped in 2009, most dramatically for Health Issues. For all three issues, the share of lobbying in 2009 is the highest among all years. And 2010 is the second-highest for Health Issues and third-highest for Pharmacy.[176] The same pattern holds if we plot total lobbying rather than percentage of lobbying by issues.[177]

[176] Lobbying on the "Constitution" issue also jumped dramatically in 2010. *Id.*
[177] *See infra* Figure 22.

FIGURE 12. LOBBYING ON ISSUES MOST RELEVANT TO THE AFFORDABLE CARE 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, respectively.



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 of increased lobbying on relevant issues is also present in the context of other landmark events. For example, lobbying on both the Defense and Homeland Security issues jumped following September 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. We conclude that as new issues emerge on the horizon, the share (or amount) of lobbying expenditures by different industry sectors does not change, but the share (and amount) of lobbying going into the new issues does rise.

3. *Big Tech's Lobbying*

Another question to be taken up from Section III.C 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 ten list and only for the last four years. Given the focus on "big tech" firms in the current discourse around concentration,[178] examining their political activism may have important lessons for political antitrust. It will also test the conventional wisdom that the giant tech firms started off Washington-shy but soon became lobbying powerhouses.[179]

We selected Amazon, Apple, Facebook (now Meta), Google (Alphabet), Microsoft, and Twitter (now X)—six tech companies with great cultural cachet that are constant targets of public and media attention. Facebook and Twitter are unquestionably the most prominent newcomers; the others, being the top four tech firms by revenue, provide a nice benchmark for comparison.[180] 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 in 1975), was the only one already established as a substantial spender on federal 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

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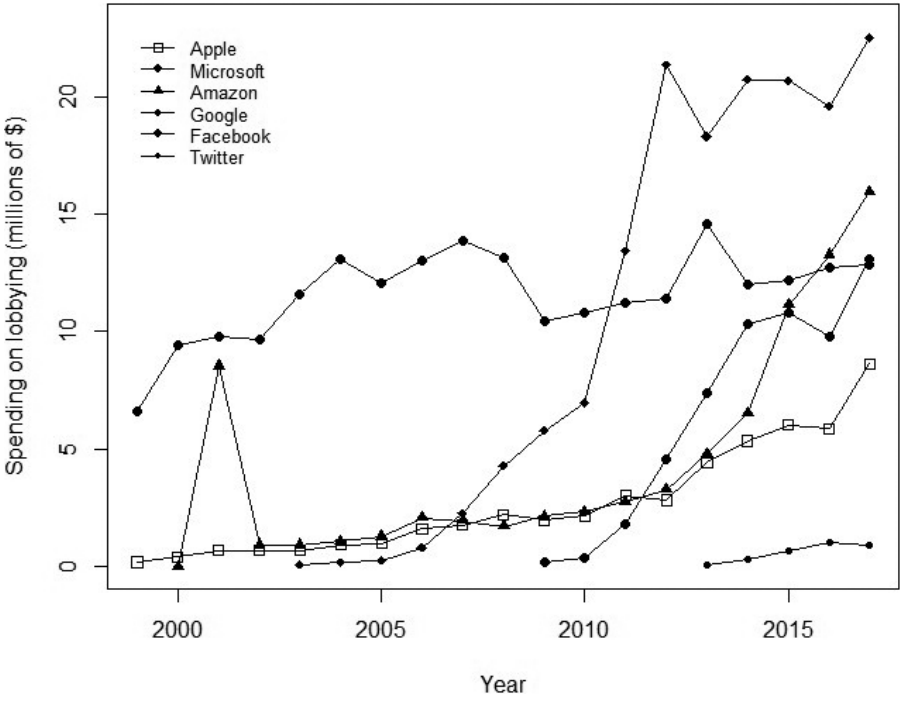
178 *See, e.g.*, *The Tech Giants, Monopoly Power, and Public Discourse*, KNIGHT FIRST AMEND. INST. AT COLUMBIA UNIV., (2020), https://knightcolumbia.org/research/the-tech-giants-monopoly-power-and-public-discourse [https://perma.cc/Q8AV-SPPU] (presenting essays that examine how big tech firms shape public discourse); TEACHOUT, *supra* note 4; WU, *supra* note 4, at 119–26 (examining the history of the internet's development and the eventual dominance of a few firms).

179 *See, e.g.*, Paul Harris, *Titans of Tech Raise Millions to Enter the Political Arena: But What Is It They Want?*, GUARDIAN (Mar. 30, 2013), https://www.theguardian.com/world/2013/mar/30/facebook-google-twitter-political-lobbying [https://perma.cc/4ZZV-NC9W] (discussing how tech firms are self-interested despite public perception of their socially responsive nature); Olivia Solon & Sabrina Siddiqui, *Forget Wall Street – Silicon Valley Is the New Political Power in Washington*, GUARDIAN (Sept. 3, 2017), https://www.theguardian.com/technology/2017/sep/03/silicon-valley-politics-lobbying-washington [https://perma.cc/SP4V-TBRM] (discussing the ever-increasing power of tech companies and the shifting of public opinion).

180 *See Fortune 500*, FORTUNE, https://fortune.com/fortune500 [https://perma.cc/2S9Y-3UXQ].

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. Its falling position relative to the other tech giants was the result not of a decline in its own spending but of a dramatic rise in the others' spending.

FIGURE 13. LOBBYING TRENDS FOR SIX TECH GIANTS, 1999–2017



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 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 made any dra-

matic leaps in spending. The newcomers did make such leaps, 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. This is remarkable in light of its great wealth. Apple 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 federal lobbying until 2001. (It registered in 2000 but did not spend anything that year.) The company 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.[181] Setting aside the 2001 blip, Amazon started out mildly interested in lobbying, with steadily-but-slowly-rising spending during 2002–2013, comparable to Apple's spending. 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 is 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 federal lobbying 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

[181] 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 do not know what happened in 2001 that was so dramatic. Perhaps it had to do with the rise of the Streamlined Sales Tax Project.

start lobbying Congress until 2009 and did not break the million-dollar mark until 2011. But its spending rose sharply afterward, 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 federal lobbying until 2013 and has surpassed the million-dollar mark only once, in 2016 (by a bare $60,000). Twitter's lobbying has also 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 the "good person" image that Twitter used to have (prior to its acquisition by Elon Musk). But it is 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 other tech companies surveyed here, often called the Big Five,[182] are all in the top fifty.[183] It remains to be seen how Twitter's lobbying profile changes after Elon Musk's acquisition.

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 the behavior of Apple and Twitter, which have shown relatively little interest in lobbying over the years.

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 twenty NAICS sectors for all nineteen 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,[184] 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

[182] *See, e.g.*, Conor Sen, Opinion, *The 'Big Five' Could Destroy the Tech Ecosystem*, BLOOMBERG NEWS (Nov. 15, 2017, 11:00 AM), https://www.bloomberg.com/opinion/articles/2017-11-15/the-big-five-could-destroy-the-tech-ecosystem [https://perma.cc/9WXY-QSQ6].

[183] *See Fortune 500*, *supra* note 180.

[184] *See supra* Figure 7 and accompanying text.

