Political Power and Market Power*

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Abstract

We study the link between political influence and industrial concentration. A model of an oligopoly that engages in lobbying shows that a merger may lead to an increase or a decrease in political influence activity. We combine data on mergers with data on lobbying expenditures and campaign contributions in the US from 1999 to 2017. We document a positive association between mergers and lobbying and we find some evidence for a positive association with 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 gather information needed to make legislative and regulatory choices, and can help voters become informed about candidates on the ballot. However, they also both raise legitimacy and fairness concerns, as individuals and organizations with greater wealth can spend more and exercise greater 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, businesses represent the largest source of lobbying spend. According to data from OpenSecrets, businesses 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 prices and reducing quantities), but indirectly affects consumers through politics (Zingales, 2017; Wu, 2018). Concern over the political influence of concentrated industries has appeared throughout the history of antitrust (e.g. Brandeis, 1914; Pitofsky, 1978; Khan, 2017).[1] Incumbent firms could lobby politicians to erect barriers to entry and 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 begin with a brief theoretical section that introduces a very simple model and dis-

[1] One example of this is Thomas Jefferson who sought to add "freedom from monopolies" to the Bill of Rights in the U.S. Constitution (Jefferson, 1789).

cusses when mergers are expected to increase or decrease influence activities. We consider an oligopoly in which firms' profits may be affected by government regulation. Firms engage in lobbying activity according to the menu auction model developed by Grossman and Helpman (1994).

We characterize the joint equilibrium in the product market and in the "political market", as well as the effect of a merger between two competitors on such equilibrium. A merger typically leads to an increase in lobbying activity – for instance when regulation is a common good for the incumbent firms that operate in the industry under consideration. The model is highly stylized but useful to generate predictions about the impact of mergers both at the intensive and extensive margin (when firms may decide whether to lobby at all). It can also be extended from the firm level to the industry level, which is of relevance to look at lobbying done through industry trade associations

The core of the paper studies whether in the US mergers are associated to an increase or a decrease in influence activities. We use data from SEC-registered companies in 1999-2017 (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 how political influence spending varies before and after a merger. We pursue two empirical approaches, 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'Haultfoeuille, 2020; Freyaldenhoven et al., 2021; Goodman-Bacon, 2021; Athey and Imbens, 2022). 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 and Hull, 2020; Goldsmith-Pinkham et al., 2020; Breuer, 2021) that uses logic similar to the Bartik (1991) instrumental variable design. Like other Bartik-like designs, ours 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 mergers are positively associated with an increase in firms' spending on political influence activities. The average merger is associated with a $74K to $106K increase in the amount spent on lobbying per period (half year) after the merger, or approximately 22% of average per-period spend of merging firms. The average merger is also associated with an approximately $4K to $10K increase in campaign contributions per period, but this association is not statistically significant in all specifications.

In most specifications, the association of mergers with influence activities appears to be significantly stronger if the merging companies are larger and if the merging companies belong to the same industry. Results seem to hold both at the firm level, and at the industry level when looking at trade associations.

We also consider a possible mis-specification problem. Merging firms may ramp up their influence activities *before* the merger, possibly to increase the chance of the transaction being approved by regulatory authorities. However, we find no evidence in the data for such an anticipation effect. This null result may be a reflection of the fact that most mergers during our sample period were not scrutinized by US antitrust authorities (Wu, 2018).

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 model as the basis for our 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 misallocation of firm resources.

Callander et al. (2021) develop an integrated dynamic model of competition, innovation, and policy-making. They show the existence of a feedback loop between market power and political power. In equilibrium, the policy-maker "manages competition" to protect the incumbent, resulting in less competition and innovation.

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 combine them into a single integrated model featuring two blocks (a model of industrial organization model of competition under regulation, as well as a political economy model of lobbying for the regulation).[2] Our blending of these models creates the potential for feedback loops between product markets and politics.

[2] 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).

Much of the prior literature both in theory and empirics is motivated by trade, where domestic firms 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).[3] Although our data come from a developed economy within a democratic state (the U.S., 1999-2017), our model is not specific to a type of government. Similar business/government dynamics could appear under other institutional arrangements. State capture by business interests is a theme appearing in development economics (Canen and Wantchekon, 2022).

Empirical Studies of Special Interest Politics. Our paper also contributes to the empirical literature. Our analysis is related to a small but growing set of studies linking industry-level variables with lobbying activities.[4] 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. 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 indus-

[3] 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).

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

try concentration, a decline in the labor 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.

Mergers. Finally, we contribute some innovations to the study of mergers and acquisitions. From a firm's perspective, our results speak to a novel type of merger benefit: "non-market synergies" such as coordinated activity in government affairs (Baron, 1995; Feldman and Hernandez, 2021). We show how this form of merger benefit arises from externalities in the (uncoordinated) non-market choices of competing firms, and how the benefit of coordination can either increase or reduce overall lobbying. Our results show an example of a non-market strategy (lobbying to erect regulatory barriers to entry) complementing a marketplace strategy (merging and setting prices and quantities in product markets).

We also contribute methodological innovations about mergers. 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 and Hull, 2020; Goldsmith-Pinkham et al., 2020; Breuer, 2021), using logic similar to the Bartik (1991) instrument. 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 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 through 7 present our empirical strategies and results, and Section 8 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.

2.1 Competition

We begin with the industrial organization block, which we take to be a standard quantity competition model augmented with regulatory variables. Consider an industry with initially 2 firms.[5] Each firm can set its own quantity q_i, as well as lobby for some regulation

[5]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.

R. The resulting demand for firm i is assumed to be linear and equal to

$$P = A + R - Q$$

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

In the absence of lobbying, this would be a standard Cournot model that we have augmented with lobbying. The term R represents the effect of regulation on demand. We can think of $R \in \Re$ as government policy that is favorable to the incumbents in an industry. For instance, R can be thought of as the result of an additional cost τ 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 τ 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 domestic producers and τ 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 τ sufficiently high.

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

$$\pi_i = Pq_i.$$

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). Suppose we have $n = 2$ lobbies with profit $\pi_i(\mathbf{P})$ where $\mathbf{P}$ is a policy vector, that in our

case simply corresponds to $\mathbf{P} = \{R\}$ and π_i is the profit described above. The policy maker maximizes

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

where t_i is the lobbying efforts – which can be interpreted as bribes, campaign contribution, informational benefits, policy help, etc. – the regulator receives from lobby i and w is a generic welfare function. We can borrow from Bernheim and Whinston 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 lobbying effort $\hat{t}_i$, 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 lobbying effort $\hat{t}$.

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 lobbying efforts 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

$$w(\mathbf{P}) = -w\frac{\left(\mathbf{P} - \overline{\mathbf{P}}\right)^2}{2}$$

so that, in the absence of lobbying, the optimal policy for each dimension of the policy vector would be set at some $\overline{\mathbf{P}}$. The coefficients w 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]

In our case, we can normalize $\overline{R} = 0$ (just redefine the fixed component of demand to include $\overline{R}$). Therefore, in what follows we use $w(\mathbf{P}) = -wR^2/2$.

[6] As it will become apparent below, in our setting a sufficient condition is $w > 1/2$.

We make two comments about this setting. While at first sight the impact of R may look akin to an investment in R&D or advertising that shifts outwards the demand for a product, there are in fact two important difference. First, R is set by the regulator in the lobbying game, and not non-cooperatively by each individual firm as in standard R&D or advertising games. Second, the welfare effects are different as the counterfactual for a welfare assessment in our setting is one where lobbying does not happen and, e.g., foreign firms are allowed to enter in an industry.

