

Political Power and Market Power*

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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 essential elements of democracy ([Grossman and Helpman, 2002](#); [Ansolabehere et al., 2003](#); [Cage, 2020](#)) and the non-market strategy of firms ([Holburn and Bergh, 2000](#); [Baron and Baron, 2003](#); [Mellahi et al., 2016](#); [Dorobantu et al., 2017](#)). On the positive side, they can help firms and elected officials synchronize information needed to make legislative and regulatory choices, and help voters understand candidates. They also raise concerns about legitimacy and representation, as individuals and organizations with greater wealth can spend more to influence the political process.

In this paper, we study the link between non-market strategy and marketplace concentration. This 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 Actions 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 increasing concern that industrial concentration does not only have a direct effect on consumers through market power (and associated higher prices and reduced quantities), but also an indirect effect on consumers through politics ([Zingales, 2017](#); [Wu, 2018](#)). Incumbent firms lobby politicians to erect barriers to entry to protect their market power. 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.

In this paper, we first propose a formalized theory of the interplay between market and non-market forces. Our model is based on [Grossman and Helpman \(1994\)](#) where firms, in a given industry, compete against each other and also make political contributions in

order to influence a government’s choice of regulations. Our theoretical model makes a key distinction between regulations that can benefit all the incumbents in an industry, and those that benefit a specific firm directly (and may actually damage competitors). An example of the former could be tariffs that keep out foreign firms. An example of the latter could be government intervening in a dispute between competitors (by favoring one side against the other).

We show that lobbying on common regulations has the characteristics of a public good for the industry incumbents. They are non-rivalrous and non-excludable, and thus lobbying for them is typically underprovided by incumbents. Concentration coming from a merger will increase total lobbying for these regulations. By contrast, when lobbying is on a private component, each firm’s lobbying generates a negative externality onto other firms. Each firm’s lobbying helps itself, but hurts competitors, and hence this type of lobbying tends to be overprovided. By merging, the firms solve the coordination problem and take care of the externality, which in this second case means less lobbying.

We then study these topics empirically using data from SEC-registered companies over the past 20 years. The key empirical challenge is the endogeneity of mergers. We pursue several empirical approaches, but our main specifications use an approach based on [Borusyak and Hull \(2020\)](#), and is particularly similar to [Bartik \(1991\)](#) and successor work.¹ Our identification strategy utilizes the well-documented tendency of merger to arrive in waves that span multiple sectors ([Nelson, 1959](#); [Gort, 1969](#); [Weston and Chung, 1990](#); [Maksimovic et al., 2013](#)).

We utilize economy wide pro-merger shocks at different times to construct a time-varying instrument similar to the [Bartik \(1991\)](#) instrument. We measure shocks originating from *outside* the focal firms’ industry, broadly defined, to identify economy-wide, exogenous

¹For successors, see [David et al. \(2013\)](#); [Borusyak et al. \(2018\)](#); [Goldsmith-Pinkham et al. \(2020\)](#); [Breuer \(2021\)](#)

merger shocks. We then interact these shocks with measurements of a firm (or industry's) exposure to these waves to identify the shock.

We find 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.

Our paper tries to shed a light on Louis Brandeis' famous hostility to monopoly power ([Brandeis, 1914](#)). This critique 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 (lobbying) and detailing how firms vie to get political power through non-market strategy.

1.1 Related Research

This paper is related to a small but growing literature linking industry-level variables with lobbying activities.² The pioneering work in the area is [Goldberg and Maggi \(1999\)](#), which tests and estimates [Grossman and Helpman's 1994](#) model with industry-level US data on lobbying and tariffs. We follow that literature in using [Grossman and Helpman's 1994's](#) model as a theoretical approach.

²For a survey of the empirical literature on lobbying see [Bombardini and Trebbi \(2020\)](#).

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](#)). [Bombardini et al. \(Forthcoming\)](#) 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.

