Political Power and Market Power*

Bo Cowgill
Columbia University

Andrea Prat
Columbia University

Tommaso Valletti
Imperial College London

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Abstract

We study the link between political influence and industrial concentration. A model of firm lobbying shows that concentration and regulation may be either complements or substitutes. Using data for the past 20 years in the US, we show how lobbying increases when an industry becomes more concentrated, using mergers as shocks to concentration. This holds true both for expenditures on federal lobbying as well as expenditures on campaign contributions.

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1 Introduction

Lobbying and campaign finance are an essential element of modern representative democracy (Grossman and Helpman, 2002; Ansolabehere et al., 2003; Cage, 2020). On the positive side, they can help elected officials to gather information needed to make legislative and regulatory choices, and can help voters become informed about the views of candidates on the ballot. They also both raise legitimacy and fairness concerns, as individuals and organizations with greater wealth can spend more and result in improper influence over the political process.

In this paper, we study the link between lobbying and concentration in industries. This link is important for two reasons. First, business represents the largest source of lobbying spend. According to data from Opensecrets, business accounted for 87 percent of total lobbying spending in the US in 2019 and 36 percent of contributions from Political Action Committees (PACs) in the 2017/18 political cycle (where labor and ideological contributions also play a big share).

Second, in recent years there has been rising concern that industrial concentration not only directly affects consumers through market power (potentially raising higher prices and reducing quantities), but indirectly affects consumers through politics (Zingales, 2017; Wu, 2018). Incumbent firms lobby politicians perhaps to erect barriers to entry to protect their market power. This is another form of consumer harm, but the channel through which it flows is regulation. If lobbying exhibits economies of scale, an increase in market concentration should lead to an increase in lobbying activity. If this hypothesis is correct, market power begets political power.

We first propose a theoretical setting, based on Grossman and Helpman (1994) where firms, in a given industry, compete against each other and also make political contribu-

tions in order to influence a government's choice of regulations. We draw a distinction between policy that can benefit all the incumbents in an industry, as opposed to policy that benefits a specific firm directly and may actually damage other existing competitors. An example of the former could be tariffs that keep out foreign firms. An example of the latter could be preferential treatment in public procurement or subsidy provision.

We show that when lobbying is on a private component it produces a negative externality because more spending from a firm hurts the other firms. As such, lobbying in this contexts tends to be overprovided. By merging, the firms ameliorate the coordination problem thus reducing lobbying expenditure in equilibrium. By contrast, when regulation has a public good quality for incumbents, lobbying and concentration are strategic complements. An unconcentrated industry tends to dissipate favorable policy through competition and therefore has limited incentive to lobby for more regulation. On the contrary, a concentrated industry is more motivated to lobby for favorable policy as it retains more of the surplus generated by it. Therefore, a merger in this context tends to increase lobbying expenditure.

To determine whether mergers tend to increase or decrease lobbying efforts, we use data from SEC-registered companies over the past 20 years (using Compustat). We match these companies with information on federal lobbying data and on campaign contributions in the US. Finally, we have detailed information about M&A transactions over the same period. We first document how political influence spending occurs within and across industries, showing a positive relationship between relative size of a firm and its spending on lobbying and campaign contributions.

Then, we focus on consummated mergers and study how the spending varies before and after the merger. We pursue two identification strategies, both based on the timing of mergers. In the first, we use a panel event study design (Gentzkow et al., 2011;

De Chaisemartin and D'Haultfœuille, 2020a; De Chaisemartin and d'Haultfoeuille, 2020b; Freyaldenhoven et al., 2021). Qualitatively, identification in this approach relies on the idea that mergers are endogenous, but depend on fixed (or slow-moving) variables whose trends we control for. The identification assumption is that the timing of the mergers, after conditioning on other factors, comes from idiosyncratic shocks that are unrelated to the returns of political spending.

Our second identification strategy is a differential exposure design (Borusyak et al., 2018; Goldsmith-Pinkham et al., 2020; Breuer, 2021) that uses logic similar to the Bartik (1991) instrumental variable design. Like other Bartik-like designs, our uses a combination of time-varying shocks and initial characteristics of companies. For shocks, we use the well-documented pattern of mergers arriving in waves (Nelson, 1959; Gort, 1969; Weston and Chung, 1990). These waves span multiple sectors and have several proposed causes ranging from macroeconomic shocks to technology shocks. We utilize economy wide pro-merger shocks at different times to construct a time-varying instrument similar to the Bartik (1991) instrument.

In both designs, our empirics suggest that greater concentration through mergers *increases* firms' spend on political influence activities. The average set of merging firms appears to share overlapping, public good-like regulatory interests. Our theory model shows why mergers in this setting would internalize positive externalities from political influence, and how these mergers lead to the increases in spend we document.

1.1 Related Research

Our paper aims to contribute to two main lines of research in political economy.

Theories of Political Influence. First, we contribute a novel political economy model of the relationship between political outcomes and marketplace dynamics. This topic has been the focus of many researchers outside of economics (e.g. Brandeis, 1914; Pitofsky, 1978; Khan, 2017; Wu, 2018, and others). Within economics, models by Tullock (1967); Stigler (1971); Hillman (1982) and McChesney (1987) formalize early ideas of regulation as a function of industry influence. We follow that literature in using Grossman and Helpman's 1994's model as a theoretical approach. A recent model by Bombardini and Trebbi (2012) studies why highly competitive industries could nonetheless cooperate on lobbying. Huneeus and Kim (2018) studies the relationship between firm size and lobbying, and the resulting misallocations of firm resources.

Our theoretical approach has two distinguishing features. First, we allow a firm's willingness to lobby to arise endogenously in response to the business and political environment, including in response to mergers. Second, we allow lobbying not only to affect policy, but also to influence prices and quantities through regulation. These are often modeled separately while we employ two blocks, an industrial organization model of competition under regulation, and a political economy model of lobbying for regulation.[1] Our blending of these models creates the potential for feedback loops between product markets and politics.

We allow for multiple types of industry regulation. Much of the prior literature both in theory and empirics is motivated by trade, where domestic are typically united in their preference for protection. This creates free rider problems which are present in our model in line with earlier papers (Olson, 1965; Grossman and Helpman, 1994).[2] However, we also allow regulation to divide competitors by helping some at the expense of others. This

[1] A notable exception is Bombardini and Trebbi (2012), which studies the formation of industry associations as a function of how competitive product markets are for an industry (assuming Bertrand competition of differentiated goods).

[2] Freeriding and "public good" aspects of lobbying appear outside of economics as well e.g. Baumgartner and Leech (1998); Hart (2004); Barber et al. (2014).

is a particularly important for the political economy of antitrust. This would apply, e.g., when a market leader lobbies for regulations to protect its position, while a challenger opposes the regulations (and/or prefers others). Should the incumbent merge with the challenger, this form of rivalrous lobbying would disappear.

An example of this arose when American Airlines and JetBlue proposed a codesharing partnership allowing joint price setting in July 2020. While not a merger, such an agreement could have similar anti-competitive effects. The two airlines lobbied the U.S. DOT to approve their partnership; Southwest and Spirit Airlines (in the roles of challenger) lobbied against it. The agreement was approved by the Trump administration, and the Biden administration has sought to overturn it. JetBlue was once a "challenger" itself, before becoming co-opted by a legacy airline in a merger-like partnership. JetBlue obtained a large portion of its airport slots in key locations via preferential treatment by the government of independent low-cost carriers, under the theory that Jetblue would exert competitive discipline against dominant legacy airlines such as American.

This story exhibits several themes we think make our model distinctive. In addition to studying the free-rider setting, we also study regulations that divide the industry (such as the AA/JetBlue alliance). These regulations are another potential source of consumer harm, even if they lack the free-riding aspect. Second, the story shows how merger-like arrangements can influence not only consumer prices, but also government policies.

Empirical Studies of Special Interest Politics. Our paper also aims to contribute to the empirical literature on lobbying and political influence. Our analysis is related to a small but growing literature linking industry-level variables with lobbying activities.[3]

The pioneering work in the area is Goldberg and Maggi (1999), which tests and esti-

[3]For a survey of the empirical literature on lobbying see Bombardini and Trebbi (2020).

mates Grossman and Helpman's 1994 model with industry-level US data on lobbying and tariffs. A set of recent related papers study in particular how lobbying tries to influence trade agreements (e.g., Bombardini and Trebbi, 2012; Blanga-Gubbay et al., 2021). Many of the prior studies conduct cross-sectional comparisons between firms or industries; a key feature of our empirical approach is the use of within-industry and even within-firm changes in merger status over time.

Bombardini et al. (2021) study lobbying in the US as a consequence of imports from China, showing differential responses between firms on the technological frontier and laggards. Bertrand et al. (2020) study the effect of the identity of a firm's shareholders on that firm's campaign contribution patterns. The probability that a firm's PAC donates to a politician supported by an investor's PAC doubles after the investor acquires a large stake. Like ours, this study uses changes within the same firm over time (in their case, changes to ownership).

A series of recent empirical papers documents firm mark-ups, higher aggregate industry concentration, a decline in the labour share of output, larger firm and income inequality, and a reduction in business dynamism (Philippon, 2019; De Loecker et al., 2020; Dube et al., 2020). Showalter (2021) and McCarty and Shahshahani (2021) show these trends were concurrent with increases in lobbying and industry concentration. Our paper aims to connect these trends more directly, both using a theoretical model of lobbying and concentration, as well as through causal empirical evidence about the linkage between concentration and political influence. Our empirics are particularly related to the political economy of antitrust. Mehta et al. (2020) and Fidrmuc et al. (2018) measure political interference in the antitrust review process from members of congress and corporations. Instead, we focus on the impact that merger policy can have on lobbying for regulation more generally.