2.3 Analysis of Duopoly

There are two stages. Firms first play, at time $t = 1$, the lobbying game with the regulator, when the policy and the transfers are determined. Then, at time $t = 2$, they play the competition game, when quantities are set. We solve the game backwards.

In the last stage at $t = 2$, standard calculations obtain

$$\pi_i = \frac{(A+R)^2}{9}.$$

Lobbying over the common component R can impact positively both firms.

We now turn to the first stage at $t = 1$.

2.3.1 Analysis

The policy maker selects R to maximize

$$2\frac{(A+R)^2}{9} - w\frac{R^2}{2}$$

with an interior solution (as mentioned earlier, we assume that w is large enough)

$$R^* = \frac{4A}{9w-4}. \tag{2}$$

Turning now to the lobbying spending, we have from Corollary 1 that the grand coalition constraint is binding and

$$\hat{t}_1 + \hat{t}_2 = w\frac{R^{*2}}{2} = \frac{8A^2w}{(9w-4)^2}.$$

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 the cheaper the social cost (low w). Notice in particular how transfers are convex in market size A.

In a symmetric equilibrium

$$\hat{t}_1 = \hat{t}_2 = \frac{4A^2w}{(9w-4)^2}. \tag{3}$$

2.4 The Consequences of a Merger

Imagine now the two firms merge to a monopoly. What is the effect on lobbying activity?

The profit of the merged firm, denoted as m, is $\pi_m = \pi_1 + \pi_2 = P(q_1 + q_2) = PQ$ with resulting equilibrium profits at $t = 2$

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

Turning to the lobbying game at $t = 1$, the policy maker selects the policy to maximize

$$\frac{(A+R)^2}{4} - w\frac{R^2}{2}$$

with an interior solution

$$R_m^* = \frac{A}{2w-1}. \tag{4}$$

The lobbying spending needs to compensate the regulator for the social loss

$$\hat{t}_m = w\frac{R_m^{*\,2}}{2} = \frac{A^2 w}{2(2w-1)^2}. \tag{5}$$

Comparing with the results from the previous section (no merger), the effect of a merger on the policy is positive because

$$R_m^* - R^* = \frac{Aw}{(9w-4)(2w-1)} > 0.$$

The effect of a merger on total lobbying transfers is also positive because if $R_m^* > R^*$, then also

$$w\frac{R_m^{*\,2}}{2} > w\frac{R^{*2}}{2}.$$

This leads to:

Proposition 1. *A merger increases equilibrium lobbying efforts.*

This result is due to an increase in the marginal value of lobbying. In a duopoly, the potential rents generated by an increase in regulation R are partly dissipated by competition between the two firms. This dissipation phenomenon would be even more obvious if there was a very large number of firms: all rent generated by R would be dissipated because competition would always bring profits down to zero. A merger to monopoly leads the two firms to take into account the price externality they impose on each other and allows them to fully capture the benefit of an increase in R. This in turn induces the two firms to increase their lobbying activity, leading to Proposition 1.

Note that there could be another reason why mergers lead to more lobbying activity, which is not captured by Proposition 1. Lobbying for regulation can be seen as a public-

good provision game. A higher R benefits all firms. In Grossman-Helpman's equilibrium, the public good is provided at the efficient level from the perspective of firms. There is no mis-coordination. One could imagine other models where some mis-coordination occurs, perhaps because of asymmetric information. In those settings, one should expect Proposition 1 to hold a fortiori as the merger to monopoly eliminates mis-coordination.

We also note that we have modeled regulation as a common good for the incumbents in an industry. The model could be easily extended to multiple types of industry regulation, which could push in the opposite direction compared to our results. For instance, there could be settings where regulation instead is a pure private good. This happens when regulation divides competitors by helping some at the expense of others. This seems 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.

2.5 Fixed Cost of Lobbying

In the baseline model, all firms always engage in lobbying, both before and after a merger. However, one feature of US lobbying is that a majority of firms spends zero dollars on lobbying activities. A merger could potentially have an effect on the *intensive margin* of lobbying by affecting the amount of activity of firms that were already lobbying before the merger. It could also have an effect on the *extensive margin* by affecting the number of firms that engage in lobbying at all.

To explore this phenomenon within our theoretical setup, we now assume that to lobby a firm must first incur a fixed set-up cost. A structural model and other empirical tests in Kerr et al. (2014) strongly suggest that up-front costs associated for companies entering the political process. Fixed costs are also an important component of Bombardini's 2008 model and data about firms' lobbying choices.

We model this issue by adding an initial stage, at $t = 0$, where each firm independently decides whether to incur a set-up cost F. In order to contribute the first dollar to the policy-maker or to start providing policy information, the firm must incur this cost F. Then, at stage $t = 1$, only the firms that have paid the fixed cost can eventually engage in the lobbying game. This can be thought of as setting a public policy department, and hiring staff with particular skills. We consider this as a decision that each firm makes individually (in contrast with the transfers and policy that are decided jointly with the regulator). In our data, we observe a distinction between lobbying done in house, as opposed to lobbying outsourced to third parties. Our description of the model suggests that the model results should be relevant especially for in-house lobbying, though in our empirical section we will check all types of lobbying.

2.5.1 No merger

Without a merger, let us first re-consider what happens at $t = 1$. The previous analysis has already considered the case when both firms engage in lobby. From (2) and (3) we obtain

$$\pi_{LL} \equiv \frac{(A+R)^2}{9} - \hat{t} = \frac{A^2 w}{9w-4},$$

where the subscript LL indicates that both firm lobby.

If none of the firm lobbies, then it is immediate that profits are

$$\pi_{NN} \equiv \frac{A^2}{9},$$

where the subscript NN indicates no firm lobbies.

If only one firm lobbies, then we need to analyze the asymmetric case. Adapting the same procedure as in the last section, there is now only one possible coalition. The policy maker selects R to maximize $\frac{(A+R)^2}{9} - w\frac{R^2}{2}$ with an interior solution $R^* = \frac{2A}{9w-2}$ and one

positive effort only $\hat{t} = \frac{2A^2w}{(9w-2)^2}$. The (asymmetric) profits of the firms are

$$\pi_{LN} \equiv \frac{(A+R)^2}{9} - \hat{t} = \frac{A^2w}{9w-2},$$
$$\pi_{NL} \equiv \frac{(A+R)^2}{9} = \frac{9A^2w^2}{(9w-2)^2},$$

where the first expression refers to the firm that lobbies and the second one to the one that does not (but free rides on it).

We can now turn to the first stage at $t = 0$ which is summarized in Figure 1.

Figure 1: Fixed Lobbying Cost

Firm 1/ Firm 2	Lobby	Don't lobby
Lobby	$\pi_{LL} - F$, $\pi_{LL} - F$	$\pi_{LN} - F$, π_{NL}
Don't lobby	π_{NL}, $\pi_{LN} - F$	π_{NN}, π_{NN}

The analysis of this initial first stage is helped by the fact that there is a clear and intuitive ranking of the gross payoffs:

$$\pi_{LL} > \pi_{NL} > \pi_{LN} > \pi_{NN}.$$

Define $k_2 \equiv \frac{\pi_{LL}-\pi_{NL}}{A^2} = \frac{4w}{(9w-2)^2(9w-4)}$ and $k_1 \equiv \frac{\pi_{LN}-\pi_{NN}}{A^2} = \frac{2}{9(9w-2)}$. We concentrate on the case when w is high enough, namely $w > 2(2+\sqrt{2})/9 \simeq 0.76$ so that it is $k_1 > k_2$. The following result follows immediately:[7]

Proposition 2. *If firms need to spend F in order to lobby, then*

- *If $F/A^2 \leq k_2$ there is lobbying, with both firms lobbying;*
- *If $k_1 \leq F/A^2 < k_2$ there is lobbying, with only one firm lobbying;*

[7] In case instead $1/2 < w < (2+\sqrt{2})/9 \simeq 0.76$, in the region between k_1 and k_2, there are no asymmetric equilibria with only one firm lobbying, while there are multiple equilibria with both lobbying or none lobbying.