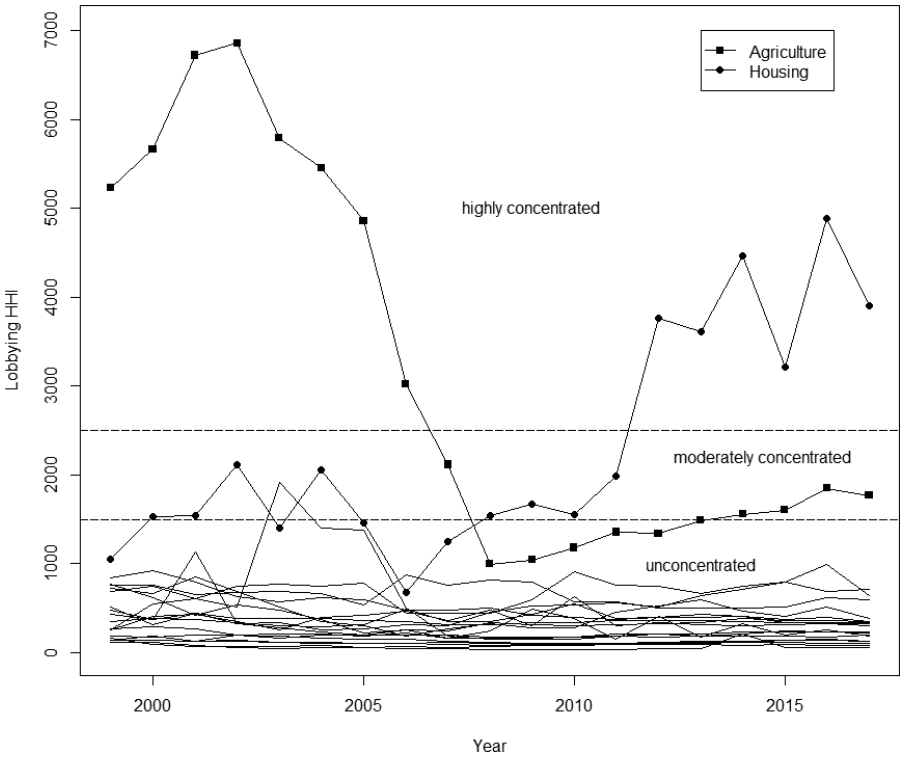
quite a few years in the highly concentrated region. Agriculture was there every year until 2006 and then climbed down to the unconcentrated and moderately concentrated regions. Housing, by contrast, used to be unconcentrated or moderately concentrated but has become highly concentrated since 2012.

The Agriculture sector's lack of lobbying competition interestingly complements its other characteristics discussed above, namely its lowermost position 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 political competition. Figure 14 is consistent with this conjecture, especially in the early years. It is also worth recalling 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.[185] Agriculture's total number of distinct lobbying entities is also the lowest among all sectors.[186] In short, it appears that lobbying in the Agriculture 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.

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

[186] *See supra* Table 7.

FIGURE 14. LOBBYING CONCENTRATION IN ALL TWENTY NAICS SECTORS, 1999–2017



IV
RELATIONSHIP BETWEEN ECONOMIC AND POLITICAL CONCENTRATION

This Part explores the connection between economic variables and political concentration. We are particularly 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.[187] In Section I.A, we teased out these claims. In Sections III.C and III.D, we documented trends in the overlap between political and economic elites and in economic and political concentration that bear on these claims. In this Part, we subject some of the claims to greater empirical scrutiny. We investigate the relationship between economic variables and political concentration first at the sector level (Section IV.A) and then at the firm level (Section IV.B). The sector-level regressions speak to

[187] *See supra* notes 46–63 and accompanying text.

Pitofsky and Wu's ideas about collective action[188] while the firm-level regressions speak more to Teachout and Khan's concerns about the disproportionate power of large firms,[189] though the analyses are connected and complementary. A primary takeaway from our empirical analysis is that, contrary to the concerns voiced by the neo-Brandeisian movement, economic concentration has not produced greater political concentration.

A. Sector-Level Regressions

We first explore the connection between political concentration and economic variables at the sector level. The analysis is subject to the caveat that there are difficulties with sector definitions and the placement of firms and other entities into sectors, but we have taken a variety of measures to ameliorate these difficulties.[190] Our economic data comes from the U.S. Economic Census, in particular the datasets prepared by Jan Keil from the Census data.[191] 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 (lower bound) estimate of the HHI for industries where the Census does not make the HHI available.[192]

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

188 *See supra* notes 49–54 and accompanying text.

189 *See supra* notes 55–63 and accompanying text.

190 For a more thorough discussion, see *infra* Appendix Section F.

191 *See U.S. Industry Concentration Data*, JAN KEIL (Jan. 2023), https://sites.google.com/site/drjankeil/data [https://perma.cc/XF7J-ZB95].

192 For details on how this lower-bound estimate is calculated and why it is superior to other estimates, see Jan Keil, *The Trouble with Approximating Industry Concentration from Compustat*, 45 J. CORP. FIN. 467, 474–75 (2017).

given Keil's conclusion that they have a "vanishingly low correlation with the more comprehensive Census measure."[193]

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.[194]

We regress the concentration of political lobbying, as measured by sector-year HHI, 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 the work of Bombardini and Trebbi, who found that industries that are more concentrated and have more differentiated products rely more on the lobbying of individual firms, whereas more competitive industries tend to lobby through trade associations.[195] However, we rule out this interpretation below.[196] In any event, 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 statistically significant negative correlation between industry revenue and political concentration, especially when we add sector fixed effects.

[193] *Id.* at 467. 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.

[194] There 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). In addition to the eight missing sectors, Keil's dataset is missing observations for the Utilities and Whole Trade sectors in 2002.

[195] *See* Bombardini & Trebbi, *supra* note 122, at 18.

[196] *See infra* notes 200–02 and Table 11 and accompanying text.

TABLE 9. REGRESSIONS OF SECTOR-YEAR POLITICAL HHI ON SECTOR-YEAR ECONOMIC VARIABLES

	Dependent variable: Political (lobbying) HHI			
	(1)	(2)	(3)	(4)
revenue (billions)	–0.065**		–0.218**	
	(0.028)		(0.096)	
economic HHI	–0.993	–0.826	–4.507	–10.430**
	(0.806)	(0.825)	(4.238)	(4.944)
log(revenue)		–40.359		–886.211**
		(40.193)		(373.210)
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
Note:				*p<0.1; **p<0.05; ***p<0.01

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 a negative correlation between economic and political HHI, though its statistical significance is not robust to the inclusion of sector fixed effects (models 3 and 4).[197]

[197] 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). 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.

TABLE 10. REGRESSIONS OF SECTOR-YEAR POLITICAL HHI ON SECTOR-YEAR ECONOMIC VARIABLES AND SECTOR-YEAR LOBBYING EXPENDITURES

	Dependent variable: Political (lobbying) HHI			
	(1)	(2)	(3)	(4)
revenue (billions)	–0.088***		–0.253**	
	(0.026)		(0.098)	
lobbying (millions)	1.574***		1.728	
	(0.568)		(1.068)	
economic HHI	–3.608***	–5.350***	–7.516	–5.847
	(0.965)	(1.233)	(4.666)	(4.195)
lobbying entities	–1.388***	–1.832***	0.058	–0.729**
	(0.235)	(0.306)	(0.422)	(0.356)
log(revenue)		–93.898**		–955.596***
		(40.980)		(317.455)
log(lobbying)		395.249***		1,623.184***
		(106.865)		(187.612)
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
Note:				*p<0.1; **p<0.05; ***p<0.01

The results also suggest that larger sectors have less concentrated lobbying, a negative correlation that is statistically significant across all specifications (both the revenue and logged revenue measures). More interesting perhaps is the association between the aggregate lobbying of a sector and the concentration of those expenditures. Using the column 4 estimate, the model predicts that a 10% increase in sector-year lobbying expenditures is associated with a roughly 162-point increase in political HHI.