Finally, we contribute some methodological innovations to studying mergers. As motivated below, our research questions require us to examine a bundle of firms as a single unit, and measure the bundle's aggregate characteristics over time (such as before/after mergers). To our knowledge this is a distinctive approach in the literature on mergers. For identification, one of our strategies uses a differential exposure design (Borusyak et al., 2018; Goldsmith-Pinkham et al., 2020; Breuer, 2021), using logic similar to the Bartik (1991). Similar Bartik-like designs have been deployed to study local labor effects of Chinese trade (David et al., 2013), native/immigrant substitution (Card, 2009) and credit shocks during the Great Recession (Greenstone et al., 2020). We propose and execute an adaptation of this strategy to examine merging firms.

While very much related in spirit to many of the the papers above, to our knowledge, ours is the first paper that attempts to link, both theoretically and empirically, the industrial concentration induced by mergers with lobbying activities and PAC spend. The next section presents our theory, and Sections 3 and 4 provide an overview of our empirical approach and data. Sections 5 and 6 present our empirical strategies and results, and Section 7 concludes.

2 Theory

In this section we present a simple model of lobbying and competition. This model is composed of two building blocks: an industrial organization model of oligopoly with regulation, and a political economy model of lobbying for regulation. Our aim is to analyze how the equilibrium in the lobbying game is affected by a merger in the industry. To show the forces at play, we discuss the simplest possible setting: an initial duopoly, to be assessed against a merger to monopoly. Proofs for propositions are in Appendix A.

2.1 Competition

We begin with the industrial organization block, which we take to be a standard quantity competition model augmented with regulatory variables.[4] Consider an industry with initially 2 firms. Each firm can set its own quantity q_i, as well as lobby for some regulations. Each firm can lobby over two dimensions: a common component that is favorable to the whole industry, that we denote as R, and a private component that is favorable only to the specific firm, and that we denote as F_i. The resulting demand for firm i is assumed to be linear and equal to

$$P_i = A + aR + bF_i - Q,$$

where $Q = q_1 + q_2$ and A is a proxy for industry size.

This is a standard Cournot model that has been augmented with regulatory variables. The term aR represents the common effect of regulation on demand. We can think of $R \in \Re$ as government policy that is favorable to the industry. An increase in R increases demand for the incumbent firms, everything else equal. In particular, R can be thought of as the result of an additional cost t imposed on a competing product that *could* be sold in the industry. This applies, e.g., to at least two well-studied form of regulations. First, the alternative product could come from the international competition and the cost t is an import tax, as studied in the tariff lobbying of Grossman and Helpman (1994). Second, the alternative product could be an alternative set of potential domestic producers and t would be an explicit or implicit barrier to entry. By lobbying over R, the incumbent duopolists can fend off entry from these alternative competitors by making t sufficiently high. The parameter a simply captures the effectiveness of lobbying.

[4] We use a Cournot setting as it is the one with the simplest analytical expressions one can obtain. A merger to monopoly is profitable and does not suffer from the merger paradox of Cournot games with more than two firms.

Similarly, the term $F_i \in \Re$ represents the effect of lobbying over a dimension that favors directly only firm i, but not its rival. In fact, the rival firm will be indirectly disadvantaged by this type of lobbying, as firm i will want to expand its output the higher F_i is, which reduces firm j's profit. The parameter b again represents the effectiveness of lobbying. A simple example of this type of regulation is a firm-targeted per-unit subsidy or tax rebate. It can also be interpreted as preferential treatment in public procurement. For instance, suppose that everything else equal, the government is willing to pay a premium for procuring Firm 1's product but not for Firm 2's product. We can represent that as $F_1 > 0$ and $F_2 = 0$.

The industrial organization part of the model is completed by a linear cost function, that we normalize to zero. Firm i maximizes with respect to own quantity its profit function

$$\pi_i = p_i q_i.$$

Each firm, in addition, makes a transfer t_i to the regulator when lobbying, to be discussed next.

2.2 Lobbying

The lobbying block follows Grossman and Helpman's 1994 canonical lobbying model, which in turn is based on the menu auctions studied by Bernheim and Whinston (1986).[5] Suppose we have $n = 2$ lobbies with profit $\pi_i(\mathbf{P})$ where $\mathbf{P}$ is a policy vector, that in our case corresponds to $\mathbf{P} = \{R, F_1, F_2\}$ and π_i is the profit described above. The policy maker maximizes

$$\sum_i t_i + w(\mathbf{P}),$$

[5]For a recent model of dynamic lobbying with market power see Foarta et al. (2021).

where t_i is the contribution the regulator receives from lobby i and w is a generic welfare function. We can borrow from Bernheim and Whinston (1986) the following useful result.

Theorem 1 (Bernheim-Whinston). *In any coalition-proof equilibrium of this lobbying game,*

(i) The policy-maker selects

$$\mathbf{P}^* \in \arg\max_{\mathbf{P}} \sum_i \pi_i(\mathbf{P}) + w(\mathbf{P})$$

(ii) To determine the equilibrium transfers $\hat{t}_i$, let

$$g_i(\mathbf{P}) = \pi_i(\mathbf{P}) - \hat{t}_i$$
$$\mathbf{P}^*_{-I} \in \arg\max_{\mathbf{P}} \sum_{j \notin I} \pi_i(\mathbf{P}) + w(\mathbf{P})$$

In equilibrium, the vector $(g_i(\mathbf{P}))_i$ lies on the upper contour of the set defined by

$$\text{for every } I \subset \mathcal{I},\ \sum_{i \in I} g_i(\mathbf{P}^*) \leq \sum_j \pi_j(\mathbf{P}^*) + w(\mathbf{P}^*) - \left(\sum_{j \notin I} \pi_j(\mathbf{P}^*_{-I}) + w(\mathbf{P}^*_{-I}) \right). \quad (1)$$

If we subtract $\sum_{i \in I} \pi_j(\mathbf{P}^*)$ from both sides of (1) and reverse the signs, we get

$$\text{for every } I \subset \mathcal{I},\ \sum_{i \in I} \hat{t}_i \geq \left(\sum_{j \notin I} \pi_j(\mathbf{P}^*_{-I}) + w(\mathbf{P}^*_{-I}) \right) - \left(\sum_{j \notin I} \pi_j(\mathbf{P}^*) + w(\mathbf{P}^*) \right),$$

which constitutes a system of inequalities that puts an upper bound on the value of the vector of transfers $\hat{t}$.

In other words, the regulator chooses the policy vector that maximizes a weighted average of welfare and profits (we have assumed equal weights). Additionally, and importantly for our application as the lobbying expenditures is what we observe in the data, the

transfers of each firm are constrained by what the regulator could do in the alternative coalitions that do not include such firms.

We can directly specialize this general result to our case.

Corollary 1. *With $n = 2$, in any coalition-proof equilibrium*

$$\mathbf{P}^* \in \arg\max_{\mathbf{P}} \sum_{i=1}^{2} \pi_i(\mathbf{P}) + w(\mathbf{P})$$

and the transfers must satisfy

$$\begin{aligned}
\hat{t}_1 &\geq \pi_2\left(\mathbf{P}^*_{\{2\}}\right) + w\left(\mathbf{P}^*_{\{2\}}\right) - \left(\pi_2(\mathbf{P}^*) + w(\mathbf{P}^*)\right) \\
\hat{t}_2 &\geq \pi_1\left(\mathbf{P}^*_{\{1\}}\right) + w\left(\mathbf{P}^*_{\{1\}}\right) - \left(\pi_1(\mathbf{P}^*) + w(\mathbf{P}^*)\right) \\
\hat{t}_1 + \hat{t}_2 &\geq \max_{\mathbf{P}} w(\mathbf{P}) - w(\mathbf{P}^*).
\end{aligned}$$

To provide a closed-form solution, we finally posit that the welfare function is given by

$$w(\mathbf{P}) = -w_1\frac{R^2}{2} - w_2\left(\frac{F_1^2}{2} + \frac{F_2^2}{2}\right)$$

so that, in the absence of lobbying, the optimal policy for each regulatory dimension would be set at zero. The coefficients w_i capture the welfare cost of deviating from the optimal policy in each dimension, and are assumed to be large enough to always ensure an interior solution.[6]

[6] As it will become apparent below, a sufficient condition is $\min[w_1/a^2, w_2/b^2] > 9/2$.

2.3 Analysis

Firms first play the lobbying game with the regulator, when the policy vector **P** and the transfers are determined, and then they play the competition game, when quantities are set. We solve the game backwards.

In the last stage, standard calculations obtain

$$\pi_i = \frac{[A + aR + b(2F_i - F_j)]^2}{9}.$$

Lobbying over the common component impacts positively both firms, while the private component has opposing effects.

We now turn to the first stage. In order to show the differences between lobbying over the common and the private component, we analyze each case separately.