- *If $F/A^2 < k_1$ there is no lobbying.*

The result tells that, in case lobbying involves a fixed cost, lobbying should be observed in those industries that are "large enough" (high A) compared to the set-up cost F. Instead, firms in more niche industries will find it too costly to spend the fixed costs to start with.

2.5.2 Merger

Whether the merged firm will spend the set up cost or not at $t = 0$ is immediate to analyze. Without spending its set-up cost, it will achieve the normal monopoly profits $\frac{A^2}{4}$. With the lobbying facilities it will instead earn, from (5),

$$\frac{(A + R_m)^2}{4} - \hat{t}_m - F = \frac{A^2 w}{2(2w - 1)} - F.$$

Thus the lobbying set-up costs F will be paid only iff net profits exceed $\frac{A^2}{4}$, which happens when

$$\frac{F}{A^2} < k_m \equiv \frac{1}{4(2w - 1)}.$$

Comparing the lobbying threshold in the merger case with those derived without mergers, it is immediate to show that $k_m > \max[k_1, k_2]$. The results is intuitive. It becomes more likely to pay the fixed set-up costs with a merger, both because of the higher effectiveness of lobbying with a merger, and because of less duplication of fixed costs. If one imagines that fixed set up costs (relative to the size of the market) are independent random draws for each firm, we can conclude:

Proposition 3. *With a merger, it becomes more likely to observe lobbying for a given market size.*

A merger increases lobbying both at the intensive margin *and* at the extensive margin.

2.6 Effect on the Whole Industry and Trade Associations

In the baseline model with a two-firm industry, the firms merge to monopoly. It is interesting to ask what the effect of the merger would be on the whole industry in a more general setting, including non-merging firms. We do it for two reasons. First, while the previous analysis showed some sensible economic mechanism, mergers to full monopoly are very rare. Hence it is important to check the robustness to a setting with many firms. Second, in our data we do have information about lobbying done by every firm in an industry, both individually or through industry-level trade associations. Contributions can thus come both from merging and non-merging firms. An analysis at the industry level allows us to study that.

Hence we extend our model to a setting with more than two firms. To do this in a standard Cournot set-up requires a small modification of the setup, because – as is well known – with at least three firms mergers may be unprofitable (the so-called Cournot "merger paradox"). We thus add a marginal cost of production in the pre-merger case, and a cost-saving element to the merger, so that the marginal cost goes down for the merged entity. As we discuss in the proof, in the presence of lobbying, concerns about the "merger paradox" are in any case much diminished.

The technical analysis follows very closely the steps we illustrated in Section 2.3 for the duopoly case, with the difference that we are now aggregating across all firms. More details are relegated to the Appendix where we show:

Proposition 4. *In an industry with n firms, a merger between two of them leads to an increase in lobbying efforts of the whole industry.*

3 Empirical Overview

We now turn to measuring this set of theoretical ideas in a sample of real companies. 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 literature in econometrics (Borusyak and Hull, 2020) propose design-based theory and methods to handle composite treatments. These new methods specifically address empirical settings where some inputs to the composite treatment are highly endogenous, and other inputs may be influenced by quasi-random variation.

We adapt and apply 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 are 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. Because of our emphasis on timing, we use a set of panel data methods outlined below.

By focusing on timing, we do not claim that firms' choices of merger partners are completely nonrandom. 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]

[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 about why treatments could vary.

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 (original, underlying firms), 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 siblings) for all periods in the sample, and leverage *within-composite firm variation* over time. Composite firms do not exist in standard merger databases, but can be assembled from the standard datasets about mergers and their timing. 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, 42% are involved in multiple mergers or acquisitions.[9] 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 58% of all lobbying spend.[10] Such firms are often both targets and acquirers in the same sample. Appendix C describes why these present challenges both for representing the phenomena for identification and standard errors, and how our composite firm representation addresses the challenges.

[9] This number rises to 68% if unlisted companies are included.
[10] This number rises to 83% if unlisted companies are included.

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 Equations

Composite-Firm Panel Regressions. Our results come from estimating two panel regressions. The first examines a composite firm panel:

$$\sum_{f \in \mathcal{F}_{it}} y_{ft} = \beta_0 + \beta_1 \text{MergerIndex}_{it} + \beta_2 X_{it} + \delta_i + \gamma_t + \epsilon_i. \tag{6}$$

y_{ft} represents political influence spending of component 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, $\sum_{f \in \mathcal{F}_{it}} y_{ft}$ 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.

We can also extend this specification by using different outcome variables. A particularly interesting outcome is the extensive margin, or the first political activity of a particular type in the history of the composite firm. We create binary variables that begin as zero, and become one the first time that any compontent firm lobbies (at all, and through in-house lobbyists) or contributes through a corporate PAC.

This specification allows us to separate the effects of merging the merging firms, using the non-merging firms as controls. Of course, non-merging firms may also increase their

spend in reaction to the merger. This is part of our motivation for our next specification.

Industry Panel Regressions. The second specification is at the industry level:

$$\sum_{f \in \mathcal{F}_{it}} y_{ft} = \beta_0 + \beta_1 \text{MergerIndex}_{it} + \beta_2 X_{it} + \delta_i + \gamma_t + \epsilon_i. \tag{7}$$

This is identical to Equation (6), but the interpretations are now different. y_{ft} still represents political influence spending of component firm f at time t. $\mathcal{F}_{it}$ now represents the industry partition for an industry i at time t. $\sum_{f \in \mathcal{F}_{it}} y_{ft}$ describes the sum of all lobbying of all component firms in industry i at time t. We include fixed effects for industries (δ_i) and time periods (γ_t). Standard errors are clustered by industry. **[Bo: what if element of the composite firms belong to different industry? How frequent in the data?]**

Because of the level of aggregation, the sample size will decrease dramatically. However, industry-level regressions allow us to measure additional, potentially important effects. As with before, we examine federal lobbying spend and donations from political action committees. However, we can now measure whether total spend increases (including non-merging firms) along with mergers. We can also measure whether industry association groups increase their lobbying and campaign finance spend.

Coefficent of Interest. In both specifications, the coefficient of interest is β_1, the coefficient on the MergerIndex_{it}. In our main specification, we examine a simple count of the number of component firms within each composite firm i at time t (or, component firms inside each industry for Equation 7). This decreases each time a merger occurs, and allows β_1 to be interpretable as the effect of a merger.[11] Because a merger corresponds to a *decrease* in the number of firms within the bundle, a negative coefficient means that political spending *increased* after the merger.

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

Identification. 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.[12] 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). 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'Haultfoeuille, 2020; Freyaldenhoven et al., 2021; Goodman-Bacon, 2021; Athey and Imbens, 2022). Our second is an exposure design, akin to a Bartik instrument (Bartik, 1991; Borusyak and Hull, 2020; Goldsmith-Pinkham et al., 2020; Breuer, 2021). In this approach, we develop an instrument for MergerIndex_{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 from 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

[12] In our notation, $Revenue_{it} = \sum_{f \in \mathcal{F}_{it}} r_{ft}$ where r is revenue of each component firm.