Despite the limitations of analysis at the sector level, a few of our findings are noteworthy. The most important is the lack of a significant positive correlation (in fact, an apparent negative correlation) between political and economic HHI. To the extent the concentration of lobbying expenditures is a good proxy for the concentration of political influence,[198] this finding does not support the neo-Brandeisian claim that economic concentration leads to greater concentration of political power by eliminating barriers to coordination and collective action.[199]

198 *See supra* Section I.B.

199 *See supra* notes 48–54 and accompanying text.

This finding suggests that more economically competitive sectors see more concentrated political activity, which may have a number of explanations. As noted above, one plausible explanation is that of Bombardini and Trebbi, who show that in lobbying on trade policy, smaller firms in competitive industries tend to be represented by trade associations.[200] If this were true more broadly beyond trade policy, then the relationship we find might be an artifact of our inability to assign trade association expenditures to constituent firms. But Table 11 shows that there is very little correlation over time between the portion of a sector's lobbying expenditures contributed by associations and the sector's concentration, so we can rule out the idea that the negative correlation between sector-level economic and political concentration is an artifact of trade associations' greater presence in competitive sectors. 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 Google.[201] But it is not clear that such patterns can be sustained 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 to the firm level.[202]

200 *See supra* note 195 and accompanying text.

201 *See, e.g.*, Emily Birnbaum & Rebecca Kern, *Tech Spent Big on Lobbying Last Year*, POLITICO (Jan. 24, 2022), https://www.politico.com/newsletters/morning-tech/2022/01/24/tech-spent-big-on-lobbying-last-year-00001144 [https://perma.cc/MH2X-2Y4B] (noting that small tech companies are "dialing up their presences in Washington").

202 *See infra* Section IV.B.

TABLE 11. REGRESSION OF SECTOR-YEAR PORTION OF LOBBYING EXPENDITURES BY ASSOCIATIONS ON SECTOR-YEAR ECONOMIC HHI

	Dependent variable: Portion of lobbying expenditure by associations	
	(1)	(2)
revenue (billions)	–0.0001 (0.0001)	0.001 (0.0004)
Year fixed effects?	Yes	Yes
Sector fixed effects?	No	Yes
Observations	211	211
R^2	0.031	0.903
Note:		*p<0.1; **p<0.05; ***p<0.01

The second notable finding is the positive correlation between total political expenditures and political HHI (controlling for the number of lobbying firms).[203] 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.[204]

In the Appendix, we check the robustness of our sector-level regressions to a variety of specifications. First, we use models with alternative measures of economic and political concentration, namely four-firm concentration ratios instead of HHI (Tables 14–15). Second, we include a time-lagged version of the economic explanatory variables to take account of the possibility that economic concentration takes time to percolate into the political sphere (Tables 16–17). Our results are unaffected: at the sector level, there is a negative correlation between revenue and lobbying concentration, there is a positive correlation between lobbying expenditure and lobbying concentration, and, most importantly, there is no positive correlation between economic and political concentration.

While we do not find a positive relationship between economic concentration and political concentration, Tim Wu suggests an addi-

[203] The relationship persists with roughly the same magnitude and with statistical significance at the 99% 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.

[204] *See infra* Section IV.B.

tional political implication of economic concentration based on the work of Mancur Olson. Wu argues that increased market concentration can help solve an industry's collective action problems by increasing the stakes of the largest firms and making coordination easier.[205] In this view, either a single large firm or a small set of firms will be willing to incur the costs of lobbying for industry-wide interests.[206] This argument is directly testable with our data as it predicts that concentrated industries will spend a larger share of their revenues on political activities. This hypothesis is tested in Table 12, which reports a series of regressions of the share of revenues allocated to lobbying on the concentration of the sector. Across six specifications with different combinations of year and sector fixed effects and measures of industry size, we estimate a precise zero correlation between an industry's lobbying share of revenue and its economic concentration. These results indicate that more concentrated industries are not more politically active than less concentrated ones and cast doubt on the claim that market concentration helps mitigate intra-industry freeriding.

TABLE 12. REGRESSIONS OF SHARE OF SECTOR REVENUE SPENT ON LOBBYING ON ECONOMIC CONCENTRATION & OTHER VARIABLES

	Dependent variable: Share of sector revenue spent on lobbying (×1000)					
	(1)	(2)	(3)	(4)	(5)	(6)
economic HHI	–0.001 (0.001)	–0.001 (0.001)	0.0001 (0.0005)	0.001 (0.001)	0.001 (0.001)	–0.001 (0.001)
revenue (billions)		–0.0001*** (0.00002)			0.00002 (0.00003)	
log(revenue)			–0.285*** (0.023)			–0.334*** (0.094)
Year fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	No	Yes	Yes	Yes
Observations	211	211	211	211	211	211
R^2	0.015	0.124	0.463	0.970	0.970	0.972
Note:						*p<0.1; **p<0.05; ***p<0.01

[205] WU, *supra* note 4, at 58 ("The more concentrated the industry, the fewer who need to coordinate, and the fewer among whom the stakes need be divided."); *see also supra* notes 49–54 and accompanying text (fleshing out the argument).

[206] WU, *supra* note 4, at 58 ("[A]fter consolidation, . . . the prospects for political cooperation improve. . . . The more concentrated the industry, the more corrupted we can expect the political process to be.").

B. Firm-Level Regressions

As noted above, the sector-level patterns considered in the last Section imply a number of behaviors for individual firms as a function of their size and position in the industry.[207] Moreover, in light of difficulties with defining industries, 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.[208] To deal with these issues, we now disaggregate to the firm level, which enables us to more directly assess the relationship between firm size and lobbying. We also ask whether that relationship 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 is 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).[209] 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.[210]

We estimate the following linear model:

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

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.

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[207] *See supra* Section IV.A.

[208] *See infra* Appendix, Section F.

[209] *See supra* Section IV.A.

[210] We 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 nineteen 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 or other types of entities (see Section III.B), in which case dropping 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.

The results 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. In some specifications we use firm-level instead of sector-level fixed effects (so substitute π_i for α_j is the error term. For our purposes, the key estimates are $\widehat{\beta_1}$, the elasticity of lobbying to firm size, and $\widehat{\beta_2}$, the difference between top firms' elasticity and the average elasticity. As modeled, the growth rate of lobbying expenditures is a function of the growth rate of revenues times the elasticity of lobby expenditure to revenue. So, if the industry is concentrating and political concentration is responsive to economic concentration, lobbying expenditures concentrate so long as the elasticity for the top firms is not substantially below that of small firms. Also, when revenues are concentrating, the extent of lobby concentration will be higher when the elasticities are larger.

The main results are presented in Table 13. 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 for every 1% increase in firm revenue, lobbying expenditures increase about 0.5%. 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.

TABLE 13. REGRESSIONS OF LOBBYING ON REVENUE AND FIRM SIZE

	Dependent variable: log(lobbying)			
	(1)	(2)	(3)	(4)
log(revenue)	0.49***	0.49***	0.70***	0.71***
	(0.01)	(0.01)	(0.02)	(0.02)
log(revenue) × topfour		0.004		–0.01*
		(0.01)		(0.01)
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
Note:				*p<0.1; **p<0.05; ***p<0.01

It might be useful to compare these results to those of Adam Bonica and Howard Rosenthal, who estimate the wealth elasticity of campaign contributions for members of the Forbes 400, a list of the wealthiest Americans.[211] They estimate elasticities of approximately 1.0, suggesting that the wealthy donate a roughly proportionate share of their wealth to political candidates and parties.[212]

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, which uses firm-level instead of industry-level fixed effects, 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% 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.