2.3.1 Lobbying only over the common component R ($b = 0$)

The policy maker selects R to maximize

$$2(A + aR)^2/9 - w_1 R^2/2.$$

When firms lobby over the common component, the common agency game becomes a public good contribution game with multiple equilibria. All equilibria lead to the same level of regulation and total lobbying spending. However, they may allocate spending differently to the two firms. The set of equilibria is as follows:

Proposition 1. *When $b = 0$, in a truthful equilibrium, regulation is given by:*

$$R^* = \frac{4Ak_R/a}{9 - 4k_R} \tag{2}$$

where $k_R \equiv a^2/w_1$, and total contributions are:

$$\hat{t}_1 + \hat{t}_2 \geq w_1 R^{*2}/2 = \frac{8A^2 k_R}{(9 - 4k_R)^2}. \tag{3}$$

The transfers therefore reflect the policy given by (2). The comparative statics are sensible: policy and transfers are higher the larger the affected market (high A), and the higher k_R is, that is, the more effective the policy is (high a), and the cheaper the social cost (low w_1). Notice in particular how transfers are convex in market size A.

2.3.2 Lobbying only over the private components F_i ($a = 0$)

The policy maker now selects F_i to maximize

$$\frac{[A + b(2F_1 - F_2)]^2}{9} + \frac{[A + b(2F_2 - F_1)]^2}{9} - w_2\frac{F_1^2}{2} - w_2\frac{F_2^2}{2}.$$

This is no longer a common-interest game for the firms. Their interests go in opposite directions: a higher level of private regulation for one firm benefits that firm and hurts the other firm. In the lobbying phase, firms will jostle to carry the policy-maker favors. Applying Corollary 1, we can find a closed-form expression for policy and transfers. Unlike the common-interest game, there is a unique truthful equilibrium game:

Proposition 2. *When $a = 0$, in a truthful equilibrium, regulation is given by:*

$$F_1^* = F_2^* = \frac{2Ak_F/b}{9 - 2k_F} \tag{4}$$

where $k_F \equiv b^2/w_2$*, and total contributions are:*

$$\hat{t}_m = \frac{A^2(k_R + k_F)}{2(2 - k_R - k_F)^2}. \tag{5}$$

Comparative statics are similar to the previous case and omitted.

2.4 The consequences of a merger

Imagine now the two firms merge to a monopoly. The profit of the resulting merged firm, denoted as m, is

$$\pi_m = \pi_1 + \pi_2 = p_1 q_1 + p_2 q_2 = \\ (A + aR - Q)Q + b(F_1 q_1 + F_2 q_2).$$

We immediately derive a first result: The monopolist produces only the product with the highest private lobbying component.

To see this, by contradiction, imagine $F_1 > F_2$ and $q_2 > 0$. Then reduce q_2 by an amount δ and increase q_1 by the same amount so that Q does not change. Profits then increase by $b\delta(F_1 - F_2) > 0$. It follows that the monopolist will want to decrease q_2 down to zero.

From now onwards, we then take that the monopolist is interested in only one product, that we take to be 1. After setting the optimal quantity, the equilibrium profits are

$$\pi_m = \frac{(A + aR + bF_1)^2}{4}.$$

Turning now to the lobbying game, the policy maker selects the whole policy to maximize

$$\frac{(A + aR + bF_1)^2}{4} - w_1\frac{R^2}{2} - w_2\frac{F_1^2}{2}$$

resulting in

$$R^m = \frac{Ak_R/a}{2 - k_R - k_F};\ F_1^m = \frac{Ak_F/b}{2 - k_R - k_F};\ F_2^m = 0. \tag{6}$$

When it comes to the determination of the transfers, the merged firm just needs to compensate the regulator for the social loss $w_1 R^{m2}/2 - w_2 F_1^{m2}/2$, that after substitution amounts to

$$\hat{t}_m = \frac{A^2(k_R + k_F)}{2(2 - k_R - k_F)^2}. \tag{7}$$

We are now in a position to state our final and main result.

Proposition 3. *A merger between the two firms causes an increase in regulation and in the total amount of lobbying spending by the firms to the policy-maker when lobbying is over a common component. When instead lobbying is over a private component, the total amount of lobbying spending decreases with the merger.*

We have employed a special model, but the insight that a merger will have a differential impact on lobbying components carries over to more general settings. With R, lobbying produces a positive externality between firms because more spending by a firm benefits the other one. With F, it produces a negative externality because more spending from a firm hurts the other one (because it leads to higher quantity and thus lower price). From the industry perspective, in duopoly lobbying on R is underprovided while lobbying on F is overprovided. By merging, the firms solve the coordination problem and address the externality. For R, it means more lobbying. For F, it means less lobbying.[7] As for transfers,

[7]Given the way we modeled demand, with a monopoly, the remaining private component has the same

the key aspect for the reduction of lobbying transfers after the merger comes from the binding constraints in the transfer game. Before the merger, each firm has to compensate the policy maker a lot because the latter could otherwise set a "bad" individual component for that firm. After the merger, that threat is lost and total contributions do not need to be as high, but only reflect the cost to the policy maker.

From a welfare perspective, we emphasize one finding that "market power begets political power." Consumers are likely to pay the cost of a merger twice (of course, in the absence of merger efficiencies): mergers increase prices, as customary, and in addition, because of the merger, regulatory choices may be distorted further away from the social optimum. Both are forms of consumer harm, but the latter flows through the channel of public policy. This is unambiguously the case when lobbying is over a common component, instead there can be countervailing forces with a private lobbying component. The remaining part of this paper tries to determine what holds in our data.

3 Empirical Overview

We now turn to measuring these set of theoretical ideas in a real a sample. We examine publicly-listed firms from 1999-2017 and their influence activity on the U.S. federal government. Among these firms, merging is a high-stakes strategic activity. As such, measuring the causal impact of mergers requires an identification approach.

In this section we lay out our broad set of strategies and the panel data we use to execute it. A key conceptual tool is the notion of a *composite treatment*. A composite treatment is a function of multiple inputs that interact to form a treatment. Recent developments

effect as R and, in the policy game, both F and G will be provided given the benefits that can be obtained from spreading lobbying resources between those two dimensions. Clearly, this result depends on our formulation, and it would be possible even to construct cases where the private component is eliminated altogether after a merger.

in econometrics (Borusyak and Hull, 2020) propose design-based theory and methods composite treatments. These new methods specifically address empirical settings where some inputs to the composite treatment are highly endogenous, and others inputs may be influenced by quasi-random variation.

We adapt these methods to studying mergers. In our data, a merger is a composite treatment that accepts two broad inputs: i) The merging parties and terms, and ii) the completion date. In the strategies we deploy below, we explicitly focus on ii) the *timing of the merger* as the source of exogenous variation, holding the merging partners fixed. Although our data is from a non-experimental setting, the experimental equivalent is to hold fixed the merging parties, and randomly perturb the moments in time when the mergers are consummated between predetermined partners. Because of our emphasis on timing, we use several panel data methods outlined below.

By focusing on timing, we do not claim that firms' choices of merger partners contain no random elements. This is not a requirement of our identification strategy. Timing is simply one of many possible sources of variation that could be used to measure the effects of mergers. Future researchers may identify natural experiments in the choice of partners (or other aspects of merging).[8]

3.1 Data Structure: Composite Firms

Our approach to studying mergers uses a new unit of analysis called a *composite firm*. Composite firms are clusters of multiple firms that eventually merge together by the end of the sample. For each *component* firm, we can identify its composite firm at the beginning of the sample (before the merger takes place). We can link each firm to composite (and sib-

[8]Because these future designs would use different variation, they would potentially yield different local average treatment effects. Our theory section above offers some guidance for how treatments will vary.

lings) for all periods in the sample, and leverage *within-composite firm variation* over time. Composite firms do not exist in standard merger databases; we developed the concept for this analysis. To our knowledge, our paper is the first to assemble the composite firm graph, study its evolution over time or use it for identification.

Appendix B presents a visualization of a multi-merger composite firm as a graph, and shows how we represent this firm in a regression-friendly panel matrix. Using the composite firm graph, we can observe the evolution of each composite at every point in our sample – including when the underlying component firms are independent, while they merge, and after they are completely unified.

By representing merger activity through composite firms, we focus on exogenous variation in merger timing. The composite representation is particularly helpful in analyzing multi-merger firms. Mergers are relatively rare. However, among companies that *do* merge with others in our sample, 62% are involved in multiple mergers or acquisitions. Multi-merger firms are particularly common among larger companies that may be the source of important political and/or economic influence. Composite firms with more than two components comprise 41% of all lobbying spend. Such firms are often both targets and acquirers in the same sample. Appendix C describes why these present challenge both for representing the phenomena, identification and standard errors, and how our composite firm representation addresses both.

Our sample includes around 12K composites. These 12K composite firms are composed from over 15K *component* firms in our original Compustat sample. Each of the 15K component firms has exactly one composite parent into which it is eventually merged. Many component firms never merge with any others; its composite parent is (essentially) itself. Using this panel of composite firms, we execute multiple identification strategies, all focused on the timing of mergers.

3.2 Regression Equation

Our results come from estimating panel regressions of the following format:

$$\sum_{f \in \mathcal{F}_{it}} y_{f,t} = \beta_0 + \beta_1 \text{ConcentrationIndex}_{it} + \beta_2 X_{it} + \delta_i + \gamma_t + \epsilon_i. \tag{8}$$

$y_{f,t}$ represents political influence spending of firm f at time t. We examine two measures of political influence (discussed in our data section): Federal lobbying spend and donations from political action committees. $\mathcal{F}_{it}$ represents the composite firm ownership partition for a composite firm i at time t. As such, $\sum_{f \in \mathcal{F}_{it}} y_{f,t}$ represents the sum of all lobbying of all component firms in composite firm i at time t. We include fixed effects for composite firms (δ_i) and time periods (γ_t). Standard errors are clustered by composite firms.