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).[13] This sample is similar to those used in other studies of mergers between public firms.[14]

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.[15] 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).[16] For each acquisition, SDC Platinum identifies the acquirer, target and dates associated with the merger.[17] The date variables are particularly important in our analysis as they allow us to use pre-/post- variation in merger status.

Using the methods in Appendix E, we produce the composite firm graph. This proce-

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

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

[15] 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.

[16] 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.

[17] 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.

dure 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 12K 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 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.[18]

4.3 Political Influence Data

Our federal lobbying data comes from *LobbyView*,[19] an NSF-funded project compiling federal lobbying data (Kim, 2017, 2018). These data have been used in several other pa-

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

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

pers.[20] 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.[21] 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 as lobbying performed by external 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 come from the Center for Responsive Politics' *OpenSecrets* project.[22] Other papers have used this data (Blanes 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 "Super PACs" (PACs with greater spending discretion), and these contributions are included in our dataset.

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

4.4 Industry Trade Association Data

Our data about lobbying and campaign contributions does not directly identify trade associations. To address this issue, we match the names of each lobbying and donation group in the OpenSecrets data against a set of known trade associations. By matching against a list of known trade associations, we can separate trade associations from other organizations within an industry (such as smaller, non-public companies).

To be classified as a trade association, we require that a lobbying group a) not be linked to a specific company, and b) not be classified by OpenSecrets as a "Ideology/Single-Issue" group. In addition, the group would have to meet at least one of the three criteria:

1) Appears in FEC Committee Data categorized as a trade association,[23] or

2) Appears in the Directory of Associations dataset,[24] or

3) Appears in IRS database of non-profits, with activity codes relating to industry, business or professional associations.[25]

We used text matching to match the names exactly (after removing common, non-identifying words and standardizing abbreviations). While the data sources above are not necessarily comprehensive, they give us broad coverage of industry associations.

The procedure above delivers a set of industry and trade associations, each with an industry identifier that uses the hand-coded OpenSecrets industry classification system.

[23] https://www.fec.gov/data/browse-data/?tab=bulk-data, documentation at https://www.fec.gov/campaign-finance-data/committee-master-file-description/. Each commitee has an "interest group category" containing one of six categories, one of which (T) represents "Trade association."

[24] https://directoryofassociations.com/, this is a database of about 38K associations.

[25] The IRS nonprofit base is at https://www.irs.gov/charities-non-profits/tax-exempt-organization-search-bulk-data-downloads. Each nonprofit can list up to three activity codes as its main objective. Non-profits that listed activity codes 200-249 in their three were classified as trade associations. Activity codes 200-229 corresponds to "Business and Professional Organizations." Codes 230-249 correspond to "Farming and Related Activities" which contains industry groups for agriculture. No other set of IRS industry codes corresponded to trade organizations. The full list of activity codes can be seen https://www.irs.gov/pub/irs-tege/p4838.pdf.

Our sample includes ≈60 industries in the OpenSecrets classification system.[26] When necessary, we map our trade association data to other industry classifiers using a crosswalk file developed by users of the OpenSecrets data.[27]

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)	54.09	558.41	0.00	0.00	0.00	0.00	40365.12
Lobbied at all (per Half Year)	0.08	0.23	0.00	0.00	0.00	0.00	1.00
In-House Lobby Spend ($1K, per Half Year)	36.33	458.92	0.00	0.00	0.00	0.00	37828.85
Lobbying Intermediary Spend ($1K, per Half Year)	17.76	139.79	0.00	0.00	0.00	0.00	7182.46
Lobbied at all (ever)	0.16	0.37	0.00	0.00	0.00	0.00	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
Ever M&A	0.10	0.31	0.00	0.00	0.00	0.00	1.00
# of Component Firms	1.24	1.23	1.00	1.00	1.00	1.00	39.00

Notes: This table displays simple summary statistics for all composite firms and all periods in our sample.

4.5 Summary Statistics

Tables 1-2 display summary statistics about our composite firms. Six 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**. 45% of composite firms have been involved in a merger, although most of these mergers are acquisitions

[26] The industry categorizations are visible at this URL. In total there are approximately 100 industries, but some industries have no constituency in our Compustat sample of (mostly) public firms.

[27] https://groups.google.com/g/opensecrets-open-data/c/nXYSeFrtwxk/m/NXRoVQhoBwAJ

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

	Mean	Std.Dev	Min	P25	P50	P75	Max
Years in Sample	14.36	5.78	0.50	9.50	18.50	19.00	19.00
Avg Revenue ($10M, per Half Year)	274.98	902.06	0.00	2.84	38.04	164.74	18359.17
Lobby Spend ($1K, per Half Year)	335.09	1355.80	0.16	7.11	28.96	138.00	40365.12
Lobbied at all (per Half Year)	0.50	0.35	0.03	0.16	0.45	0.86	1.00
In-House Lobby Spend ($1K, per Half Year)	225.06	1123.69	0.00	0.00	0.00	40.92	37828.85
Lobbying Intermediary Spend ($1K, per Half Year)	110.03	333.07	0.00	6.05	23.34	78.42	7182.46
Lobbied at all (ever)	1.00	0.00	1.00	1.00	1.00	1.00	1.00
PAC Donations ($1K, per Half Year)	13.05	60.22	0.00	0.00	0.00	4.57	1903.46
PAC Donations$>$ 0 (per Half Year)	0.25	0.37	0.00	0.00	0.00	0.50	1.00
PAC Donations$>$ 0 (Ever)	0.38	0.48	0.00	0.00	0.00	1.00	1.00
Individual Donations ($1K, per Half Year)	2.74	8.89	-1.75	0.00	0.13	1.61	157.41
Individual Donations$>$ 0 (per Half Year)	0.19	0.20	0.00	0.00	0.13	0.32	1.00
Individual Donations$>$ 0 (Ever)	0.71	0.45	0.00	0.00	1.00	1.00	1.00
Individual + PAC ($1K, per Half Year)	15.78	65.12	-1.75	0.00	0.48	7.63	2011.94
Individual + PAC$>$ 0 (per Half Year)	0.34	0.36	0.00	0.00	0.20	0.62	1.00
Individual + PAC$>$ 0 (Ever)	0.74	0.44	0.00	0.00	1.00	1.00	1.00
Ever M&A	0.32	0.47	0.00	0.00	0.00	1.00	1.00
# of Component Firms	1.99	2.69	1.00	1.00	1.00	2.00	39.00

Notes: This table displays simple summary statistics for all composite firms in our sample that lobby in at least one period.

of small, unlisted companies. 10% of our composite companies feature a merger between Compustat-listed companies.

2. **Political influence is rare (per firm) but increasing over time**. 84% of composite firms in our data have no lobbying, at any time during our sample, in any component firms. Similarly, 92% of composite firms have no corporate PAC, for any composite firm, for any time during our sample. On the individual donor side, only 29% of composites have at least one individual donor reported 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.

   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.

6. **Political Influence is Persistent Over Time.** Once firms become politically active, they remain active over time. In our data, firms are active in lobbying in about two-thirds of all half-year periods following their first lobbying spend. Following the establishment of an in-house lobbying operation, they are active in 87% of the remaining half years. On the campaign contributions side, their PAC is active in about 76% of periods after the PAC's first spend.[28]

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 1-3 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 over half of a million dollars on

[28] Kerr et al. (2014) finds similar results about persistence.