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.

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, lobbying concentration will increase at a lower rate than corresponding economic concentration. They also question Teachout and Khan's claim about large corporations "disproportionately influencing governmental actors."[213] Given the declining share of revenue allocated to lobbying and the lack of difference in the revenue elasticity of lobbying between top firms and other firms, large corporations' politicking is, if anything, lower than their wealth would suggest.

Though exploring the causes of this fact is beyond the scope of this Article, it might be useful to offer some informed guesses. One straightforward and plausible explanation is that lobbying might have

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[211] *See* Adam Bonica & Howard Rosenthal, *The Wealth Elasticity of Political Contributions by the Forbes 400* (Working Paper, 2015), https://ssrn.com/abstract=2668780 [https://perma.cc/LXQ8-525L].

[212] *See id.* at 26. The elasticity falls to about 0.6 with the inclusion of fixed effects for individuals and election cycles.

[213] Teachout & Khan, *supra* note 36, at 37.

diminishing marginal returns: The early dollars spent on lobbying go toward gaining access or producing the first study on a subject, which make a large difference relative to having no access or having no studies on the subject, but subsequent expenditures do not buy as much (the value of producing the twenty-first study of the subject is not much greater than leaving it at twenty studies). A similar, though perhaps more contestable, explanation is that lobbying might have increasing marginal costs. For example, low levels of lobbying might involve hiring an outside representative whereas moderate levels would require an in-house department and high levels would require a permanent Washington presence and Washington real estate. Or it could be that—holding revenue constant—the opportunity cost of lobbying is higher at higher levels of lobbying. One explanation that does *not* seem plausible is that richer firms shift from lobbying to other means of seeking political influence; to the contrary, the latest research suggests that these different means are often complements, not substitutes.[214]

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 between large and small firms within a sector. They would seem to rule out patterns where smaller firms employ a larger share of their extra revenues for political influence. In particular, one way to reconcile our finding of no sector-level positive correlation between economic and political concentration with neo-Brandeisian claims would be to conjecture that larger firms have a higher return to lobbying (more "bang for the buck") and therefore do not need to spend as much; but our finding in this Section that there is no difference between top firms and other firms in the elasticity of lobbying to revenue seems to rule out this explanation. In Section H of the Appendix we present a simple mathematical model that makes this point precise. The model shows why the elasticity of lobbying expenditure to revenue would not be the same between large firms and other firms if large firms actually had a greater return to lobbying. Second, if lobbying concentration is higher in industries where revenues are lower, as we found in the preceding Section, then the positive correlation between firm revenues and lobbying expenditure 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).

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214 *See* Kim et al., *supra* note 37, at 23.

Conclusion

This Article has investigated the patterns of concentration in the political lobbying marketplace and their relationship to economic concentration over the past two decades. Several findings stand out:

- The set of top lobbies is quite stable. It has varied very little over time or in response to the emergence of new issues.
- 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 firm lobbies, there are about three times as many firms that belong to one set but not the other.
- Important events (policy shocks) correlate with lobbying in that relevant *issues* make up a larger portion and amount of lobbying in the times surrounding the events than in other times. However, the level and portion 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 spending 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.
- There is no significant relationship between the share of industry revenue spent on lobbying and the industry's economic concentration, casting doubt on the claim that political coordination is easier in more concentrated industries.
- We do not find a substantial difference between top firms and other firms in the elasticity of lobbying expenditure to revenue. That fact combined with relatively low elasticities 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—more so than economic competition within industries. Increasing economic concentration does not appear

to have appreciably tightened the sphere of political advocacy through lobbying.

Our findings question the empirical foundations for the neo-Brandeisian program to incorporate political concerns into antitrust policy. The neo-Brandeisians' arguments are based on a hypothesized relationship between economic and political concentration that is intuitively plausible but, as we find, empirically unsupported—at least in the important area of lobbying. While there may be other channels through which economic concentration translates into political concentration, our unexpected results in the important lobbying context suggest that intuition may not be a good guide for predicting the effects of economic concentration in other contexts either. The fact is that claims about the democratic harms of economic concentration do not currently rest on systematic empirical evidence, and our effort to bring systematic data to bear on the question did not support the claims. Therefore, at the present state of knowledge, it would seem ill-advised to fundamentally reshape antitrust to address questions of political equality.

We stress that these conclusions are subject to refinement by future research. The endeavor at systematic empirical evaluation of political antitrust puts us in a difficult position inasmuch as the political antitrust movement has not been precise about theoretical mechanisms or falsifiable empirical predictions. All the same, we made a good faith first effort at teasing out the claims and systematically evaluating them. But our findings do not say the last word on the subject. One way of interpreting our conclusions is that they fail to support one version of what political antitrust may mean, but perhaps other interpretations of the movement's claims, with different falsifiable empirical implications, are possible. Fleshing out such interpretations would require a greater effort at theoretical precision. We hope that our findings will spur advocates to sharpen and refine their claims.

We also hope that our analysis will pave the road for research on important remaining questions. One important limitation of our findings is that they have 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, some scholars have 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.[215] Similarly, political competition among tech giants may be less important than the competition between Amazon and traditional retailers or that between Google and old media advertisers. We hope to probe these questions more deeply in future work.

[215] *See* LUIGI ZINGALES, A CAPITALISM FOR THE PEOPLE: RECAPTURING THE LOST GENIUS OF AMERICAN PROSPERITY 48–69 (2012) (arguing for government intervention that may be economically inefficient but might limit the political power of monopoly firms); NOLAN MCCARTY, KEITH T. POOLE & HOWARD ROSENTHAL, POLITICAL BUBBLES: FINANCIAL CRISES AND THE FAILURE OF AMERICAN DEMOCRACY 81 (2013) (arguing that the concentration of financial sector employment incentivizes certain legislators to intervene in the regulatory process).

APPENDIX

A. Cleaning and Recoding of LobbyView Data

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 dataset, the same entity is often called by various names; for example, the R.J. Reynolds Tobacco Company goes by twenty-three different names and the Biotechnology Innovation Organization by fourteen 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).[216] 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:[217]

- The number of unique entity names in LobbyView is 67,842 whereas the number of unique entity names we have recorded is 42,584. This means that 37% 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.

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[216] Simply stated, the Levenshtein distance between two strings of characters refers to the minimum number of single-character edits (insertions, deletions, or substitutions) required to transform one string into the other. It is a commonly used metric to measure the similarity of words or phrases. In our case, computerized matching based on Levenshtein distance provided a good starting point for more thorough manual coding.

[217] 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.

• 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%.

• 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% of all observations).

B. Issues with Spending Data

There are two important issues with lobby spending data: double counting and missingness. The first issue arises because filers may amend their reports (e.g., to add or delete names of lobbyists or to change the 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. 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% 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% 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.[218]

[218] 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. *Compare* Lobbying Disclosure Act of 1995, Pub. L. No. 104-65, 109 Stat. 691 *with* Honest Leadership and Open Government Act of 2007, Pub. L. No. 110-81, 121 Stat. 735 (amending the estimate requirement from the nearest $20,000 to the nearest $10,000).

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. 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. The spending trends are substantially similar regardless of approach to missingness.

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.