The coefficient of interest is β_1, the coefficient on the $\text{ConcentrationIndex}_{it}$. In our main specification, we examine a simple count of the number of independent firms within each composite firm i at time t. This decreases each time a merger occurs, and allows β_1 to be interpretable as the effect of a merger.[9] Because mergers are endogenous, we examine several different approaches to identifying effect (outlined below).

We vary controls X_{it} in coordination with our identification strategies. Because of the potential importance of size, we control for total composite firm $revenue_{it}$ in all specifications. We also use controls to increase precision of our main estimates, to report descriptive patterns of interest and as checks on the robustness of our findings (Altonji et al., 2005; Oster, 2019). One control appearing in multiple specifications is the combined revenue of all members of a composite firm (in our notation, $\sum_{f \in \mathcal{F}_{it}} r_{f,t}$ where r is revenue); we use

[9] Our specification permits other measures of concentration as well, such as the Herfindahl-Hirschman Index (HHI). Appendix G implements this approach, and shows that our empirical results are qualitatively similar to using this alternative.

this as a proxy of each composite firm's overall size in each period. In some specifications, we also control for trends by industry and other firm characteristics.

For identification, we pursue two strategies. The first is a panel event study (Gentzkow et al., 2011; De Chaisemartin and D'Haultfœuille, 2020a; De Chaisemartin and d'Haultfoeuille, 2020b; Freyaldenhoven et al., 2021). Our second is an exposure design, akin to a Bartik instrument (Bartik, 1991; Borusyak et al., 2018; Goldsmith-Pinkham et al., 2020; Breuer, 2021). In this approach, we develop an instrument for $\text{ConcentrationIndex}_{it}$. Our instrument uses economy-wide shocks to the attractiveness of merging. Both designs are based on the timing of mergers. In order to explain our designs, we first describe the structure and sources of our data in the section below.

4 Data and Descriptive Statistics

Our study of public firms 1999-2017 combines data from four sources. This section describes these sources and summarizes key properties of the resulting dataset. We describe our sample and the data sources in detail below. In Appendix D, we describe how these data sources are merged together with identifiers.

4.1 Sample

Our underlying sample consists of all firms present in the Compustat database from 1999-present. This includes publicly traded companies as well as private companies that are large enough to publicly disclose financial statements. This sample is limited in part by data availability. As discussed above, our empirical strategy requires pre-merger size data for all component firms. We use Compustat to obtain a sample of firms and key firm

financial data including size (revenue) and industry (NAICS).[10] This sample is similar to those used in other studies of mergers between public firms.[11]

Our sample boundaries are also limited by the availability of political influence data. Detailed data on federal lobbying began only in 1999 following the Lobbying Disclosure Act ("LDA") of 1995. LDA reports are required only once every half-year. As a result, half-years are the temporal unit of our panel, and we summarize all variables at the half-year level.[12] We include all firms that are available in Compustat for each half-year.

4.2 Merger Data and the Composite Firm Graph

Our composite firm database uses Thomson Reuters' SDC Platinum database of acquisitions and mergers. SDC Platinum contains the universe of global M&A transactions and is used in many academic papers about M&As (Matvos and Ostrovsky, 2008; Rossi and Volpin, 2004; Blonigen and Pierce, 2016).[13] For each acquisition, SDC Platinum identifies the acquirer, target and dates associated with the merger.[14] The date variables are particularly important in our analysis as it allows us to utilize pre-/post- variation in merger status.

Using the methods in Appendix E, we produce the composite firm graph. This procedure can be run for any time during our sample period. The procedure takes the above merger dataset and a date. For each underlying component firm, we identify a set of sib-

[10] For each company, we use the first non-missing NAICS code

[11] See, for example, Gaspar et al. (2005), Harford et al. (2011), Bena and Li (2014).

[12] In 2007, a new disclosure law was adopted ("The Honest Leadership and Open Government Act") requiring that lobbying disclosures take place twice as often (quarterly). Nonetheless, we continue our analysis on a half-year basis for consistency.

[13] Barnes et al. (2014) independently evaluate the SDC Platinum database and find positive results, particularly for the variables, time horizons and types of companies (larger) we analyze in this paper. Bollaert and Delanghe (2015) evaluate other sources of merger data, including Zephyr (`https://zephyr.bvdinfo.com/`) and find positive results for SDC.

[14] The SDC dataset also includes other variables (such as the date of the merger announcement) as well as non-merger events such as rumored mergers. We do not use these in our analysis.

ling firms who are connected through a merger or acquisition happening *before the specified date*. This procedure is "transitive" in the sense that if Firm A is bought by Firm B, which is then purchased by Firm C – then A is not only siblings with B, but also with C. Together, they form a composite firm which we can call "ABC." We run the procedure using the final date of the sample. This assembles composites using all connections between firms at any point during our sample. We use this set of 16K composite firms as the i variable in our $i \times t$ panel.

The final step of this process is to measure the evolution of each composite firm over time. As discussed earlier, our identification strategy uses *within composite firm* variation in concentration. To measure this, we run the procedure in Appendix E for each half-year (the t dimension of our panel) in our sample. This produces a dataset that connects each component firm j to its eventual parent i, as well as to its intermediate parent k at time t. The intermediate parent k is a potentially smaller composite firm (i.e. collection of merged firms) that eventually merges into the main composite firm. Alternatively in cases towards the end of our sample, the intermediate parent k is the final composite firm.

Using these intermediate firms, we can calculate the change in concentration over time. Our simplest measure of concentration is a count of the number of intermediate firms that still remain un-merged with each composite i at each time t. This variable consists of integers that decrease by 1 with each successive merger.[15]

[15]On rare occasions when a firm merges with two firms within the same period, this number would decrease by two.

4.3 Political Influence Data

Our federal lobbying data comes from *LobbyView*,[16] an NSF-funded project compiling federal lobbying data (Kim, 2018). This data has been used in several other papers.[17] As discussed above, lobbying disclosures are required on a half-year basis (quarterly after 2008). The disclosures are made on forms that *LobbyView* converts into structured, machine-readable data.[18] Importantly, *LobbyView* matches companies not only on its name, but also to a structured identifier that we can merge with our other data.

For each company, *LobbyView* contains disclosures for in-house lobbyists as well that done by lobbying firms hired by the company. Lobbying firms are required to identify their clients in these disclosures, so we can sum each company's in-house and outsourced lobbying. One limitation of this data is its handling of industry associations or coalitions. If a company donates money to an intermediary who hires lobbyists (such as an industry association or nonprofit), the intermediary's lobbying would be attributed to the intermediary. It cannot be traced back to the originating company/donor. This issue affects all research that uses lobbying data from the disclosure laws.

Finally, we utilize data about campaign contributions. Our data about this outcome comes from the Center for Responsive Politics' *OpenSecrets* project.[19] Other papers have used this data (i Vidal et al., 2012; Bertrand et al., 2014). Like *LobbyView*, the *OpenSecrets* project takes government disclosures and standardizes them into machine readable format. The *OpenSecrets* process of standardization includes a greater level of manual review than *LobbyView*. Coverage spans the 1998 electoral cycle to 2018. Campaign contributions include contributions from companies' PAC, as well as contributions by employees or

[16] https://www.lobbyview.org/
[17] See Bombardini and Trebbi (2020); Huneeus and Kim (2018); Ellis and Groll (2018) for examples.
[18] An example of a lobbying disclosure report can be viewed here.
[19] https://www.opensecrets.org/bulk-data/

owners of the organizations, as well as these individuals' family members. Before the Citizens United decision in 2010, companies could not directly donate to political campaigns. Afterwards, companies can donate directly to superPACs, and these contributions are included in our dataset.

4.4 Summary Statistics

Tables 1-4 display summary statistics about our composite firms. Five broad patterns are evident. Although these patterns have been documented elsewhere in the literature, we mention these to set the context of our empirical application.

1. **Mergers among public companies are not uncommon**. 52% of composite firms have been involved in a merger, although most of these mergers are acquisitions of small, unlisted companies. 11% of our composite companies feature a merger between Compustat-listed companies.

2. **Political influence is rare (per firm) but increasing over time**. 85% of composite firms in our data have no lobbying, at any time during our sample, in any component firms. Similarly, 93% of composite firms have no corporate PAC, for any composite firm, for any time during our sample. On the individual donor side, only 28% of composites have at least one individual donor listing who listed one of the component firms as an employer. Spending on lobbying has grown over time in aggregate.

3. **Firms spend a relatively small amount of revenue on political influence**. As described above, most firms' lobbying accounts for 0% of revenue. Among those who do, the average amount is approximately one-hundredth of one percent.

4. **Firms spend more on lobbying than on campaign contributions**. This is true in aggregate, but also at the individual composite firm level. Of composite firms that spend at all on donations and lobbying, 90% spend more on lobbying.

5. **Merging, revenue and political influence activity are correlated**. Large composite firms are more likely to lobby and have PACs and individual donors. They are also more likely to merge with another Compustat-listed firm and to have a longer lifespan.

Our descriptive tables present these patterns at the composite level, but we find the same patterns in our disaggregated dataset of individual component firms as well. Most component firms, even when viewed separately from their (eventual) merger siblings (where applicable) do not merge with other publicly listed firms or engage in political influence (#1 and #2) often or ever. Most underlying firms spend a relatively small amount of revenue on political influence (#3), and spend more on lobbying than on campaign contributions (#4). Component firms that merge are more likely to have high revenue and spend on politics.

The averages in Tables 1-4 also highlight some important dimensions of heterogeneity. While most firms do not lobby, there is a sizable minority of firms who lobby a lot. Conditional on lobbying, the average composite firm spends about half of a million dollars on lobbying per year in our sample (median of \$56K/year). At the top of the distribution, there are firms that spend tens of million of dollars per year. As the raw correlations in Table 4 show, these firms tend to be the largest firms and are also more likely to engage in merger activity, which is the core question of our paper.