Our paper is related to the non-market consequences of marketplace concentration. [Ding et al. \(2020\)](#) shows that corporate social responsibility (CSR) behavior by companies is higher in settings with strong competition law. [Ferracuti et al. \(2020\)](#) Using data on firms' government relations staff show that political activism enables firms to grow their market power. While very much related in spirit to 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.

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.

2.1 Competition

We begin with the industrial organization block, which we take to be a standard quantity competition model augmented with regulatory variables.³ 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, 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.

³We 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. As 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 \(1986\)](#).⁴ 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

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

⁴For 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*

$$g_i(\mathbf{P}) = \pi_i(\mathbf{P}) - \hat{t}_i$$

$$\mathbf{P}_{-I}^* \in \arg \max_{\mathbf{P}} \sum_{j \notin I} \pi_j(\mathbf{P}) + w(\mathbf{P})$$

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 putting 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

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

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 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.⁵

⁵As 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 $\mathbf{P}$ 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:

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

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

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

Proof. 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

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

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

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, (4) 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

$$\hat{t}_1 = \hat{t}_2 = \frac{4A^2k_R}{(9 - 4k_R)^2}. \quad (5)$$

□

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:*

$$F_1^* = F_2^* = \frac{2Ak_F/b}{9 - 2k_F} \quad (6)$$

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

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

Proof. 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

$$\hat{t}_1 \geq \frac{18A^2k_F(5 - 2k_F)}{(9 - 2k_F)^2(9 - 10k_F)}. \quad (8)$$

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 (8) are now the key constraints. The intuition comes from the harsh punishment illustrated above. Then we get

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

□

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

$$\begin{aligned}\pi_m &= \pi_1 + \pi_2 = p_1 q_1 + p_2 q_2 = \\ & (A + aR - Q)Q + b(F_1 q_1 + F_2 q_2).\end{aligned}$$

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

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

$$R^m = \frac{Ak_R/a}{2 - k_R - k_F}; F_1^m = \frac{Ak_F/b}{2 - k_R - k_F}; F_2^m = 0. \quad (10)$$

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

$$\hat{t}_m = \frac{A^2(k_R + k_F)}{2(2 - k_R - k_F)^2}. \quad (11)$$

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.*

Proof. 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 (10): $R^* = \frac{4Ak_R/a}{9-4k_R} < R^m = \frac{Ak_R/a}{2-k_R} \Rightarrow \frac{4}{9-4k_R} < \frac{1}{2-k_R} \Rightarrow 9 - 4k_R > 8 - 4k_R$.

Transfers also increase, as obtained by comparing $\hat{t}_m$ given by (11) with $\hat{t}_1 + \hat{t}_2$ given by (5): $\hat{t}_1 + \hat{t}_2 = \frac{8A^2k_R}{(9-4k_R)^2} < \hat{t}_m = \frac{A^2k_R}{2(2-k_R)^2} \Rightarrow \frac{1}{(9-4k_R)^2} < \frac{1}{16(2-k_R)^2} \Rightarrow 9 - 4k_R > 8 - 4k_R$.

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 (10) with (6): $F_1^* = \frac{2Ak_F/b}{9-2k_F} < F_1^m = \frac{Ak_F/b}{2-k_F} \Rightarrow \frac{2}{9-2k_F} < \frac{1}{2-k_F} \Rightarrow 9 - 2k_F > 8 - 2k_F$.

Finally, transfers decrease, as obtained by comparing $\hat{t}_m$ given by (11) with $\hat{t}_1 + \hat{t}_2$ given by (9): $\hat{t}_1 + \hat{t}_2 = \frac{36A^2k_F(5-2k_F)}{(9-2k_F)^2(9-10k_F)} > \hat{t}_m = \frac{A^2k_F}{2(2-k_F)^2} \Rightarrow \frac{36(5-2k_F)}{(9-2k_F)^2(9-10k_F)} > \frac{1}{2(2-k_F)^2}$, which is always verified in the range required for an interior solution ($1/k_R \equiv w_2/b^2 > 9/2$). $\square$

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 take care of the externality. For R , it means more lobbying. For F , it means less lobbying.⁶ As for transfers, 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 a lot the policy maker 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 the 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.