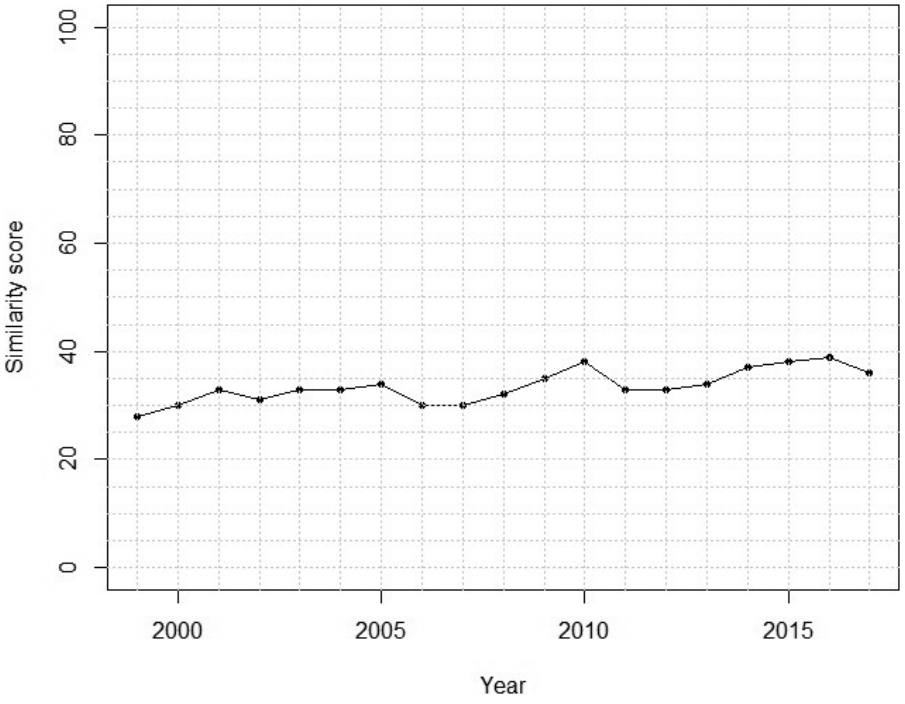
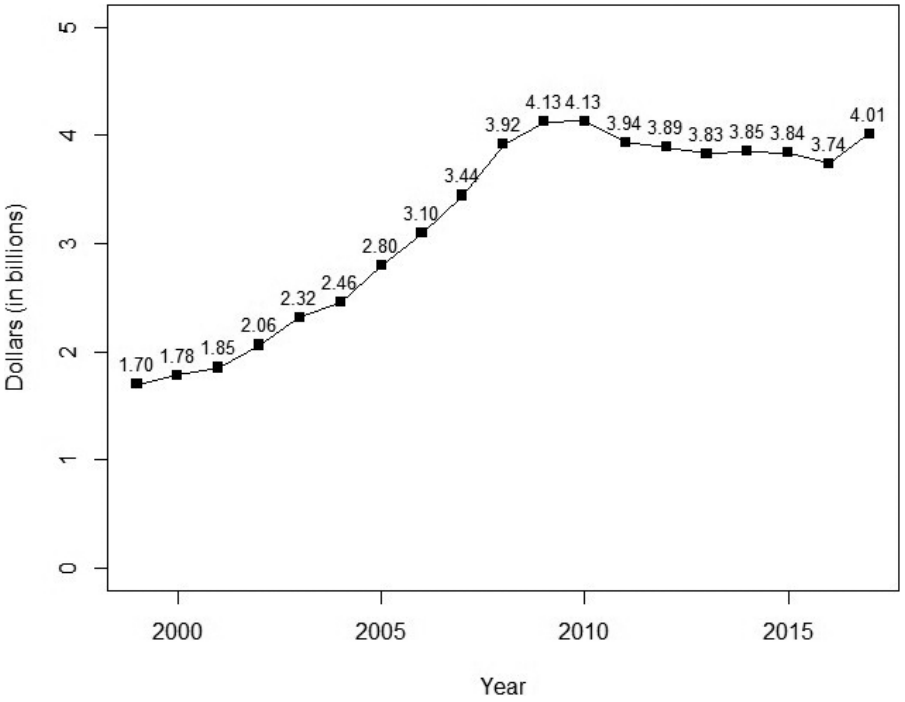


Figure 16. Upper-Bound Estimate for Lobbying Expenditures

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.



C. *Alternate 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 28 to a high of 39 with an annual mean of 33.5, median of 33, and mode of 33.

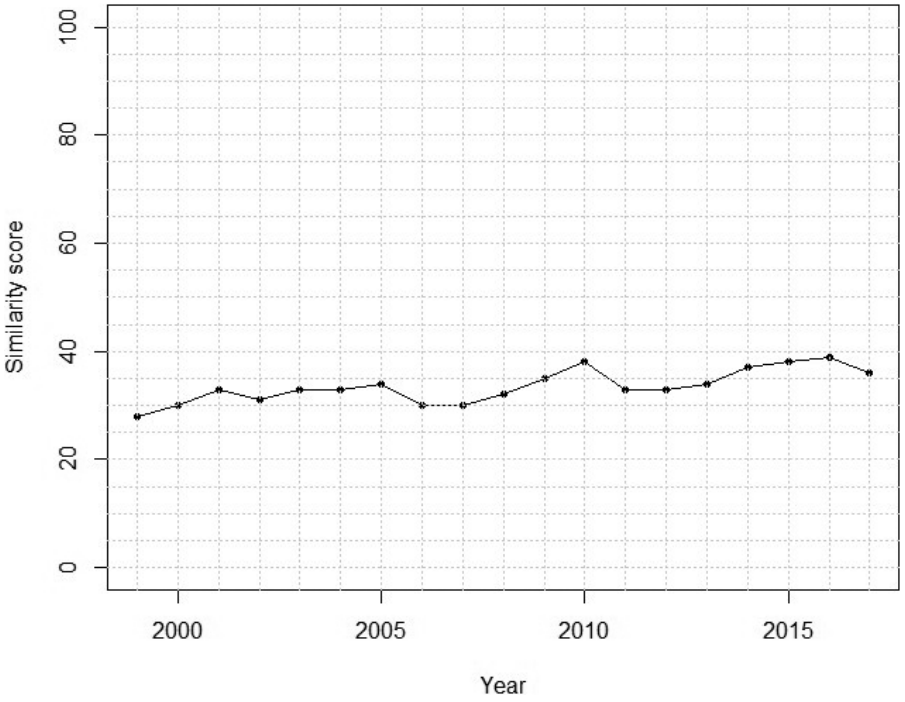
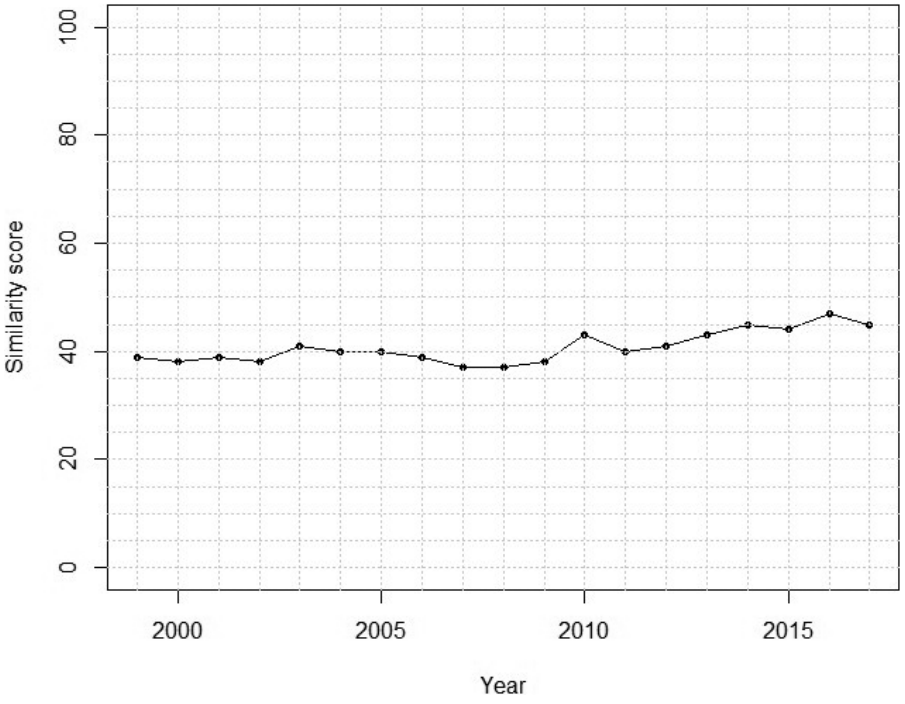