Other trends emerges along the time dimension. In the two decades of our sample, total lobbying spend steadily increased by \$67.2M per year on average. Among the firms that lobby in our sample, total lobbying spend increased by \$25.2M per year. This is an annual

increase of $3.6K per composite firm, or $24.4K among firms who lobby at all. Among firms lobbying at all, the median lobby spend increased by 2.5 times, from $80K in 1999 to $200K in 2017, a large increase. Also during this period, the number of firms at any cross-section of our sample decreased by less than 1% per year. The reduction in publicly traded companies has been documented in other studies (Grullon et al., 2015; Doidge et al., 2017). The proportion of these firms in our sample that were lobbying at any time increased very slightly over time (by less than 1% per year).[20]

5 Panel Event Study

Panel event studies are a type of econometric model studied by Freyaldenhoven et al. (2021). In this approach, estimation of Equation (8) in this approach is straightforward (i.e., there is no instrument or first stage). In this setup, mergers are endogenous, but we assume they depend on fixed (or slow-moving) variables whose trends we control for. The consummation of the merger creates a sharp discontinuity in the firms' ability to coordinate externalities.

The threat to identification in this strategy comes from a potential unobserved confound C_{it}. C_{it} can include potentially unobserved time-specific factors for each composite firm, as well as an idiosyncratic component i.e., $C_{it} = \lambda_i' F_t + \xi \eta_{it}$. Freyaldenhoven et al. (2021) notes that Equation (8) is identified with two-way fixed effects model, as long as C_{it} is low-dimensional and $F_t = 0$. In our setting, a confound would violate this criteria if it affects political influence activities through a non-merger mechanism, and would coincide with the merger event.

[20] One reason for this is our composite firm level of analysis. If a company does not lobby but its future merging partner does, we count both companies as part of the same composite firm and are coded as lobbying. Similarly, when two lobbying companies merge and continue lobbying, we do not treat this as a reduction in the number of firms lobbying.

To complement this approach, we also add unit-specific, time-varying controls that may capture such confounds. In particular, we include a measure of firm size (revenue) and allow for industry-specific trends at a narrow category (NAICS5). We also allow include controls for differential revenue effects depending on how many mergers were realized over the time horizon of the sample. The identification assumption is that the timing of the mergers, after conditioning on these other factors, comes from idiosyncratic shocks that are unrelated to the returns of political spending.

A key identification challenge unaddressed by this specification is possibility of pre-merger increases in lobbying activity. Such pre-merger activity would bias the "control" period upwards, resulting in a smaller difference coming from the merger. The resulting bias is likely to work against finding a positive effect by inflating the pre-merger levels. Firms could initiate this form of pre-merger lobbying to influence the merger's review by regulators. Alternatively, firms may anticipate a positive review, and begin coordinating and integrating lobbying activity before the official merger date.

Results. Table 5 shows results on lobbying and PAC donations using our main specification in Equation (8). Columns 1 and 3 exclude component firm-fixed effects. This allows us to measure the correlation between the average size of each component firm with its political influence activities (lobbying and PACs, respectively). Composite-firm fixed effects are instead included in Columns 2 and 4, which absorb variation in size.

In all of our specifications, results point in the same direction: Greater concentration increases composite firms' spend on political influence activities (both lobbying spend and PAC spend). Controlling for composite-firm fixed effects, the average merger increases lobbying spend by $145,000 per year (column 2), while the impact on PAC donations amounts to almost $9,000 per year (column 4).

Results are robust to using HHI instead of the number of component firms as an index of concentration (see Appendix G).

Our specification allows us to examine heterogeneity along firm size. Our theory intuitively should apply particularly to "large" firms, especially if there are fixed costs associated to lobbying. To measure size, we use revenue. In particular, we sum all revenue across the entire sample for each composite firm, and examine companies above and below the median on this dimension.[21]

Table 6 presents heterogeneity by size. We broadly see that, while mergers increase lobbying spend across both sets of firms, results are for noisy for small firms while it is indeed the larger firms that increase their political influence activity along with mergers.

6 Differential Exposure Design

Our second approach to identification is an exposure design (Borusyak et al., 2018; Goldsmith-Pinkham et al., 2020; Breuer, 2021). The idea in these designs is that units are affected by shocks, but they have differential exposure to these shocks. In an influential paper developing this strategy, Bartik (1991) examined how employment growth affects wage growth. Because employment growth is endogenous, the authors developed an instrument. The instrument exploited the idea that economy-wide demand shocks have idiosyncratic effects in local markets. These shocks varied systematically according to the pre-shock characteristics of the local market.

In this section we pursue a similar strategy to study mergers. A long-noticed fact about mergers is that they often come in waves (Nelson, 1959; Gort, 1969; Weston and

[21] Although this splits our composite firms in half, it does not split our entire panel in half because the large firms have more observations, possibly because of survivorship bias.

Chung, 1990). These waves span multiple sectors (Maksimovic et al., 2013), and have several underlying causes including macroeconomic shocks (Maksimovic and Phillips, 2001; Rhodes-Kropf and Viswanathan, 2004), regulatory and technology shocks (Mitchell and Mulherin, 1996; Harford, 2005), uncertainty (Toxvaerd, 2008; Bonaime et al., 2018), connections between industries (Ahern and Harford, 2014), and even envy among CEOs (Goel and Thakor, 2010) and management fads (Haleblian et al., 2012).

We utilize economy wide pro-merger shocks at different times to construct a time-varying instrument similar to the Bartik (1991) instrument. At various times during our sample, mergers have been particularly popular (or unpopular) compared to the overall trends. We measure these shocks, and interact them with measurements of a firm (or industry's) exposure to these shocks. As we show later, our has a strong first stage.

6.1 Implementation

To implement this design we again use Equation (8), but develop an instrument for the key measure of concentration. The unit of observation in this regression is {half year}$\times${composite firm}. The instrumented variable is ConcentrationIndex$_{it}$, which measures how concentrated composite firm i is at time t. As is common for exposure designs, our instrument is a product of two terms.

Merger Wave Term (Time-Varying). The first term is the average ConcentrationIndex for other firms in the same period, excluding the focal firm *and all other firms' in the focal firm's industry.* The first term can be written as:

$$W_{it} = \frac{\sum_{j:S_i \neq S_j} ConcentrationIndex_{j,t}}{N_{S_i \neq S_j}} \tag{9}$$

where S_i and S_j represent the industries of composite firms i and j. W_{it} captures the time-varying merger waves; in periods with high concentration due to economy wide shifts in concentration, W_{it} will be high.

As is typical in exposure designs, we measure these shocks using a "leave-one-out" average of changes in the same period. We go beyond this and leave out the entire industry of the each focal observation. By leaving out the entire industry, our goal is to ensure that we measure shocks arising from economy-wide trends, and are not part of the endogenous dynamics with each composite firm's industry competitors. We define the focal industry broadly by using the top level NAICS category for each composite firm in its initial period.[22] As a result, the value of W_{it} differs not only over time, but also across observations within the same time. However, its main purpose is to capture time-varying shocks to the entire sample; because merger waves are indeed economy wide (in our sample and in others), shocks between different industries during the same time period are correlated.

Exposure Term (Unit-Varying). The second term is a fixed feature of the composite firm representing the firm's exposure to the wave. We call this term K_{i0}. This term is already included in Equation (8) as part of the composite firm fixed effects; it enters our IV strategy again when we form an instrument for $\text{ConcentrationIndex}_{it}$ from the product of K_{i0} and W_{it}.

We examine several possible implementations of K_{i0} for robustness. Our main exposure term we call N_{i0}, or the total number of component (member) firms inside each composite firm in its initial period. Defined this way, "large" composite firms (high N_{i0}) are more exposed to shocks; as there are more member firms who could merge together and increase

[22] NAICS classifications for composite firms are calculated for each period by summing the revenue in each NAICS category, and selecting the NAICS code with the most revenue.

the ConcentrationIndex$_{it}$ for this composite firm. As a robustness check, we also implement K_{i0} as the *average* of N_{i0} for all firms inside the same industry. In this representation, entire industries (rather than particular firms) have a greater or lower exposure to merger waves.

We now have the main components of our instrument. Our instrument is $Z_{it} = W_{it}K_{i0}$, the product of the terms above. Because the Bartik-like instruments are products, researchers typically argue that one (or both) elements are exogenous (Goldsmith-Pinkham et al., 2020). Consistent with our discussion above, we portray the time-varying shocks as exogenous, and regard the choice of the number and identity of overall merging partners (and thus the level of exposure) as endogenous.

We use this Z_{it} to instrument the ConcentrationIndex$_{it}$ term in Equation (8) by using the following first stage regression:

$$\text{ConcentrationIndex}_{it} = \lambda_0 + \lambda_1 Z_{it} + \lambda_2 X_{it} + \zeta_i + \tau_t + \eta_i. \tag{10}$$

This is the same regression as Equation (8), but the dependent variable is now ConcentrationIndex$_{it}$, and the main independent variable is now our instrument Z_{it}. The other terms are the same but given separate names; the coefficients are now λs, the error term is η, ζ_i are composite firm fixed effects and τ_t are time period fixed effects. Diagnostics on the instruments (correlations tests, compliers and instrument strengths) are performed in Appendix F.