3 Empirical Strategy

The essence of our theory is that large, concentrated firms undertake strategic actions that a collection of small firms would not. The reason is that political actions by one firm can generate positive or negative spillovers onto other firms within the same (or adjacent) industries. Concentration in an industry allows businesses to better coordinate and internalize these spillovers. Depending on the setting, concentration (and the resulting

⁶Given the way we modeled demand, with a monopoly, the remaining private component has the same 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.

coordination) may increase or decrease the overall amount of lobbying.

To test our theoretical predictions, we focus on concentration induced by a merger. hence, we need data on the behavior of both merged firms and a control set of unmerged firms. Our approach will use panel data methods. Our empirical strategy will use a unit of analysis we call the *composite firm*. Composite firms are clusters of multiple firms that *eventually* merge together by the end of the sample. However, we can identify each firm's composite firm well before the merger takes place. We can link each firm to composite (and siblings) for all periods in the sample, and measure the changes in aggregate behavior in the composite firm as the underlying firms merge.

To our knowledge, our paper is the first to assemble the composite firm graph, study its evolution over time or use it for identification.⁷ 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. As in most panel methods, the counterfactual/control group comes from two sources. The first source is pre-treatment units, i.e., composite firms before a merger. The second comes from firms that never merge.

When other papers have focused on the mergers of public companies, they often focus on the acquiring firm, and drop the observation of the target firm. For our topic, this would be problematic because of the importance of 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. Some of these firms acquire multiple targets over their lifespans. However, even if a firm acquires only one target, the target

⁷The most similar approach we are aware of is analysis of “merger pairs” (Bena and Li, 2014) which entered the M&A literature with Auerbach and Reishus (1987). Composite firms extend the intuition of merger pairs to coalitions of more than two, and to multi-merger firms in which merger activity was spread out across multiple periods. As we show later, multi-merger firms that combine over several periods comprise a large portion of merger activity, and a large portion of political activity by businesses.

may have itself merged with other firms, prior to being acquired. This would place the final acquirer as part of a multi-merger firm. 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.

Multi-merger firms present a research design challenge.⁸ If one drops a target firm entirely, 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 strategy is designed to address 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.

Appendix [A](#) 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. Our sample includes around 16K composites. These 16K composite firms are composed from over 25K *component* firms in our original Compustat sample. Each of the 25K 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.

⁸More generally, analysis of networks featuring merging nodes is rare in any network setting. [Hernandez and Menon \(2018\)](#) examines “node collapse” through simulations. Our “composite node” approach may have applications in other empirical settings featuring merging nodes.

3.1 Specifications

Our regression equations are specified below, but we summarize the intuition first. Our strategy leverages *within-composite firm variation* in the concentration over time. Before a merger, concentration within the composite firm is low. After a merger, concentration increases. Over the course of multiple mergers, all firms inside the composite firm are eventually unified.

All regressions control for composite-firm fixed effects. These fixed effects control the average outcome for each composite firm during all periods, including those far in advance of any merger. In some specifications, we also control for trends in each composite firm’s lobbying spend. The use of composite firm fixed effects allows us to separate the effects of the *size and growth* of the composite firm from the measures of concentration within it.

Our main specifications are:

$$\begin{aligned} \sum_{f \in \mathcal{F}_{i,t}} y_{ft} = & \beta_1 \sum_{f \in \mathcal{F}_{i,t}} x_{f,t} + \beta_2 \times \text{ConcentrationIndex}_{i,t} \\ & + \text{CompositeFirmFE}_i + \text{HalfYearFE}_t + \epsilon_i \end{aligned} \quad (12)$$

where $y_{f,t}$ represents lobbying expenditures of firm f at time t , and $\sum_{f \in \mathcal{F}_{i,t}} y_{ft}$ represents the sum of all lobbying of all component firms in composite firm i at time t . $x_{f,t}$ represents the size of firm f at time t (that we proxy with revenue). $\mathcal{F}_{i,t}$ represents the composite firm ownership partition for a composite firm i at time t . We include fixed effects for composite firms and half-years and cluster standard errors by composite firms.