FIGURE 18. SIMILARITY SCORES, DEFINED AS THE NUMBER OF FIRMS IN THE TOP 100 LOBBYING SPENDERS THAT ARE LISTED IN THE TOP 100 FIRMS IN THE FORTUNE 500

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 37 to a high of 47 with an annual mean of 40.7, median of 40, and mode of 38, 39, and 40.



D. Alternative Figures for Lobbying and Policy Shocks

FIGURE 19. LOG OF LOBBYING EXPENDITURES IN THE FINANCE AND HOUSING SECTORS, 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.

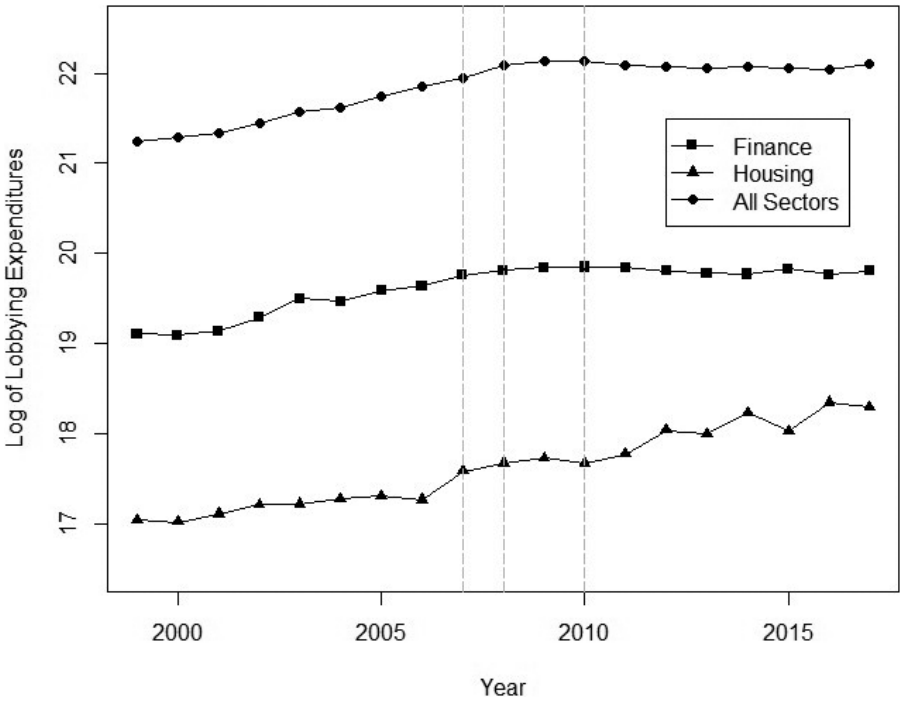


FIGURE 20. LOG OF LOBBYING EXPENDITURES ON ISSUES RELATED TO FINANCE AND HOUSING, 1999–2017

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.

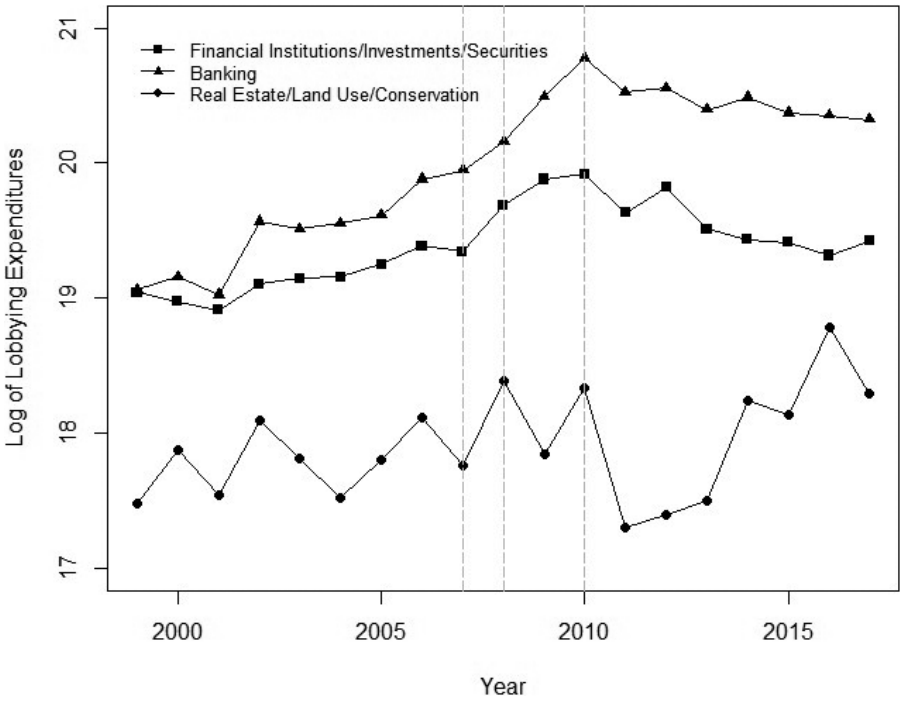


FIGURE 21. LOG OF LOBBYING EXPENDITURES BY ENTITIES MOST AFFECTED BY THE AFFORDABLE CARE ACT, 1999–2017

See footnotes 172–74 and accompanying text for related definitions. The vertical lines mark the years 2009 and 2010, when the ACA was introduced and signed into law.