6.2 Results

Table 7 shows results on lobbying and PAC spend using our exposure IV specification. Panel A contains our first implementation of K_{i0}, and Panel B contains the second. As

with our earlier results, our specifications suggest that greater concentration increases composite firms' spend on political influence activities (both lobbying spend and PAC spend).

Our results in this design are in the same order of magnitude as the panel event study, although slightly larger. This is consistent with our earlier characterization of our instrument compliers as larger firms. The average merger identified by this design increases lobbying spend just over $200K per year (columns 1 & 2), while the impact on PAC donations is around $10K per year (columns 3 & 4).

In both our empirical designs, our merger coefficients aggregate over lots of heterogeneity. Presumably some of the mergers have a more rivalrous quality. The results above speak to aggregated averages (and in the exposure design, a local average treatment effect). The positive sign of these coefficients result suggests that the typical set of merging firms have overlapping, public good-like regulatory interests. Our theory model shows why this would cause firms to increase spend, as the positive externalities of lobbying become internalized.

7 Conclusion

Our paper tries to shed a light on Louis Brandeis' famous hostility to monopoly power. Braindeis coined the phrase "the curse of bigness" (Brandeis, 1914) which he applied to the bigness of the industrial trusts in railroads, oil, steel and tobacco. This debate has re-emerged in recent years, with empirical evidence suggesting that market economies are changing in fundamental ways. There is an increase in firm mark-ups, higher aggregate industry concentration, a decline in the labour share of output, larger firm and income inequality, and a reduction in business dynamism (Philippon, 2019; De Loecker et al.,

2020; Dube et al., 2020). The causes of these changes and the policy conclusions drawn from them are subject to a lively debate (Autor et al., 2020; Berry et al., 2019; Grullon et al., 2019; Azar et al., 2020; Dube et al., 2020).

We contribute to this discussion by adding an additional element (political influence) and studying how firms vie to get political power both in theory and in data. Our theoretical model takes a standard model of competition, and extends it to include regulatory variables. Our data suggests that firms increase lobbying after mergers.

Our findings do not dispute the benefits of many forms of regulation to consumers (e.g., safety or environmental reasons), or that mergers can sometime increase efficiencies. However, corporate control of regulations could be used to erect barriers to entry or otherwise protect incumbents' market power. This would constitute another form of consumer harm, but one arriving through the channel of regulation rather than price, quantity or innovation. Documenting this consumer harm is beyond the scope of this paper, but it is a natural next avenue for future research.

For readers concerned about these effects, an implication is that antitrust, lobbying regulations and campaign finance regulation are complementary benefits to consumers. If correctly designed and enforced, regulations of lobbying and campaign finance could limit influence of firms on regulators and politicians and lead to regulations favoring more competitive market structures. At the same time, strict enforcement of antitrust laws may also benefit consumers through the typical channels, by reducing rents accruing from market power.

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Tables and Figures

Table 1: **Descriptive Statistics: All Composite Firms**

	Mean	Std.Dev	Min	P25	P50	P75	Max
Years in Sample	8.78	6.44	0.50	3.00	6.50	14.50	19.00
Avg Revenue ($10M, per Half Year)	62.95	392.77	0.00	0.01	1.87	16.15	18359.17
Lobby Spend ($1K, per Half Year)	42.16	374.14	0.00	0.00	0.00	20.00	23730.28
Lobbied at all (per Half Year)	0.20	0.32	0.00	0.00	0.00	0.45	1.00
Lobbied at all (ever)	0.34	0.47	0.00	0.00	0.00	1.00	1.00
PAC Donations ($1K, per Half Year)	2.26	25.03	-0.12	0.00	0.00	0.00	1903.46
PAC Donations$>$ 0 (per half year)	0.05	0.19	0.00	0.00	0.00	0.00	1.00
PAC Donations$>$ 0 (Ever)	0.08	0.27	0.00	0.00	0.00	0.00	1.00
Individual Donations ($1K, per Half Year)	0.59	3.92	-1.75	0.00	0.00	0.01	157.41
Individual Donations$>$ 0 (per Half Year)	0.06	0.14	0.00	0.00	0.00	0.05	1.00
Individual Donations$>$ 0 (Ever)	0.29	0.45	0.00	0.00	0.00	1.00	1.00
Individual + PAC ($1K, per Half Year)	2.86	27.16	-1.75	0.00	0.00	0.02	2011.94
Individual + PAC$>$ 0 (per Half Year)	0.09	0.21	0.00	0.00	0.00	0.05	1.00
Individual + PAC$>$ 0 (Ever)	0.30	0.46	0.00	0.00	0.00	1.00	1.00
# of Component Firms (Total)	4.26	20.71	1.00	1.00	1.00	3.00	2036.00
Ever M&A (with any firm)	0.46	0.50	0.00	0.00	0.00	1.00	1.00
# of Component Firms in Compustat	1.24	1.23	1.00	1.00	1.00	1.00	39.00
Ever M&A (with Compustat firm)	0.10	0.31	0.00	0.00	0.00	0.00	1.00

Notes: This table displays simple summary statistics for all composite firms and all periods in our sample. Our panel dataset is described in Section 4, and composite firms are defined at the beginning of Section **??**.

Table 2: **Descriptive Statistics: Firms Who Lobby**

	Mean	Std.Dev	Min	P25	P50	P75	Max
Years in Sample	12.20	5.86	0.50	6.50	12.00	19.00	19.00
Avg Revenue ($10M, per Half Year)	142.48	635.73	0.00	0.77	8.96	56.23	18359.17
Lobby Spend ($1K, per Half Year)	123.29	632.03	0.16	17.50	29.41	40.00	23730.28
Lobbied at all (per Half Year)	0.60	0.27	0.03	0.42	0.61	0.77	1.00
Lobbied at all (ever)	1.00	0.00	1.00	1.00	1.00	1.00	1.00
PAC Donations ($1K, per Half Year)	6.42	42.38	0.00	0.00	0.00	0.00	1903.46
PAC Donations$>$ 0 (per half year)	0.12	0.29	0.00	0.00	0.00	0.00	1.00
PAC Donations$>$ 0 (Ever)	0.20	0.40	0.00	0.00	0.00	0.00	1.00
Individual Donations ($1K, per Half Year)	1.53	6.41	-1.75	0.00	0.01	0.46	157.41
Individual Donations$>$ 0 (per Half Year)	0.13	0.18	0.00	0.00	0.05	0.21	1.00
Individual Donations$>$ 0 (Ever)	0.56	0.50	0.00	0.00	1.00	1.00	1.00
Individual + PAC ($1K, per Half Year)	7.94	45.89	-1.75	0.00	0.02	1.20	2011.94
Individual + PAC$>$ 0 (per Half Year)	0.20	0.30	0.00	0.00	0.06	0.29	1.00
Individual + PAC$>$ 0 (Ever)	0.58	0.49	0.00	0.00	1.00	1.00	1.00
# of Component Firms (Total)	7.82	34.51	1.00	1.00	3.00	7.00	2036.00
Ever M&A (with any firm)	0.67	0.47	0.00	0.00	1.00	1.00	1.00
# of Component Firms in Compustat	1.61	2.00	1.00	1.00	1.00	1.00	39.00
Ever M&A (with Compustat firm)	0.23	0.42	0.00	0.00	0.00	0.00	1.00

Notes: This table displays simple summary statistics for all composite firms in our sample that lobby in at least one period. Our panel dataset is described in Section 4, and composite firms are defined at the beginning of Section **??**.

Table 3: **Merged vs Non-Merging Composite Firms: Differences in Means**

	Never Merged	Merged	Difference
Years in Sample	7.98	15.67	-7.69***
Avg Revenue ($10M, per Half Year)	35.18	300.14	-264.97***
Lobby Spend ($1K, per Half Year)	22.86	206.94	-184.07***
Lobbied at all (per Half Year)	0.17	0.50	-0.33***
Lobbied at all (ever)	0.29	0.76	-0.46***
PAC Donations ($1K, per Half Year)	0.82	14.58	-13.76***
PAC Donations$>$ 0 (per half year)	0.03	0.22	-0.19***
PAC Donations$>$ 0 (Ever)	0.05	0.34	-0.30***
Individual Donations ($1K, per Half Year)	0.30	3.08	-2.77***
Individual Donations$>$ 0 (per Half Year)	0.04	0.20	-0.16***
Individual Donations$>$ 0 (Ever)	0.24	0.78	-0.54***
Individual + PAC ($1K, per Half Year)	1.12	17.66	-16.53***
Individual + PAC$>$ 0 (per Half Year)	0.06	0.32	-0.26***
Individual + PAC$>$ 0 (Ever)	0.24	0.79	-0.55***
# of Component Firms (Total)	2.60	18.48	-15.88***
# of Component Firms in Compustat	1.00	3.33	-2.33***

Notes: This table displays average differences between composite firms that merge and composite firms that do not. Our dataset is described in Section 4, and composite firms are defined at the beginning of Section **??**.

Table 4: **Descriptive Statistics: Correlations**

	Years	Revenue	Lobby	PAC	Individual	Ever Merged (Compustat)	Ever Merged (Any)
Years	1						
Revenue	0.16***	1					
Lobby	0.13***	0.46***	1				
PAC	0.12***	0.49***	0.74***	1			
Individual	0.18***	0.42***	0.43***	0.49***	1		
Ever Merged (Compustat)	0.37***	0.21***	0.15***	0.17***	0.22***	1	
Ever Merged (Any)	0.37***	0.099***	0.077***	0.082***	0.13***	0.37***	1

Notes: This table displays raw correlations between some of the key variables in our analysis. Our panel dataset is described in Section 4, and composite firms are defined at the beginning of Section **??**.