For $\text{ConcentrationIndex}_{i,t}$, we study two implementations of concentration indices. 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 takes place. In a robustness check, we also examine a Herfindahl Index-like concentration measure instead of the simple count (see Section 3.3).

3.2 Identification

Identification in our empirical analysis relies on the timing of mergers. Mergers are endogenous, but we assume they depend on slow-moving variables whose trends we control for. The adoption of the merger creates a sharp discontinuity in the firms' ability to coordinate externalities. The identification model is similar to a panel event-study ([Gentzkow et al., 2011](#)).

By creating a composite firm panel, we have incorporated the choice of merger partners into the structure of the data. Any fixed, time-invariant characteristics that lead two firms to merge together – or to remain unmerged – are held constant across the panel and are incorporated into the units of analysis and the composite-firm fixed effects. As a result, our identification assumption depends on the exogeneity of the timing of the merger, conditional on trends that might affect the timing.

Our controls, particularly for revenue and period fixed effects, are thus focused on time-varying factors that may influence when mergers are consummated. 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.

The main identification challenge to this approach is the 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. In our next section, we propose an additional specification to examine pre-merger effects.

Notice that our empirical strategy differs from the panel data approaches used to study mergers in other settings. Many papers about mergers restrict attention on the outcomes of publicly-held acquiring companies, and their behavior pre/post acquiring another (typically private) firm (e.g., [Bena and Li 2014](#)).⁹ While this strategy estimates a reduced-form treatment effect of a merger, we would have trouble interpreting this through the lens of our model. Our specification has separate terms for the size and level of concentration, and allows us to focus on the effects of concentration.¹⁰

3.3 Additional Specifications: Pre-Merger Effects and Concentration

In addition our main specification in Equation 12, we also examine two additional variations.

In the first, we examine the change in each composite firm's *ConcentrationIndex*_{*i,t*} between the current period and future periods. We denote these as $\Delta \text{ConcentrationIndex}_{i,t,t+n}$ for each period *n* half years away. This specification is motivated by the fact that firms may increase lobbying in advance of mergers, possibly 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. Our additional terms measure lobbying ahead of a merger.

The second variation is to test the robustness of our concentration measure. Instead of

⁹Most analyses of 3-day merger announcement returns utilizes this strategy ([Moeller et al., 2005](#); [Mitchell et al., 2004](#)).

¹⁰Without pre-merger size data (and size trend data), it is less clear how much larger the combined firm became after the merger.

the simple count, we proxy $ConcentrationIndex_{i,t}$ with an Herfindahl Index-like concentration measure. This is defined as the sum of the squared sizes of each independent firm, or $\sum_{f \in \mathcal{F}_{i,t}} [x_{f,t}^2]$. Since we already directly control for total size in Equation 12 (β_1), this additional term captures the notion that concentration is related to the disparity in firm sizes created by a merger, as recognized by the Merger Guidelines issued by the Department of Justice and the Federal Trade Commission.

In this specification, we also add a term for the total size (revenue) of the composite firm, squared ($\sum_{f \in \mathcal{F}_{i,t}} x_{f,t}$)² as a control variable. For many observations in our panel, the HHI-like $ConcentrationIndex_{i,t}$ is identical to the squared size. This is true for all composite firms that never merge (“isolates”) as well as for composite firms that do merge, for all the observations after their final merger. By adding this control, we can more precisely separate the effects of mergers from growth in the squared size of the firm.

4 Data

To operationalize our empirical strategy, we use data from four sources. Our underlying sample consists of all firms present in the Compustat database from approximately 1999-present. We connect these firms together into composite firms using merger data from Thomson Reuters’ SDC Platinum database (recently acquired by Refinitiv). We then add political influence outcomes using data from OpenSecrets and LobbyView. We describe our sample and the data sources in detail below. In Appendix B, 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).¹¹ This sample is similar to those used in other studies of mergers between public firms.¹²

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.¹³ 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&A (Matvos and Ostrovsky, 2008; Rossi and Volpin, 2004; Blonigen and Pierce, 2016).¹⁴ For each acquisition, SDC Platinum identifies

¹¹For each company, we use the first non-missing NAICS code

¹²See, for example, Gaspar et al. (2005), Harford et al. (2011), Bena and Li (2014).