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)	21.29	334.31	-313.02***
Lobbied at all (per Half Year)	0.06	0.30	-0.24***
Lobbied at all (ever)	0.12	0.50	-0.38***
In-House Lobby Spend ($1K, per Half Year)	12.46	240.20	-227.73***
Lobbying Intermediary Spend ($1K, per Half Year)	8.82	94.11	-85.29***
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	1.00	3.33	-2.33***

Notes: This table displays average differences between composite firms that merge and composite firms that do not.

lobbying per year ($670K) 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 2 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 emerge 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).[29]

5 Panel Event Study

Panel event studies are a type of econometric model studied by De Chaisemartin and d'Haultfoeuille (2020); Freyaldenhoven et al. (2021); Goodman-Bacon (2021); Athey and Imbens (2022). In this approach, estimation of Equation (6) 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 (6) 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.

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 include firm-specific political cycle effects,[30] as well as controls for differential revenue effects depend-

[29] 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.

[30] Our firm-specific political cycle controls would capture the possiblity that "Walmart tends to spend a

ing on the number of mergers during 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 challenge that is unaddressed by this specification is the possibility of pre-merger increases in lobbying activity. 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. Note that 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. We address this potential with an additional specification controlling for anticipation effects (the results are summarized in the next section and reported in Appendix G).

5.1 Results: Composite Firm Panel

Table 4: **All Firms, Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-74,286**	-68,934**	-4,470*	-3,898
	(33,691)	(28,188)	(2,382)	(2,514)
Additional Controls		Y		Y
Observations	223,043	223,022	223,043	223,022
R^2	.79	.83	.32	.47

Notes: This table shows results on lobbying and PAC donations using our panel event study specification.

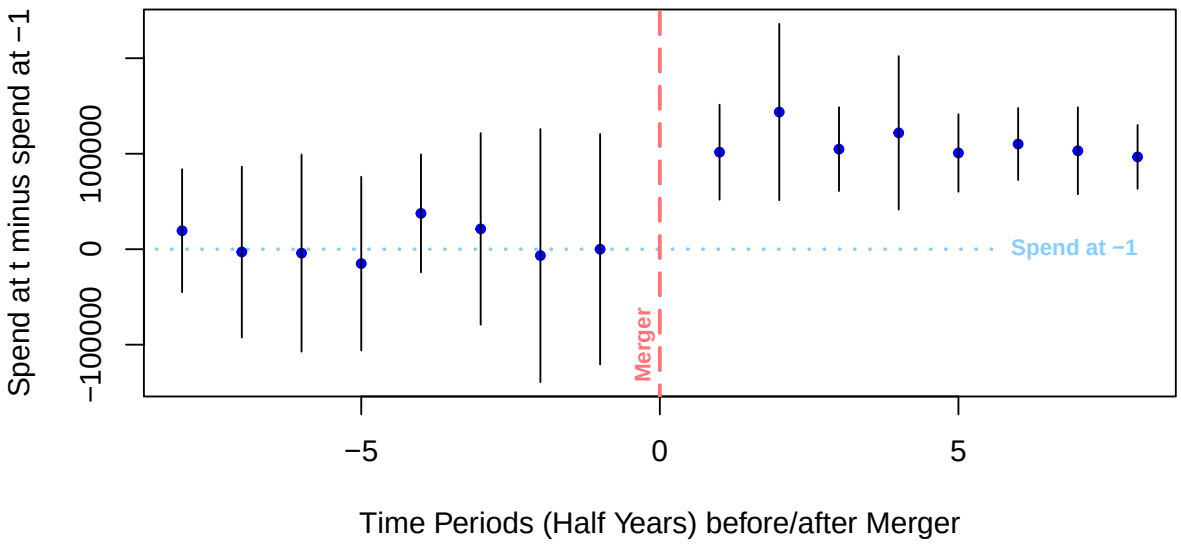
Table 4 shows results on lobbying and PAC donations using our main specification

lot in the midterms," or "Boeing spends a lot during the presidential election years" and etc. To implement this, we codify each half-year in our sample based on its timing within a four year (eight half-year) political cycle between presidential elections. The main effect of political cycles is absorbed by our half-year fixed effects. We then interact these cycle indicators with firm identifiers to produce firm-specific political cycle effects.

in Equation (6). Columns 1 and 3 include two-way fixed effects and revenue controls. Columns 2 and 4 contain the additional controls described above.

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). Our results suggest the average merger increases lobbying spend by $140,000 per year (column 2), while the impact on PAC donations amounts to almost $8,000 per year (column 4). Results are robust to using HHI instead of the number of component firms as an index of concentration (see Appendix L).

Figure 2: **Lobby Spending: Event Study Plots**



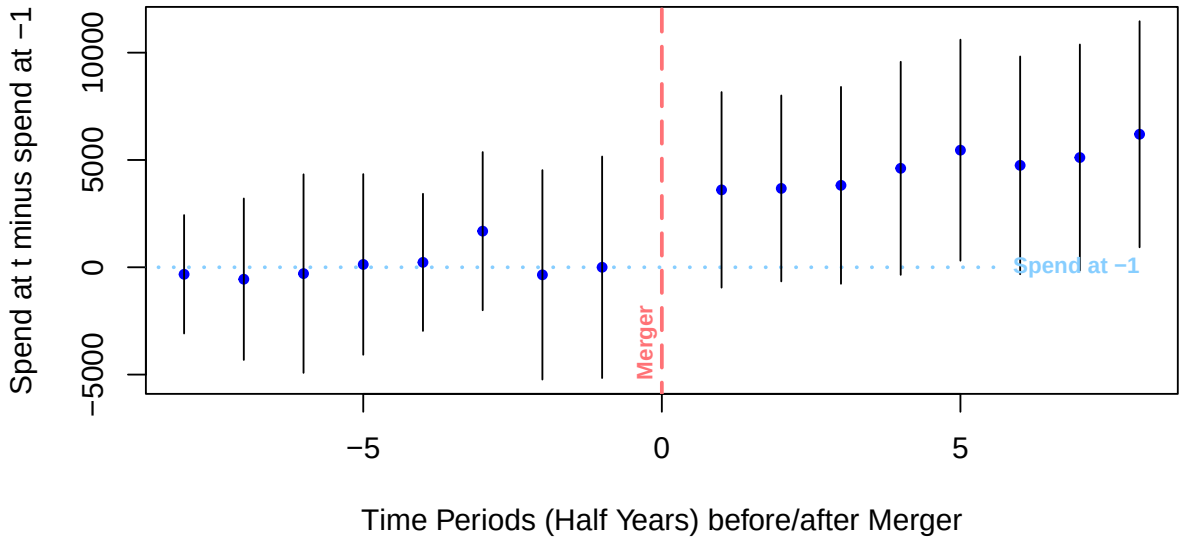
Notes: This figure shows an event study plot showing displaying differences before and after the merger (window length = eight half years before/after), using our event study design. Each point bar represents the cumulative effect of the merger on per- half year spend.

To visualize these effects, Figures 2 and 3 display event study plots. Each point bar represents the cumulative effect of the merger on per-period spend at each period of time.[31]

[31]These plots include a window of 8 periods, or four years, on either side of the merger. In some approaches to event study plots, coefficients are estimated to place additional bars on the plot that aggregate for all pre- and post- window observations. We have not estimated these coefficients as they significantly decrease our sample size.

Although some data points are estimated noisily, the broad pre/post effects are visible in the plot.

Figure 3: **PAC Donations: Event Study Plots**



Notes: This figure shows an event study plot displaying spending differences before and after the merger (window length = eight half years before/after), using our event study design. Each point bar represents the cumulative effect of the merger on per- half year spend.

We also probe the robustness of our results to pre-merger anticipation effects (See Appendix G). One could imagine that merging firms may engage in lobbying activities to get the merger approved. However, our data show no evidence of increased lobbying or campaign spending in the six months that precede the merger.