Table 5: **Results: Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-65,384**	-62,393***	-4,470*	-4,290
	(27,069)	(24,160)	(2,382)	(2,839)
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
Sample	All	All	All	All
Observations	222,540	222,519	222,540	222,519
R^2	.54	.55	.32	.32

Notes: This table shows results on lobbying and PAC donations using our main panel specification in Equation 8.

Table 6: **Heterogeneity (Firm Size in Revenue): Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-14,996	-60,468**	-689	-4,201
	(16,417)	(24,512)	(966)	(2,856)
Controls	Y	Y	Y	Y
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
Sample	Below Median Revenue	Above Median Revenue	Below Median Revenue	Above Median Revenue
Observations	76,352	146,167	76,352	146,167
R^2	.4	.55	.67	.32

Notes: TODO This table shows results on lobbying and PAC donations using our main panel specification in Equation 8.

Table 7: **Results: Exposure Design**

Panel A: Implementation #1, K_{i0} = Initial # of component firms

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-103,062***	-101,286***	-9,489*	-9,759
	(32,799)	(30,232)	(5,523)	(6,589)
Controls		Y		Y
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
F-Statistic	1,398	1,308	1,398	1,308
Observations	221,502	221,502	221,502	221,502
R^2	.016	.011	.00036	-.00037

Panel B: Implementation #2, K_{i0} = NAICS4 Industry Avg # of component firms

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-124,971**	-132,992*	-19,331	-16,205
	(63,707)	(75,441)	(11,906)	(15,223)
Controls		Y		Y
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
F-Statistic	88	17	88	17
Observations	221,502	221,502	221,502	221,502
R^2	.014	.0087	-.014	-.0081

Notes: TODO

Appendix

A Theoretical Appendix: Proofs of Propositions

Proof of Proposition 1. For the first part of the proposition, R^* is given by the value of R that maximizes joint surplus. For the second part, we have from Corollary 1 that, in a coalition with only a duopolist, the policy maker could select R to maximize $(A + aR)^2/9 - w_1 R^2/2$ with an interior solution $R^*_{\{1\}} = \frac{2Ak_R/a}{9-4k_R}$. This results in

$$\hat{t}_1 \geq \frac{18A^2 k_R}{(9-4k_R)^2(9-2k_R)}. \tag{11}$$

A similar expression applies to $\hat{t}_2 \geq \frac{18A^2 k_R}{(9-4k_R)^2(9-2k_R)}$.

The grand coalition (firm 1 + firm 2) will instead need to compensate the policy-maker loss at the policy equilibrium

A quick inspection tells that (3) is the key constraint. Intuitively, (11) is not binding because the alternative coalition without firm 1 will still be choosing a relatively high level of the common R, and hence the "punishment" that could be inflicted on firm 1 is limited. Instead, jointly both firms need to convince the regulator to enact a policy choice that is against social welfare: the higher the level of the policy, the more the regulator will have to be compensated with higher transfers. There is a continuum of contribution pairs that satisfy condition (3), which can be thought of as different allocations of contributions to a common good. It is natural to select the symmetric one (this is also the solution that minimizes, e.g., the sum of the square of transfers) to finally get

$$\hat{t}_1 = \hat{t}_2 = \frac{4A^2 k_R}{(9-4k_R)^2}. \tag{12}$$

□

Proof of Proposition 2. Policy is found by maximizing surplus. Turning to the contributions, we have that for firm 1, in a coalition with the other duopolist, the policy maker could select the F_i's to maximize $\pi_2 - w(F_1^2/2 + F_2^2/2)$ with an interior solution $F^*_{1\{1\}} = \frac{-2Ak_F/b}{9-10k_F}, F^*_{2\{1\}} = \frac{4Ak_F/b}{9-10k_F}$. Note that the "punishment" to firm 1 is quite harsh (in fact, a negative F_1). This results in a minimum transfer for firm 1 of

$$\hat{t}_1 \geq \frac{18A^2 k_F(5-2k_F)}{(9-2k_F)^2(9-10k_F)}. \tag{13}$$

A similar expression applies to $\hat{t}_2 \geq \frac{18A^2k_F(5-2k_F)}{(9-2k_F)^2(9-10k_F)}$.

The grand coalition (firm 1 + firm 2) will instead need to compensate the policy-maker loss at the policy equilibrium

$$\hat{t}_1 + \hat{t}_2 \geq w(F_1^{*2}/2 + F_2^{*2}/2) = \frac{4A^2k_F}{(9-2k_F)^2}.$$

In contrast with the case with only the common lobbying component, with private lobbying components (13) are now the key constraints. The intuition comes from the harsh punishment illustrated above. Then we get

$$\hat{t}_1 = \hat{t}_2 = \frac{18A^2k_F(5-2k_F)}{(9-2k_F)^2(9-10k_F)}. \tag{14}$$

□

Proof of Proposition 3. Consider first the case with only R ($b = 0$). That regulation increases with the merger, follows from comparing R^* from (2) with the corresponding R^m in (6): $R^* = \frac{4Ak_R/a}{9-4k_R} < R^m = \frac{Ak_R/a}{2-k_R} \Rightarrow \frac{4}{9-4k_R} < \frac{1}{2-k_R} \Rightarrow 9 - 4k_R > 8 - 4k_R$.

Transfers also increase, as obtained by comparing $\hat{t}_m$ given by (7) with $\hat{t}_1 + \hat{t}_2$ given by (12): $\hat{t}_1 + \hat{t}_2 = \frac{8A^2k_R}{(9-4k_R)^2} < \hat{t}_m = \frac{A^2k_R}{2(2-k_R)^2} \Rightarrow \frac{1}{(9-4k_R)^2} < \frac{1}{16(2-k_R)^2} \Rightarrow 9 - 4k_R > 8 - 4k_R$.

Consider next the case with only F ($a = 0$). We have already discussed that one private component (e.g., F_2) disappears with the merger. The remaining component F_1 instead goes up, as can be checked by comparing (6) with (4): $F_1^* = \frac{2Ak_F/b}{9-2k_F} < F_1^m = \frac{Ak_F/b}{2-k_F} \Rightarrow \frac{2}{9-2k_F} < \frac{1}{2-k_F} \Rightarrow 9 - 2k_F > 8 - 2k_F$.

Finally, transfers decrease, as obtained by comparing $\hat{t}_m$ given by (7) with $\hat{t}_1 + \hat{t}_2$ given by (14): $\hat{t}_1 + \hat{t}_2 = \frac{36A^2k_F(5-2k_F)}{(9-2k_F)^2(9-10k_F)} > \hat{t}_m = \frac{A^2k_F}{2(2-k_F)^2} \Rightarrow \frac{36(5-2k_F)}{(9-2k_F)^2(9-10k_F)} > \frac{1}{2(2-k_F)^2}$, which is always verified in the range required for an interior solution ($1/k_R \equiv w_2/b^2 > 9/2$). □

B Example of a Composite Firm

Below we show a visual example of a composite firm that starts off as four distinct component firms (A-D) and merges into one over three periods (half years in our sample). Figure B.1 below shows the evolution of this composite firm from period 1 (top) to period 3 (bottom).

In this example, all component firms' revenue was $1 for all periods, and there was no

organic growth over the three periods. At the end when all four firms are merged, the final firm is worth $4. This example keeps size/revenue constant for clarity; our actual data include organic growth. In the example, the concentration index varies across the three periods, which we can measure either as a reduction in the number of independent, as-yet-unmerged firms within the composite ("# of component firms"), or as an increase in the HHI index as described in Appendix G.

Figure B.1: **Graphical Representation of Composite Firm "ABCD"**

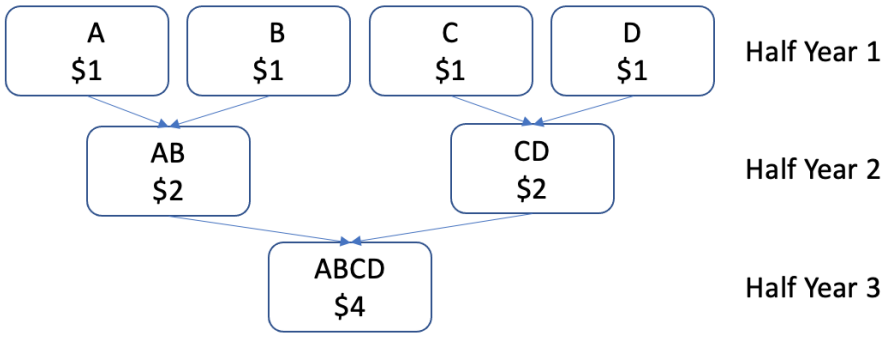


Table B.1: **Tabular Representation of Figure B.1, Composite Firm "ABCD"**

HalfYearID	CompositeFirmID	Total Revenue (Size)	# of Component Firms	HHI Index	
1	"ABCD"	$4	4	2,500	$=(1/4)^2 \times 4 \times 10K$
2	"ABCD"	$4	2	5,000	$=(1/2)^2 \times 2 \times 10K$
3	"ABCD"	$4	1	10,000	$=(1/1)^2 \times 1 \times 10K$

C Representing Multi-Merger Firms

As described in Section 4, our composite firm representation is particularly helpful for analyzing multi-merger firms. Mergers are relatively rare. However, among companies that *do* merge with others in our sample, 62% are involved in multiple mergers or acquisitions. Multi-merger firms are particularly common among larger companies that may be the source of important political and/or economic influence. Composite firms with more than two components comprise 41% of all lobbying spend. Such firms are often both targets and acquirers in the same sample.