¹³In 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.

¹⁴Barnes 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.

the acquirer, target and dates associated with the merger.¹⁵ 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 C, 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 sibling 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 $\approx 16K$ 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 C 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

¹⁵The 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.

of integers that decrease by 1 with each successive merger.¹⁶ We also examine a concentration metric that utilizes the size (measured in revenue) rather than the count of the intermediate parents. This measure sums the squared sizes (revenues) of each intermediate parent.¹⁷ When a merger is completed, the number of intermediate parents shrinks, and the revenue is larger inside the intermediate parent that absorbed one of the firms, resulting in a higher concentration index.

4.3 Political Influence Data

Our federal lobbying data comes from *LobbyView*,¹⁸ an NSF-funded project compiling federal lobbying data (Kim, 2018). This data has been used in several other papers.¹⁹ 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.²⁰ 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 interme-

¹⁶On rare occasions when a firm merges with two firms within the same period, this number would decrease by two.

¹⁷This second measure is clearly similar to the Herfindahl index, except rather than summing the squared shares (normalized between 0 and 1), we sum the squared raw dollar amounts. This has the advantage of giving more weight to the merger of large firms.

¹⁸<https://www.lobbyview.org/>

¹⁹See Bombardini and Trebbi (2019); Huneus and Kim (2018); Ellis and Groll (2018) for examples.

²⁰An example of a lobbying disclosure report can be viewed [here](#).

diary. 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.²¹ Several 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 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 rare.** Although 52% of composite firms have been involved in a merger, most of these mergers are acquisitions of small, unlisted companies. Only 11% of our composite companies feature a merger between Compustat-listed companies.

²¹<https://www.opensecrets.org/bulk-data/>

2. **Political influence is rare (per firm).** Although spending on lobbying has grown over time in aggregate, 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.
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're 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).²²

5 Empirical Results

Table 5 shows results on lobbying and PAC donations using our main specification in Equation 12. The focus of this table is the concentration index, which changes when a merger happens. However, we begin by reviewing some key descriptive control variables.

²²One 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.

The table tells a common story. First, 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). As suggested in descriptive statistics, the size of each firm is correlated with political activity, both in Lobbying and PAC contributions. The size of this relationship is reduced with the addition of composite-firm fixed effects (Columns 2 and 4, respectively), which absorb variation in size.

Turning to the concentration metric that changes with mergers, 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 \$93,000 per year (column 2), while the impact on PAC donations amounts to \$5,000 per year (column 4). The positive sign of this result suggests that the average set of merging firms have overlapping, public good -like regulatory interests. Our theory model shows why this would cause firms to increase spend because the positive externality has been internalized. By contrast, the theory we proposed for more rivalrous regulatory demands would suggest that lobbying spend could be reduced.

Our merger coefficients aggregate over lots of heterogeneity, and presumably some of the mergers have a more rivalrous quality. The results in Table 5 speak to the average.

Table 6 shows results on pre-merger spends. We examine pre-merger effects affecting two years before the merger (4 periods in our sample).²³ Our results suggest that influence activities start in anticipation of a merger. Column 2 suggests that merging parties anticipate the merger by increasing their spend by \$51.7K in the year prior to the merger. The impact two years before the merger is not statistically significant. As for PAC contri-

²³This cut off is arbitrary but robust to alternative specifications that go further back in time.

butions, the anticipation effects last for both years prior to the merger.

The pre-merger spend increases we find also suggest that our main results in Table 5 are biased downwards. As noted in Section 3.2, increases pre-merger spend depress the control periods, and reduce the size of the increase after the merger discontinuity. We see some evidence in Table 6; our estimate of the post-merger increase is larger both for lobbying and PAC spends once we control for pre-merger activity.