This null result is consistent with the observation that in the period under consideration the US antitrust authorities scrutinized a small proportion of mergers (Wu, 2018). Between 2010 and 2019, the Federal Trade Commission and the Department of Justice issued "Second Requests" to between 2.2% and 3.9% of transactions depending on the year (Simons and Delrahim, 2020). This means that in each of those years over 95% of proposed mergers were approved within 30 days with no additional information requests.

Heterogeneity: Size and Similarity. Our specification allows us to examine heterogeneity across different types of firms. Our theory features two aspects in particular. First, it is a theory of horizontal mergers of similar firms. Second, our theory intuitively should apply particularly to "large" firms, especially if there are fixed costs associated to lobbying.

We can operationalize these concepts using our data. For size, we use revenue. We sum all revenue across the entire sample for each composite firm, and examine companies above and below the median.[32] In Table 5, we find that although mergers broadly increase lobbying spend across both sets of firms, the effects on large firms are bigger.

Table 5: **Heterogeneity by Firm Size (Panel Event Study)**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-15,835	-66,208**	-823	-3,788
	(17,269)	(28,513)	(1,107)	(2,513)
Additional Controls	Y	Y	Y	Y
Sample	Below Median Revenue	Above Median Revenue	Below Median Revenue	Above Median Revenue
Observations	76,773	146,249	76,773	146,249
R^2	.55	.84	.72	.47

Notes: This table shows results on lobbying and PAC donations using our panel event study specification. Results are separated by firm size (measured by revenue). For additional discussion of this specification, see "Heterogeneity: Size and Similarity" in Section 5.

Our theory also suggests that a merger of more closely-related firms would have a bigger effect. Such firms are more likely to have common, overlapping interests. To measure close vs. distant mergers, we use data about the industry categorizations of component firms (measured by NAICS codes). For each composite firm, we measure the number of unique NAICS codes at the beginning of the sample. Composite firms with a high number of unique NAICS codes represent firms that merge across industries (distant), while those with few unique NAICS codes represent within industry mergers.

[32] 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.

Tables 6 shows our close-vs-distant results. We interact our MergerIndex_{it} variable with our measure of distance. Our findings suggest that mergers among more distant firms have a lower overall increase in lobbying. The effect on political activity is instead higher when the merging firms are within the same industry.

Table 6: **Heterogeneity: Close vs Distant Mergers (Panel Event Study)**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-91,572**	-91,351**	-3,027	-2,480
	(41,214)	(35,909)	(2,555)	(2,160)
# Component Firms × Unique NAICS	8,204**	8,360**	105	70
	(3,816)	(3,866)	(207)	(146)
Additional Controls		Y		Y
Observations	223,043	223,022	223,043	223,022
R^2	.79	.83	.32	.48

Notes: This table shows results on lobbying and PAC donations using our panel event study specification. We include interactions with how many industries are included among the merging firms using NAICS codes. For additional discussion of this specification, see "Heterogeneity: Size and Similarity" in Section 5.

Extensive Margins. The raw data show that many firms do not lobby at all. In our stylized model, we rationalized this by adding a fixed lobbying cost. The model would predict that a merger would still increase the probability that a firm starts lobbying. That is, mergers increase lobbying at the extensive margin. Also, we argued that the theory captures particularly in-house lobbying than outsourced lobbying. Table 7 shows extensive margin results for all firms. **[Bo: can you briefly describe what you did?**

Results suggest that mergers increase both lobbying and PACs at the extensive margin. Following a merger, it is more likely that a firm that was not doing lobbying prior to the merger, starts doing that. Also, when we can distinguish between in-house and outsourced lobbying, effects are stronger and more statistically significant for the former.

Appendix Tables 5 and 4 study extensive margin effects heterogeneously. We show

larger effects for mergers involving larger firms and horizontal mergers. This is again in line with the simple theoretical predictions that showed that lobbying is more likely to be started in large rather than niche industries.

Given these results, one might also wonder about intensive margin effects. We study this in Appendix I by examining how mergers change political influence spend among firms that were already lobbying and/or donating via PACs. Because these activities are rare, our sample for this analysis is much smaller. While the coefficients are all negative, we are underpowered to rule out large or small effects.

Table 7: **All Firms, Extensive Margin Effects**

	(1) Started In-House Lobbying	(2) Started In-House Lobbying	(3) Started Outsourced Lobbying	(4) Started Outsourced Lobbying	(5) Started PAC	(6) Started PAC
# Component Firms	-.015***	-.015***	-.0039	-.0068*	-.016***	-.017***
	(.0036)	(.0037)	(.0035)	(.0038)	(.004)	(.004)
Additional Controls		Y		Y		Y
Observations	223,043	223,022	223,043	223,022	223,043	223,022
R^2	.86	.88	.83	.86	.88	.9

Notes: This table shows results on extensive margins (first lobbying and PAC donations in firm history) using our panel event study specification. For additional discussion of this specification, see "Extensive Margins" in Section 5.

5.2 Results: Industry and Trade Association Panel

We now turn to the results at the industry level, as described by Equation (7). **Bo: please say more again on what you did, what's an "industry" etc.**

Table 8 presents the findings. The top panel looks at the impact of a merger on total spend on lobbying and PACs made by industry trade associations in a given industry. The bottom panel instead reports the effect of a merger on spending by everyone in that industry.

As expected, the sample size is reduced dramatically by the aggregation. The number

of observations goes down from 220k for the composite level analysis, to just over 2K for the industry level analysis. Despite this drastic sample reduction, we do observe that a merger still has an an impact that is also statistically significant at the level of industry trade associations. The top panel also indicates that an industry association reacts in a similar way to a merger both on lobbying and on PACs. Instead, results at the industry level are more fuzzy. We will revisit these results in the next section under a different empirical strategy.

Table 8: **Industry Analysis, Panel Event Study**

Panel A: Trade Associations

	(1) Lobby Spend, Industry Associations	(2) Lobby Spend, Industry Associations	(3) PAC Spend Industry Associations	(4) PAC Spend Industry Associations
# Unmerged Firms	-121,330*	-129,096**	-60,443	-97,576**
	(63,748)	(52,032)	(36,366)	(46,144)
Additional Controls		Y		Y
Observations	2,212	2,212	2,212	2,212
R^2	.53	.63	.62	.69

Panel B: All Corporate Spend

	(1) Lobby Spend, Full Industry	(2) Lobby Spend, Full Industry	(3) PAC Spend, Full Industry	(4) PAC Spend, Full Industry
# Unmerged Firms	-97,675	-186,005	9,149	6,409
	(106,862)	(116,867)	(6,509)	(7,038)
Additional Controls		Y		Y
Observations	2,212	2,212	2,212	2,212
R^2	.89	.9	.58	.68

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5.

6 Differential Exposure Design

Our second approach to identification is an exposure design (Borusyak and Hull, 2020; 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 arrive in waves (Nelson, 1959; Gort, 1969; Weston and 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 CEO envy (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 instrument has a strong first stage.