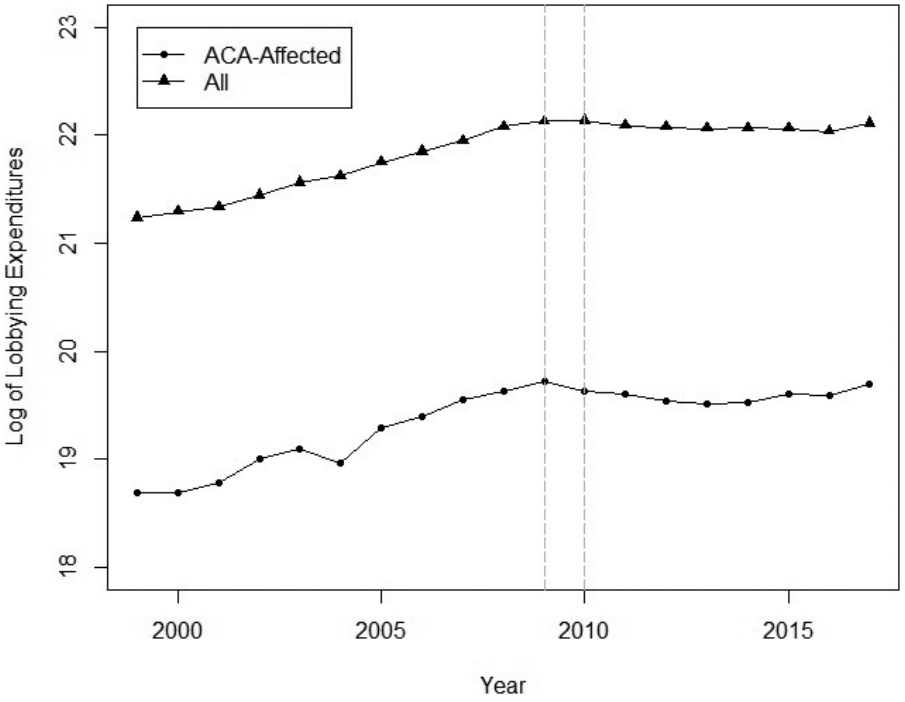
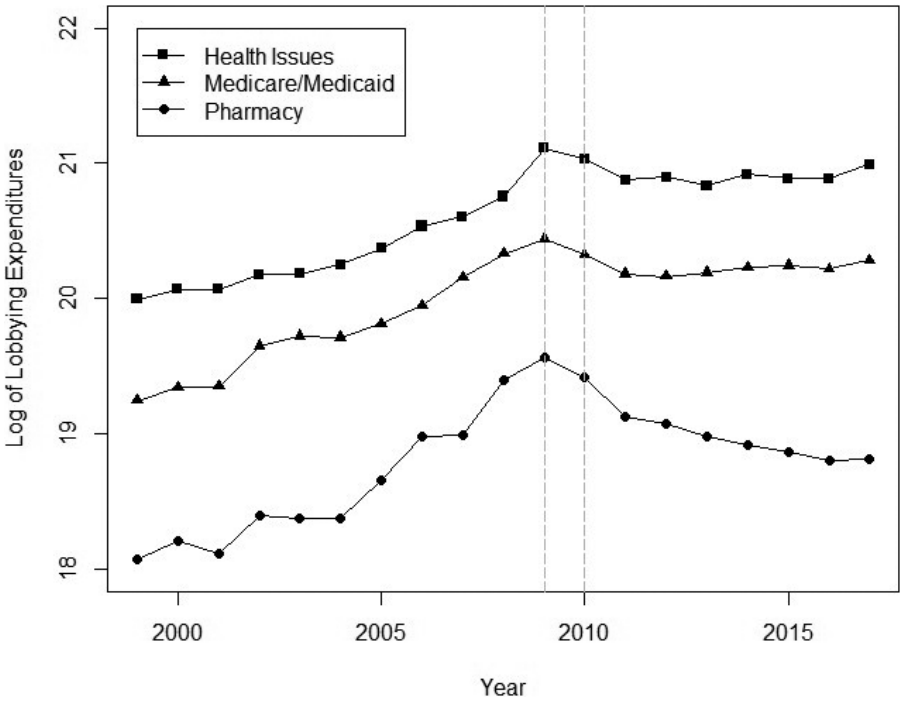


FIGURE 22. LOG OF LOBBYING EXPENDITURES ON ISSUES MOST RELEVANT TO THE AFFORDABLE CARE ACT, 1999–2017

The vertical lines mark the years 2009 and 2010, when the ACA was introduced and signed into law.



E. Subsidiaries

Should a subsidiary be coded under its parent's name? The question presents a tradeoff. On the one hand, we are inclined to code subsidiaries under the parent company's name in order to track the real source of money; on the other hand, we are inclined to code subsidiaries separately, especially for firms spanning multiple industries, to keep separate track of money 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 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.

F. 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, it is difficult to know whether a 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 one of the reasons that 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.[219] ("Small but significant" is typically defined as a 5% increase, and "nontransitory" typically means a price increase lasting for more than a year.)[220] 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.[221] It would be nice if scholars of political economy had recourse to a similar classification system 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. All the important recent studies of industrial concentration, as well as all the data we could find, are

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[219] *See* HORIZONTAL MERGER GUIDELINES, *supra* note 147, at 8–13.
[220] *Id.* at 10.
[221] *Id.* at 8–13.

linked to NAICS codes (or their predecessors, Standard Industrial Classification (SIC) codes). There is no obvious or widely accepted alternative to NAICS that we could use to link economic and lobbying data.[222] 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—i.e., two-digit rather than longer NAICS codes—a point that we will return to.

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."[223] The Census Bureau itself assigns NAICS codes, but these codes are unfortunately inaccessible to researchers because the law, as the Bureau interprets it, "prohibits the U.S. Census Bureau from releasing information on a specific business including NAICS codes."[224] 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 associations, nonprofit organizations, private companies, and government entities. Although BvD is 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 classifications and have found several indefensible classifications.[225]

The third difficulty is the presence of trans-industry entities. As discussed in Sections III.B and III.C, many lobbies, including some of the top spenders, are associations whose work is not directed at a

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[222] The Hoberg-Phillips classification system is more systematic, but it is not sufficiently widely accepted or linked to a wide enough range of entities to be of much use to us. *See* HOBERG-PHILLIPS DATA LIBR., https://hobergphillips.tuck.dartmouth.edu [https://perma.cc/3TXM-AN4N] (last visited Jan. 26, 2023). The classification developed by Lanier Benkard and coauthors is also not useful for our purposes because it is linked only to product markets, not firms. *See* C. Lanier Benkard, Ali Yurukoglu & Anthony Lee Zhang, *Concentration in Product Markets* (Nat'l. Bureau of Econ. Rsch., Working Paper No. 28745, 2021) https://www.nber.org/papers/w28745 [https://perma.cc/7LMD-Y45G].

[223] *North American Industry Classification System: Frequently Asked Questions*, U.S. CENSUS BUREAU, https://www.census.gov/naics [https://perma.cc/AC89-4RK2] (last visited Jan. 26, 2023).

[224] *Id.* (citing 13 U.S.C. § 9(a)).

[225] Although 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.

single industry (e.g., the U.S. Chamber of Commerce, the Business Roundtable, 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,[226] is classified under Vocational Rehabilitation Services (624310). Even when BvD chooses a defensible code (e.g., Business Associations (813910) for the U.S. Chamber of Commerce), 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 lobbying. The latter three difficulties are serious and, unfortunately, will distort our industry-specific estimates of spending and concentration. But we have sought to minimize their distortions:

(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 with 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 fewer changes in the four- and three-digit codes and none 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% of all lobbying expenditures. This took care of the Business Roundtable misclassification mentioned above, as well as many others. We hope that future researchers will also benefit from our improved NAICS classifications of top lobbying entities.

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[226] *See supra* Table 3.

(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 tech firms.

(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 use them in future work.