In Appendix Table D.2, we add the HHI-like index of concentration, as well as the squared size term, as described in Section 3.3. Results hardly change, in that, with full fixed effects, an increase in the index of concentration leads to an increase both in lobby amounts and in PAC contributions, though the latter is not statistically significant any longer.

6 Conclusion

Our paper tries to shed a light on Louis Brandeis' famous hostility to monopoly power. He 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 (lobbying) and de-

tailing how firms vie to get political power. In our paper, we do not document direct consumer harm as this is outside the scope of our work. While we acknowledge that regulations have many good reasons to be adopted (e.g., safety or environmental concerns), as well as efficiencies can be behind a merger, there are also many factors pointing to consumers losing from political lobbying leading to industrial concentration. The implication that follows from our study is the strict complementarity between antitrust laws on the one hand, and campaign finance law and lobbying regulations on the other hand. It is evident that, if correctly designed and enforced, regulations of lobbying and campaign finance can reduce undue influence of firms on decision makers. This should then result in choices that produce regulations that favor more competitive market structures (facilitating the job of antitrust enforcers). At the same time, a strict enforcement of antitrust laws reduces rents accruing from abuse of market power. With diminished rents, it follows that the reward to firms from lobbying shrinks, so that political contributions go down as well. This reduces the influence of industry on regulators, making also the oversight of lobbying and campaign finance a less pressing issue in practice.

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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	8.71	6.32	0.50	3.50	6.50	14.00	19.00
Avg Revenue (\$10M, per Half Year)	92.01	580.07	0.00	0.22	3.00	20.47	20621.06
Lobby Spend (\$1K, per Half Year)	31.90	303.42	0.00	0.00	0.00	0.00	18208.35
Lobbied at all (per Half Year)	0.06	0.20	0.00	0.00	0.00	0.00	1.00
Lobbied at all (ever)	0.13	0.33	0.00	0.00	0.00	0.00	1.00
PAC Donations (\$1K, per Half Year)	1.71	16.62	-0.12	0.00	0.00	0.00	809.97
PAC Donations > 0 (per half year)	0.04	0.17	0.00	0.00	0.00	0.00	1.00
PAC Donations > 0 (Ever)	0.06	0.24	0.00	0.00	0.00	0.00	1.00
Individual Donations (\$1K, per Half Year)	0.47	3.50	-1.75	0.00	0.00	0.00	157.41
Individual Donations > 0 (per Half Year)	0.05	0.13	0.00	0.00	0.00	0.00	1.00
Individual Donations > 0 (Ever)	0.25	0.43	0.00	0.00	0.00	0.00	1.00
Individual + PAC (\$1K, per Half Year)	2.19	18.52	-1.75	0.00	0.00	0.00	866.96
Individual + PAC > 0 (per Half Year)	0.07	0.19	0.00	0.00	0.00	0.03	1.00
Individual + PAC > 0 (Ever)	0.25	0.43	0.00	0.00	0.00	1.00	1.00
# of Component Firms (Total)	3.97	18.50	1.00	1.00	1.00	3.00	2036.00
Ever M&A (with any firm)	0.45	0.50	0.00	0.00	0.00	1.00	1.00
# of Component Firms in Compustat	1.22	1.12	1.00	1.00	1.00	1.00	39.00
Ever M&A (with Compustat firm)	0.10	0.30	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 3.