6.1 Implementation

To implement this design we again use Equation (6), 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 MergerIndex$_{it}$, 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 MergerIndex 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:

$$W_{it} = \frac{\sum_{j:S_i \neq S_j} MergerIndex_{j,t}}{N_{S_i \neq S_j}} \tag{8}$$

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 each focal observation. By leaving out the entire industry, our goal is to ensure that we measure shocks arising from economy-wide trends and that are not part of the endogenous dynamics among close competitors. We define the focal industry broadly by using the top level NAICS category for each composite firm in its initial period.[33] As a result, the value of W_{it} differs not only over time, but also across observations within the same time period. However, the main purpose of W_{it} 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 cross-sectional feature of each composite firm at period zero. It represents the firm's exposure to merger waves. We call this term K_{i0}. This term already appears in Equation (6) as part of the composite firm fixed

[33]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.

effects; it enters our IV strategy again when we create an instrument for MergerIndex$_{it}$ using 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 the MergerIndex$_{it}$ 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 NAICS industry. In this representation, entire industries (rather than particular firms) have a greater or lower exposure to merger waves.

Either way, high K_{i0} indicates a high propensity to merge in the overall sample period. However, the specifications of K_{i0} say nothing about the *timing* of mergers, only about the overall propensity over the sample period. The timing could be anything, for example, a high exposure (K_{i0}) firm could be completely unresponsive to merger waves by (for example) doing all mergers in the first period and remaining inactive for the rest of the sample. There are many ways for a high K_{i0} firm to avoid complying with merger waves. We integrate the timing aspect into the other term in the instrument (the wave term W_{it}, described above).

We now have the main components of our instrument. Our instrument is $Z_{it} = W_{it}K_{i0}$, the product of the wave term (W_{it}) and the exposure term (K_{i0}). Because 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 identity of merging partners (and thus the level of exposure) as endogenous. As in our earlier design, identification comes from merger timing.

We use this Z_{it} to instrument the MergerIndex$_{it}$ term in Equation (6) by using the fol-

lowing first stage regression:

$$\text{MergerIndex}_{it} = \lambda_0 + \lambda_1 Z_{it} + \lambda_2 X_{it} + \zeta_i + \tau_t + \eta_i. \tag{9}$$

This is the same regression as Equation (6), but the dependent variable is now MergerIndex_{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 J.

6.2 Results

We start with results on composite firms. Table 9 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 (and also with larger standard deviations). This is consistent with our analysis in Appendix J, showing that larger firms were more likely to be compliers to our instrument. The average merger identified by this design increases lobbying spend over \$200K per year (columns 1 & 2), while the impact on PAC donations is around \$10K per year (columns 3 & 4).

Extensive Margins. Results are shown in Table 10. Across all specifications, a merger increases lobbying spend at the extensive margin. As in the panel event study, results are

Table 9: **Exposure Design Results**

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

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-106,615**	-101,684***	-9,497*	-9,456
	(42,297)	(37,871)	(5,494)	(6,364)
Controls		Y		Y
F-Statistic	1,361	1,213	1,361	1,213
Observations	221,994	221,994	221,994	221,994

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	-140,740*	-164,789**	-18,967	-18,868
	(83,248)	(77,418)	(12,266)	(14,178)
Controls		Y		Y
F-Statistic	91	22	91	22
Observations	221,994	221,994	221,994	221,994

Notes: This table shows results on lobbying and PAC donations using our exposure specification in described in Section 6.

particularly strong for in-house lobbying compared to outsources lobbying.[34]

6.3 Results: Industry and Trade Association Panel

The final set of results relate to the aggregate industry level and are presented in Table 11. When compared to Table 8, findings are remarkably in line with those we found with the event study design.

[34]For the sake of brevity, we do not report results on heterogeneity (size and similarity) using the exposure design.

Table 10: **Extensive Margin Effects, Exposure Design**

	(1) Started In-House Lobbying	(2) Started In-House Lobbying	(3) Started Outsourced Lobbying	(4) Started Outsourced Lobbying	(5) Started PAC	(6) Started PAC
# Component Firms	-.023***	-.021***	-.0093*	-.0099*	-.019***	-.02***
	(.005)	(.0052)	(.0051)	(.0056)	(.0047)	(.0047)
Controls		Y		Y		Y
F-Statistic	1,361	1,213	1,361	1,213	1,361	1,213
Observations	221,994	221,994	221,994	221,994	221,994	221,994

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We include interactions with how many industries are included among the merging firms using NAICS codes. For additional discussion of this specification, see Section 5.

Table 11: **Industry Analysis, Exposure Design**

Panel A: Trade Associations

	(1) Lobby Spend, Industry Associations	(2) Lobby Spend, Industry Associations	(3) PAC Spend Industry Associations	(4) PAC Spend Industry Associations
# Unmerged Firms	-121,716*	-128,717**	-62,620	-101,288*
	(64,746)	(54,606)	(42,147)	(52,830)
Controls		Y		Y
F-Statistic	733	359	733	359
Observations	2,212	2,212	2,212	2,212

Panel B: All Corporate Spend Per Industry

	(1) Lobby Spend, Full Industry	(2) Lobby Spend, Full Industry	(3) PAC Spend, Full Industry	(4) PAC Spend, Full Industry
# Unmerged Firms	-115,296	-191,881*	8,645	5,942
	(97,347)	(114,433)	(7,163)	(7,708)
Controls		Y		Y
F-Statistic	733	359	733	359
Observations	2,212	2,212	2,212	2,212

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5.

7 Firm-Level Political Risk

In our theory section, a merger helps coordinate the positive externalities of lobbying for a common cause. However, another mechanism could also produce this increase: After a merger, regulators could increase scrutiny as a result of negative attention from third parties. Because of this attention, the merged entity could increase political spending — not because of coordinated externalities, but in response to a more adversarial environment.

To investigate this possibility, we examine measures of *firm-level political risk*. If the political environment became more negative after a merger, then we may expect exposure to political risk to increase after the merger. A highly-cited paper by Hassan et al. (2019) develops an empirical strategy for measuring firm-level political risk over time. The approach uses text-mining methods to quantify "[T]he share of [a firm's] quarterly earnings conference calls that they devote to political risks." We use the measures from this paper as the outcome variables in our panel specifications above.

The Hassan et al. (2019) metrics not only contain an overall measure of firm-level risk, but additional detailed data about the *type and direction* of political risk. The primary measure in Hassan et al. (2019) is the overall level of political risk. However, they also score the sentiment of the discussions. Higher sentiment indicates more positive discussion. In addition, the data contains detailed breakdowns about the level of political risk across eight topics: Economic policy & budget, environment, trade, institutions & political process, health, security & defense, tax policy, and technology & infrastructure. Our main results include the economic policy & budget variable as an outcome, but we include the full set of categories in the appendix.

Political risk measures are available only for the subset of firms that have regular investor calls. Appendix K contains descriptive statistics for firms that are in our investor call sample (compared to ones that are not), and other details of how we integrated this data into our composite firm panel. Our panel of composite firms that use investor calls is about one third of the size of the sample as a whole. Firms with regular investor calls are

generally larger and more politically active.

Table 12 contains our results using both our panel event study (Panel A) and exposure designs (Panel B). For ease of interpretation, we normalize all measures of political risk. In Columns 1 and 2, we replicate our main results on lobbying and PAC spending on the subsample. Our results on this subsample have the same direction and size as our main results – although in some cases less precise, partly as a result of the smaller sample size (31% of the main sample).