G. Alternative Specifications for Sector-Level Regressions

TABLE 14. REGRESSIONS OF SECTOR-YEAR POLITICAL CONCENTRATION ON SECTOR-YEAR ECONOMIC VARIABLES

	Dependent variable: Political (lobbying) four-firm concentration ratio			
	(1)	(2)	(3)	(4)
revenue (billions)	–0.00002***		–0.0001***	
	(0.00001)		(0.00001)	
economic four-firm concentration ratio	–0.059	–0.030	–0.372	–0.231
	(0.165)	(0.169)	(0.423)	(0.490)
log(revenue)		–0.007		–0.022
		(0.008)		(0.046)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	Yes	Yes
Observations	211	211	211	211
R^2	0.059	0.027	0.909	0.900
Note:				*p<0.1; **p<0.05; ***p<0.01

TABLE 15. REGRESSIONS OF SECTOR-YEAR POLITICAL CONCENTRATION ON SECTOR-YEAR ECONOMIC AND LOBBYING VARIABLES

	Dependent variable: Political (lobbying) four-firm concentration ratio			
	(1)	(2)	(3)	(4)
revenue (billions)	–0.00002***		–0.0001***	
	(0.00000)		(0.00001)	
lobbying (millions)	0.0004***		0.0002	
	(0.0001)		(0.0001)	
economic four-firm concentration ratio	–0.819***	–0.350	–0.597	–0.102
	(0.174)	(0.239)	(0.451)	(0.445)
lobbying entities	–0.0004***	–0.0002***	–0.00003	–0.0001**
	(0.00004)	(0.0001)	(0.0001)	(0.00005)
log(revenue)		–0.002		–0.035
		(0.008)		(0.042)
log(lobbying)		–0.0001		0.166***
		(0.021)		(0.026)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	Yes	Yes
Observations	211	211	211	211
R^2	0.409	0.309	0.910	0.919
Note:				*p<0.1; **p<0.05; ***p<0.01

TABLE 16. REGRESSIONS OF SECTOR-YEAR POLITICAL HHI ON LAGGED SECTOR-YEAR ECONOMIC VARIABLES

	Dependent variable: Political (lobbying) HHI			
	(1)	(2)	(3)	(4)
revenue (billions), lagged a year	–0.069**		–0.129	
	(0.030)		(0.095)	
economic HHI, lagged a year	–1.007	–0.826	–6.339	–12.489**
	(0.854)	(0.874)	(4.285)	(4.913)
log(revenue), lagged a year		–44.105		–1,037.957**
		(42.565)		(415.408)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	Yes	Yes
Observations	199	199	199	199
R^2	0.061	0.039	0.763	0.769
Note:				*p<0.1; **p<0.05; ***p<0.01

TABLE 17. REGRESSIONS OF SECTOR-YEAR POLITICAL HHI ON SECTOR-YEAR LOBBYING EXPENDITURES AND LAGGED SECTOR-YEAR ECONOMIC VARIABLES

	Dependent variable: Political (lobbying) HHI			
	(1)	(2)	(3)	(4)
revenue (billions), lagged a year	–0.094***		–0.190*	
	(0.027)		(0.098)	
lobbying (millions)	1.603***		2.221*	
	(0.587)		(1.198)	
economic HHI, lagged a year	–3.741***	–5.691***	–9.595**	–6.917*
	(1.025)	(1.301)	(4.595)	(4.099)
lobbying entities	–1.409***	–1.916***	–0.284	–0.643*
	(0.245)	(0.318)	(0.456)	(0.373)
log(revenue), lagged a year		–104.023**		–1,007.413***
		(43.338)		(342.519)
log(lobbying)		428.746***		1,650.815***
		(112.510)		(185.528)
Year fixed effects?	Yes	Yes	Yes	Yes
Sector fixed effects?	No	No	Yes	Yes
Observations	199	199	199	199
R^2	0.247	0.243	0.770	0.845
Note:				*p<0.1; **p<0.05; ***p<0.01

H. A Simple Formal Model of Lobbying

In this Section we sketch out a simple model of lobbying to help structure and interpret our results in Section IV.B. The takeaway is that our finding that the elasticity of lobbying expenditure to revenue is the same across top firms and other firms in an industry rules out the idea that large firms have greater returns to lobbying than other firms. We will present the theory first in words and then in math.

Consider a simple model of a firm's choice of how much to spend on lobbying. Assume that a firm's policy impact is an increasing concave function of its lobbying expenditures (that is, the policy benefits increase, but at a decreasing rate, as a firm spends more on lobbying). Thus, an optimizing firm will allocate money to lobbying up to the point at which the marginal policy benefits equal the marginal cost. The amount spent will depend, therefore, both on the productivity of lobbying expenditures and on the opportunity cost of the money spent.

To derive some predictions, consider first a case where the lobbying productivity of all firms is the same (that is, all firms get the same "bang for the buck," the same policy benefits for a given amount of spending), but the opportunity cost of lobbying expenditure declines in firm size or sales. In such a case, we would expect the elasticity of lobbying expenditure to revenue to be roughly constant across all firms that lobby. Larger firms would lobby more because their opportunity costs are lower, but the impact of lobbying at a given dollar amount would be the same as that of smaller firms.

Next, consider the case where larger firms can spend more productively on lobbying (more "bang for the buck" in terms of policy benefits). Under this scenario, the marginal benefits of lobbying would be higher for large firms with the gap increasing in firm size. Thus, larger or more concentrated firms would have substantially higher elasticities of lobbying expenditure to revenue.

Thus, this framework suggests an empirical test for whether larger firms are disproportionately influential—do such firms have higher elasticities than smaller firms? We found in Section IV.B that they do not, which shows that larger firms' policy influence via lobbying is not disproportionate to their revenue.

Now we make these ideas more concrete with the aid of some simple mathematics. Firms' lobby influence function is given by $\theta(r)l^a$ where r is revenue, l is the amount spent on lobbying, and $a < 1$. Note that because θ is a function of r, we allow influence to grow with revenue even if lobbying is constant. A special case is $\theta(r) = 1$, in which case larger firms have no natural political advantage. The cost of lob-

bying is $c(l)/r$, which captures the fact that the opportunity cost of lobbying is lower for larger firms. We assume $c'(l) > 0$ and $c''(l) > 0$.[227]

Thus, a firm's objective is to choose l to maximize

$$\theta(r)l^a - \frac{c(l)}{r}$$

The implicit solution is given by

$$l^{1-a}c'(l) = ar\theta(r)$$

Since $a < 1$, the lefthand side is an increasing function of l and the righthand side is an increasing function of r. This implies that $dl^*/dr > 0$, meaning that the optimal amount to be spent on lobbying increases in a firm's revenue. Note that this may hold for two reasons: r increases the productivity of lobbying through θ (an "influence-productivity effect") and large firms have lower opportunity cost (a "revenue effect").

Now note that the elasticity of lobbying to revenue is given by $\frac{dl^*r}{drl}$. To compute the elasticity, assume costs are quadratic so $c(l) = l^2$. Then

$$l^* = \left(0.5ar\theta(r)\right)^{\frac{1}{2-a}}$$

and

$$\frac{dl^*}{dr} = \frac{1}{2-a}\left(0.5a\theta(r) + 0.5ar\theta'(r)\right)\left(0.5ar\theta(r)\right)^{\frac{a-1}{2-a}}$$

so

$$\frac{dl^*r}{drl} = \frac{r}{2-a}\left(0.5a\theta(r) + 0.5ar\theta'(r)\right)\left(0.5ar\theta(r)\right)^{-1}$$

Rewriting,

$$\frac{dl^*r}{drl} = \frac{1}{2-a} + \frac{r}{2-a}\theta'(r)\theta(r)^{-1}$$

The main result is immediate: if $\theta'(r) = 0$ then elasticity is not a function of revenue. Otherwise, the elasticity is larger for larger firms because $r\theta'(r)\theta(r)^{-1} > 0$. Now, returning to our results from Section IV.B, recall that we found no difference in elasticities between larger firms and other firms. This corresponds to the $\theta'(r) = 0$ case, meaning

[227] To motivate the last inequality, consider that low levels of lobbying might involve hiring an outside representative whereas moderate levels would require an in-house department and high levels would require a permanent Washington presence and Washington real estate.

that larger firms do not have higher returns to lobbying than smaller firms. So, of the two possible channels through which increased revenue may increase a firm's policy influence—the revenue effect and the influence-productivity effect—only the former is in fact operative. To sum up, our empirical findings, interpreted through a theoretical lens, tend to rule out the idea that larger firms have a disproportionate policy influence by obtaining higher returns from lobbying.