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

	Mean	Std.Dev	Min	P25	P50	P75	Max
Years in Sample	14.35	5.80	0.50	9.50	18.50	19.00	19.00
Avg Revenue (\$10M, per Half Year)	381.46	1148.78	0.00	7.42	53.30	247.47	18359.17
Lobby Spend (\$1K, per Half Year)	251.56	819.16	0.16	6.87	28.41	126.56	18208.35
Lobbied at all (per Half Year)	0.49	0.34	0.03	0.16	0.44	0.83	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)	12.08	43.72	0.00	0.00	0.00	4.17	809.97
PAC Donations > 0 (per half year)	0.24	0.37	0.00	0.00	0.00	0.46	1.00
PAC Donations > 0 (Ever)	0.37	0.48	0.00	0.00	0.00	1.00	1.00
Individual Donations (\$1K, per Half Year)	2.69	8.84	-1.75	0.00	0.12	1.50	157.41
Individual Donations > 0 (per Half Year)	0.19	0.20	0.00	0.00	0.12	0.32	1.00
Individual Donations > 0 (Ever)	0.71	0.46	0.00	0.00	1.00	1.00	1.00
Individual + PAC (\$1K, per Half Year)	14.77	48.55	-1.75	0.00	0.43	7.17	866.96
Individual + PAC > 0 (per Half Year)	0.33	0.35	0.00	0.00	0.18	0.61	1.00
Individual + PAC > 0 (Ever)	0.73	0.44	0.00	0.00	1.00	1.00	1.00
# of Component Firms (Total)	11.28	49.14	1.00	1.00	4.00	11.00	2036.00
Ever M&A (with any firm)	0.73	0.44	0.00	0.00	1.00	1.00	1.00
# of Component Firms in Compustat	1.91	2.35	1.00	1.00	1.00	2.00	34.00
Ever M&A (with Compustat firm)	0.32	0.47	0.00	0.00	0.00	1.00	1.00

Notes: This table displays simple summary statistics for all composite firms in our sample that engage in at least one merger. Our paenl dataset is described in Section 4, and composite firms are defined at the beginning of Section 3.

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

	Never Merged	Merged	Difference
Years in Sample	7.98	15.44	-7.47***
Avg Revenue (\$10M, per Half Year)	63.45	354.01	-290.56***
Lobby Spend (\$1K, per Half Year)	15.62	181.20	-165.57***
Lobbied at all (per Half Year)	0.04	0.23	-0.19***
Lobbied at all (ever)	0.10	0.42	-0.32***
PAC Donations (\$1K, per Half Year)	0.67	11.27	-10.60***
PAC Donations > 0 (per half year)	0.02	0.19	-0.17***
PAC Donations > 0 (Ever)	0.04	0.30	-0.26***
Individual Donations (\$1K, per Half Year)	0.25	2.56	-2.31***
Individual Donations > 0 (per Half Year)	0.04	0.18	-0.14***
Individual Donations > 0 (Ever)	0.20	0.71	-0.52***
Individual + PAC (\$1K, per Half Year)	0.92	13.83	-12.91***
Individual + PAC > 0 (per Half Year)	0.05	0.28	-0.23***
Individual + PAC > 0 (Ever)	0.20	0.72	-0.52***
# of Component Firms (Total)	2.52	17.28	-14.75***
# of Component Firms in Compustat	1.00	3.21	-2.21***

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 3.

Table 4: **Descriptive Statistics: Correlations**

	Years	Revenue	Lobby	PAC	Individual	Ever Merged (Compustat)	Ever Merged (Any)
Years	1						
Revenue	0.14***	1					
Lobby	0.14***	0.33***	1				
PAC	0.14***	0.36***	0.59***	1			
Individual	0.16***	0.26***	0.36***	0.47***	1		
Ever Merged (Compustat)	0.35***	0.15***	0.16***	0.19***	0.20***	1	
Ever Merged (Any)	0.35***	0.066***	0.079***	0.094***	0.12***	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 3.

Table 5: **Main Results: Political Spending**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
Composite Firm Revenue (M)	19*** (4)	8.1*** (2.7)	1.1*** (.21)	.31*** (.11)
# Component Firms	39,841*** (11,327)	-46,412*** (10,979)	4,656*** (1,148)	-2,500*** (662)
Composite Firm FEs		X		X
PeriodFEs	X	X	X	X
Sample	All	All	All	All
Observations	284,077	283,464	284,077	283,464
R ²	.097	.72	.12	.75

Notes: This table shows results on lobbying and PAC donations using our main panel specification in Equation 12.