Multi-merger firms present a data representation challenge. More generally, analysis of networks featuring merging nodes is rare in any network setting. Hernandez and Menon

(2018) examines "node collapse" through simulations. Our approach of building a "composite node" (in our case, a composite firm) for handling this problem may have applications in other empirical settings featuring merging nodes.

In standard datasets of corporate mergers, target firms disappear after an acquisition. However, the target firm has not disappeared, it has been joined into a larger entity. Some researchers drop the target firm from analysis entirely, and focus only on the outcomes of the acquiring firm (both before and after the merger). This is problematic in settings like our model, where researchers want to study changes in the combined output of comes of both firms (compared to pre-trends before the merger).

In addition, if one drops a target firm entirely then the target's own prior acquisitions (as an acquirer) would also be dropped. As described above, this would remove a large volume of potentially important activity. One could also keep the targets, and represent them as targets in some acquisitions and acquirers in others. However, the double-appearance of these firms would need to be accounted for in standard error clustering.

Our composite firm representation addresses these issues. Rather than dropping firms or double-counting them, we create a unit of analysis (the composite firm) that can represent multi-merger firms, single-merging firms and non-merging firms. We can track internal changes to the composition of composite firms over time, and cluster standard errors around these composites.

D Merging Data Sources

As described in Section 4, our dataset brought together four datasets: 1) financial data from Compustat, 2) a dataset about mergers from SDC Platinum, 3) a lobbying dataset from *LobbyView*[23] (Kim, 2018), and 4) corporate PAC contribution data from the Center for Responsive Politics' *OpenSecrets* project.[24]

Below we list additional details about how these datasets were merged together. Our merging mostly used standardized identifiers (GVKEY and CUSIP) with the exception of the text-matching used to incorporate the *OpenSecrets* data.

1) *Compustat* identifies companies both using CUSIP and GVKEY identifiers, thus allowing linkages with other data below using either key.

2) The SDC platinum data identify both target and acquiring companies using CUSIP identifiers. Before integrating this data, we added the composite firm identifiers using the procedure described in Appendix E.

[23] https://www.lobbyview.org/

[24] https://www.opensecrets.org/bulk-data/

3) *LobbyView* indexes companies using GVKEY identifiers. We link *LobbyView*'s data with other datasets using the GVKEY/CUSIP crosswalk from Compustat.

4) Unlike *LobbyView*, *OpenSecrets* data does not index companies by a standardized identifier, but by company standardizing company names. We merged this data into the other datasets by using a text matching procedure we validated by manual inspection.

E Procedure for Creating the Composite Firm Graph

The procedure below takes the SDC Platimum merger dataset described in the main paper (and in Appendix D above) and a date.

We begin by removing all M&A observations before the specified date. Then we use the SDC data to create a graph that connects all merged firms before that date. Although this graph's edges should arguably be directed, for our purposes in this section an undirected graph connecting targets and acquirers will suffice.

We then find the connected components of this graph. A connected component is a maximal connected subgraph. All nodes within the subgraph are reachable from every other node in the subgraph, either directly or through paths. However, all nodes in the component subgraph cannot necessarily reach all nodes in the overall graph. In short, a connected component is an "island" of nodes that are interconnected with each other, but not the rest of the graph.

In our setting, a composite firm is a collection of firms (nodes) that are interconnected to each other by mergers (edges). These connections can either be direct (two firms merging) or through paths (A merging with B, which previously merged with C). The members of these clusters of course typically are not necessarily connected to all other firms (directly or through paths), and thus each cluster of inter-merged firms is an isolated, connected subgraph of the larger merger graph.

Connected components of a graph can be calculated using efficient, well-known algorithms such as the Hopcroft and Tarjan (1973) algorithm. We used the implementation provided by the igraph scientific computing package (Csardi and Nepusz 2006, `http://igraph.org`), Version 1.2.6 (published October 6, 2020).

F Diagnostics of the Exposure Design Instruments

Correlation Tests. To meet the IV requirements, our instrument must satisfy an exclusion restriction. The requirement is that the merger waves do not affect political spending of the exposed units, except through mergers. Like many identifying assumptions, this

cannot be directly tested. Goldsmith-Pinkham et al. (2020) suggest an empirical test to validate the instrument: Examine whether initial exposures K_{i0} predict the levels (or differences) of shocks W_{it} from other parts of the economy.

Table F.2 implements this test. To assesses economic significance, we use regressions with standardized values for both the left- and right-hand side variables. The resulting point estimates are less than one one-hundredth of a standard deviation. Until other controls are added, the R^2 is less than one ten-thousandth. This is a correlation of effectively zero in economic significance. Because of our large dataset, we do find statistically significant correlations (our standard errors are even smaller than our point estimates). However, the magnitude of these correlations are effectively zero.

Compliers & Instrument Strength. Compliers to the instrument are composite firms that contain mergers, but whose timing of mergers are sensitive to waves. Many other mergers happen on a timeline unaffected by these waves, or never happen at all; these are not identified by our instrument. In Table F.3, we assess whether instrument compliance is different by size (measured in revenue). We find that large companies are more likely to be compliers to our instrument; as a result, our IV estimand will capture effects on companies that are larger than the average company in our sample. This property of the instrument also limits our ability to do heterogeneity analysis on the main effects of mergers, because our instrument is weaker for smaller companies. Overall, our instrument has a strong first stage in both implementations, featuring strong F statistics (as measured using the metrics proposed by Olea and Pflueger 2013 and Stock and Yogo 2005; Kleibergen and Paap 2006).

Table F.2: **IV Diagnostic: Does Initial Concentration Level Predict Shocks?**

	(1) Merger Shocks (Levels)	(2) Merger Shocks (Changes)	(3) Merger Shocks (Levels)	(4) Merger Shocks (Changes)
Component Firms in Period 0	-.00036	.00097**		
	(.00029)	(.00041)		
Standardized values of nc_firstob_mfn4			-.0035***	.0045***
			(.00058)	(.00067)
Constant	-1.5e-09	-6.7e-06	-1.5e-09	-.000049
	(.00051)	(.00073)	(.00051)	(.00073)
Controls	Y	Y	Y	Y
Observations	221,998	209,394	221,998	209,394
R^2	.99	.88	.99	.88

Notes:

- All vars standardized.
- Controls: Revenue & half year FEs.

Table F.3: **IV Compliance Heterogeneity: Firm Size in Revenue**

	(1) # of Component Firms	(2) # of Component Firms	(3) # of Component Firms	(4) # of Component Firms
Instrument	7.1***	7.1***	1.2***	1.6***
	(.26)	(.3)	(.18)	(.59)
Instrument × Large Firm	.34***	.24*	.71***	.77***
	(.1)	(.14)	(.042)	(.055)
Instrument Version	#1	#1	#2	#2
Controls		Y		Y
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
Observations	221,502	221,502	221,502	221,502
R^2	.86	.87	.64	.67

Notes:

- All vars standardized.
- Controls: Revenue & half year FEs.

G Empirical Results using HHI as Concentration Index

In this appendix we employ the Herfindahl-Hirschman Index (HHI) of the composite firm as an alternative measure for ConcentrationIndex$_{it}$, instead of the simple count of the number of independent firms within each composite firm that we used in the main text.

The HHI is defined as the sum of the squared relative revenue share of each independent firm within the composite firm, or $\text{HHI}_{it} = \sum_{f \in \mathcal{F}_{i,t}} [x_{ft}^2]$, where $x_{ft} = r_{ft} / \sum_{f \in \mathcal{F}_{i,t}} r_{ft}$. It is a term that can take values between 0 and 10,000. An example is provided in Table B.1. When a merger is completed, the number of intermediate parents shrinks, and the revenue share is larger inside the intermediate parent that absorbed one of the firms, resulting in a higher HHI.

Results are shown in the Table below and are qualitatively similar to those in Table 5. Note that an increase in concentration in Table 5 reduces the index of concentration, while now HHI would increase it.

Implementation Notes. Recall that ConcentrationIndex$_{it}$ appeares twice in our exposure design: Once as the variable being instrumented, and again when the instrument itself uses the ConcentrationIndex$_{it}$ of firms outside the focal firm's industry. In our implementation below, we use HHI as the ConcentrationIndex$_{it}$ in both cases.

Table G.4: **Results: Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
HHI	5.5*	5.5*	.37	.33
	(3.2)	(3)	(.28)	(.3)
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
Sample	All	All	All	All
Observations	222,540	222,519	222,540	222,519
R^2	.54	.55	.32	.32

Notes: This table shows results on lobbying and PAC donations using our main panel specification in Equation 8.

Table G.5: **Heterogeneity (Firm Size in Revenue): Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
HHI	.41**	12*	.0097**	.74
	(.19)	(7)	(.0045)	(.69)
Controls	Y	Y	Y	Y
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
Sample	Below Median Revenue	Above Median Revenue	Below Median Revenue	Above Median Revenue
Observations	76,352	146,167	76,352	146,167
R^2	.4	.55	.67	.32

Notes: TODO This table shows results on lobbying and PAC donations using our main panel specification in Equation 8.

Table G.6: **Results: Exposure Design**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
Composite firm HHI	175**	184**	20	22
	(77)	(73)	(14)	(17)
Controls		Y		Y
Composite Firm FEs	Y	Y	Y	Y
Half Year FEs	Y	Y	Y	Y
F-Statistic	51	52	51	52
Observations	221,502	221,502	221,502	221,502
R^2	-.22	-.24	-.28	-.33

Notes: TODO

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