Table 6: **Pre-Merger Political Spend**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
Composite Firm Revenue (M)	8.1*** (2.7)	7.2*** (2.7)	.31*** (.11)	.29*** (.11)
# Component Firms	-46,412*** (10,979)	-51,655*** (13,605)	-2,500*** (662)	-3,373*** (880)
Δ # Component Firms, $t + 1$		-23,397** (11,039)		-2,519*** (886)
Δ # Component Firms, $t + 2$		-28,295** (12,508)		-2,622*** (994)
Δ # Component Firms, $t + 3$		-23,569 (15,552)		-3,197*** (1,052)
Δ # Component Firms, $t + 4$		-15,077 (15,502)		-1,863*** (669)
Composite Firm FEs	X	X	X	X
PeriodFEs	X	X	X	X
Sample	All	All	All	All
Observations	283,464	221,590	283,464	221,590
R^2	.72	.71	.75	.75

Notes: This table shows results on lobbying and PAC donations using our panel specification in Equation 12, augmented with the pre-merger variables described in Section 3.3.

Appendix

A 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. Figure A.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 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, either as a reduction in the number of independent firms within the composite, or as an increase in the HHI-like index.

Figure A.1: Graphical Representation of Composite Firm "ABCD"

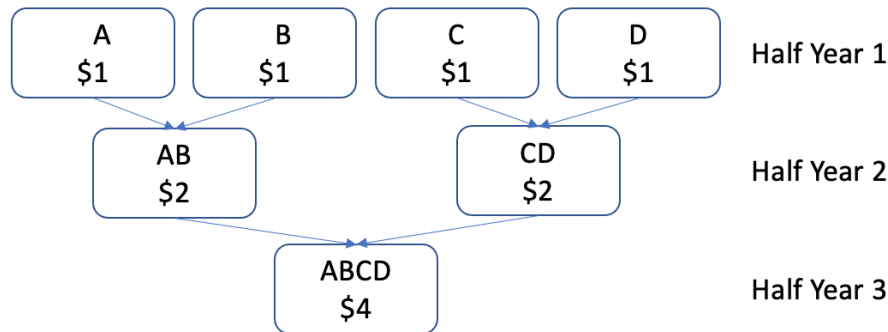


Table A.1: Tabular Representation of Figure A.1, Composite Firm "ABCD"

HalfYearID	CompositeFirmID	Total Revenue (Size)	# of Component Firms	HHI-Like Concentration Index	
1	"ABCD"	\$4	4	\$4	$=\$1^2 \times 4$
2	"ABCD"	\$4	2	\$8	$=\$2^2 \times 2$
3	"ABCD"	\$4	1	\$16	$=\$4^2 \times 1$

B 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*,²⁴ (Kim, 2018), and 4) corporate PAC contribution data from the Center for Responsive Politics' *OpenSecrets* project.²⁵

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 below in Appendix C.
- 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.

C Procedure for Creating the Composite Firm Graph

The procedure below takes the above SDC Platinum merger dataset described in the main paper (and in Appendix B) 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

²⁴<https://www.lobbyview.org/>

²⁵<https://www.opensecrets.org/bulk-data/>

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 connected to each other by mergers (edges). These connections can either be direct (two firms merging) or through pathes (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).

D Appendix Figures and Tables

Table D.2: **Robustness: HHI-like term**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
Composite Firm Revenue (M)	30*** (5.2)	15*** (2.5)	1.6*** (.24)	.65*** (.17)
Composite Firm Revenue ² (M)	-.000095 (.00026)	-.00045* (.00025)	.00008 (.00007)	-7.9e-06 (9.4e-06)
Composite Firm HHI-like Term	.00002 (.00026)	.00042* (.00025)	-.000084 (.00007)	6.7e-06 (9.3e-06)
Composite Firm FEs		X		X
PeriodFEs	X	X	X	X
Sample	All	All	All	All
Observations	284,077	283,464	284,077	283,464
R ²	.12	.72	.17	.75

Notes: This table shows results on lobbying and PAC donations using our panel specification in Equation 12, augmented with the HHI-like variables described in Section 3.3.

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- Csardi, Gabor and Tamas Nepusz**, “The igraph software package for complex network research,” *InterJournal*, 2006, *Complex Systems*, 1695.
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