Table 12: **Firm-Level Political Risk**

Panel A: Panel Event Study

	(1) Lobby Amount	(2) PAC Contribs	(3) Political Risk	(4) Econ. Policy Political Risk	(5) Political Sentiment
# Component Firms	-40,267	-1,539	-.0043	-.0069	-.0099
	(27,186)	(1,643)	(.0082)	(.0077)	(.01)
Additional Controls	Y	Y	Y	Y	Y
Observations	69,789	69,789	69,789	69,789	69,789
R^2	.88	.51	.59	.58	.6

Panel B: Exposure Design, Implementation #1, K_{i0} = Initial # of component firms

	(1) Lobby Amount	(2) PAC Contribs	(3) Political Risk	(4) Econ. Policy Political Risk	(5) Political Sentiment
# Component Firms	-69,007*	-10,509	-.012	-.016	-.029**
	(40,622)	(8,386)	(.011)	(.011)	(.014)
Controls	Y	Y	Y	Y	Y
F-Statistic	276	276	276	276	276
Observations	69,456	69,456	69,456	69,456	69,456

Notes: This table examines firm-level political risk. We have firm-level political risk scores for approximately 1/3rd of our sample using the method in Hassan et al. (2019). We use these values as outcomes. For additional discussion, see Section 7.

The remaining columns show the effect of mergers on political risk, particularly risks around economic policy. We find no evidence of higher political risk after a merger (in any specification). Our estimates generally fail to reject zero, with standard errors small

enough to rule out large effects. In one case, we obtain statistically significant results in the opposite direction: Political sentiment becomes more positive after the merger (although the size of this effect is small). Table 10 contains all measures of political risk,[35] and Appendix L contains HHI versions.

8 Conclusion

Our paper has tried to contribute to the lively debate on the increase in industry concentration and changes in business dynamics (Philippon, 2019; De Loecker et al., 2020; Dube et al., 2020), as well as its causes and policy implications (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 the data. Our theoretical model takes a standard model of competition, and extends it to include regulatory variables. While our data come from a developed economy within a democratic state, our model is agnostic about the form of government (or the level of development). In countries with less democratic accountability, some of the forces in our model could be stronger or weaker. State capture by business interests is an issue appearing in development economics (Canen and Wantchekon, 2022).

Our data from the U.S. suggests that firms increase lobbying after mergers. This pattern survives a number of robustness checks and alternative stories. The association is stronger for large firms, and for firms in the same industry.

We see our set of findings not as conclusive, but we hope it is a starting point for richer and deeper analyses of the political effect of mergers. By focusing on specific industries, future research could explore the link between lobbying activity and government regulation. When a merger occurs, which policies is the additional influence activity directed

[35] In total we study ten measures of polical risk. Trade policy is one area where we do find a small statistically significant differences in risks after mergers.

toward? In turn, how do those policies affect the firms' profit and consumer welfare in that industry?

These 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 delivered through the channel of regulation rather than price, quantity or innovation.

Investigating this consumer harm is beyond the scope of this paper, but it is a natural avenue for future research.

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Appendix: For Online Publication

A Theoretical Appendix: Proof of Proposition 4

Pre-merger equilibrium. There are n identical firms. The demand function is still $P = A + R - Q$. Assume a marginal cost, identical form each firm, normalized to 1. The profit of one firm is

$$\pi_i = (A + R - Q)\, q_i - q_i.$$

The first-order condition for profit maximization yields

$$A + R - Q - q_i - 1 = 0.$$

Summing over i we obtain

$$Q = \frac{n}{n+1}\left(A + R - 1\right).$$

In equilibrium, firm profit and industry profit are respectively

$$\begin{aligned} \pi_i &= \frac{(A + R - 1)^2}{(n+1)^2}, \\ \Pi &= \frac{n\,(A + R - 1)^2}{(n+1)^2}. \end{aligned} \tag{10}$$

Post-merger equilibrium. Now suppose firms 1 and 2 merge into a firm that we denote as 12. We assume the marginal cost of the merging firms goes down by s. The profit function of the merged firm is:

$$\begin{aligned} \pi_{12} &= (A + R - Q)\,(q_1 + q_2) - (1 - s)\,(q_1 + q_2) \\ &= (A + R - Q)\, q_{12} - (1 - s)\, q_{12}. \end{aligned}$$

The first-order condition for all the other firms still yields

$$q_i = A + R - Q - 1.$$

For the merged firm, instead it is

$$A + R - Q - q_{12} - (1 - s) = 0,$$

yielding

$$q_{12} = A + R - Q - (1 - s)\,.$$

Summing quantities over firms, and noting that $Q = (n-2)q_i + q_{12}$, we get

$$Q = \frac{(n-1)}{n}(A + R - 1) + \frac{s}{n}.$$

The profit of a non-merged firm is

$$\pi_i = \frac{(A + R - 1 - s)^2}{n^2},$$

while that of the merged firm is

$$\pi_{12} = \frac{(A + R - 1 - s + ns)^2}{n^2}. \tag{11}$$

Finally, total industry profit is

$$\begin{aligned}\Pi &= (n-2)\,\pi_i + \pi_{12} \\ &= \frac{(n-1)\,(A + R - 1)^2}{n^2} + s\frac{2(A + R - 1) + s(n^2 - n - 1)}{n^2}.\end{aligned}$$

Effect of merger on lobbying incentives. We know from Grossman-Helpman that the equilibrium lobbying level will solve

$$\max_R \Pi - w\frac{R^2}{2}.$$

Thus, the equilibrium level of regulation is

$$R^* = \frac{1}{w}\frac{d}{dR}\Pi.$$

Hence, regulation will go up after the merger if the industry incentive to regulate, $\frac{d}{dR}\Pi$, increases after the merger.

To determine the effect of a merger on lobbying activity, note that all firms are lobbying in the same direction: more R. So the grand coalition is binding in the Grossman-Helpman characterization and – both before and after the merger – we have

$$\sum_{i=1}^{\tilde{n}} t_i = w\frac{R^{*2}}{2},$$

where $\tilde{n} = n$ pre-merger and $\tilde{n} = n - 1$ post-merger. Therefore, a merger increases total lobbying activity if and only if it increases equilibrium regulation R.

The marginal effect of regulation of industry profit before the merger is

$$\frac{d}{dR}\left(\frac{n}{(n+1)^2}(A+R-1)^2\right) = \frac{2n(A+R-1)}{(n+1)^2}.$$

The marginal effect after the merger is

$$\frac{d}{dR}\left(\frac{(n-1)(A+R-1)^2}{n^2} + s\frac{2(A+R-1)+s(n^2-n-1)}{n^2}\right) = \frac{2(n-1)(A+R-1)}{n^2} + \frac{2s}{n^2}.$$

We have

$$\frac{2(n-1)(A+R-1)}{n^2} + \frac{2s}{n^2} - \frac{2n(A+R-1)}{(n+1)^2} = \frac{n^2-n-1}{n^2(n+1)^2}2(A+R-1) + \frac{2s}{n^2} > 0 \text{ if } n \geq 2.$$

Thus, the merger increases R^* as well as $\sum_{i=1}^{\tilde{n}} t_i$.[36]

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 4 below shows the evolution of this composite firm from period 1 (top) to period 3

[36] We briefly return to the potential issue of the "merger paradox" in a Cournot setting. Recall also the timing: first firms may merge, then they lobby the regulator, and finally they compete. Hence, the condition for profit to go up after a merger has to be analyzed in the first stage. Namely, π_{12} from (11), net of transfers, must be greater than $2\pi_i$ from (10), also net of transfers. The equilibrium levels of R as well as the transfers change, with and without the merger. Tedious but straightforward calculations show that the merger is profitable, for instance, even when there are no efficiency gains ($s = 0$), iff the cost of lobbying w is not too high. For instance a 3-to-2 merger is profitable if $w < 1$ (whereas it would never be profitable in a standard symmetric Cournot game). Similarly, one can show that, for any number n of firms, the efficiency gain required to make a merger profitable is always reduced in the presence of lobbying, compared to the standard Cournot setting.

(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 MergerIndex_{it} 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 L.

Figure 4: **Graphical Representation of Composite Firm "ABCD"**

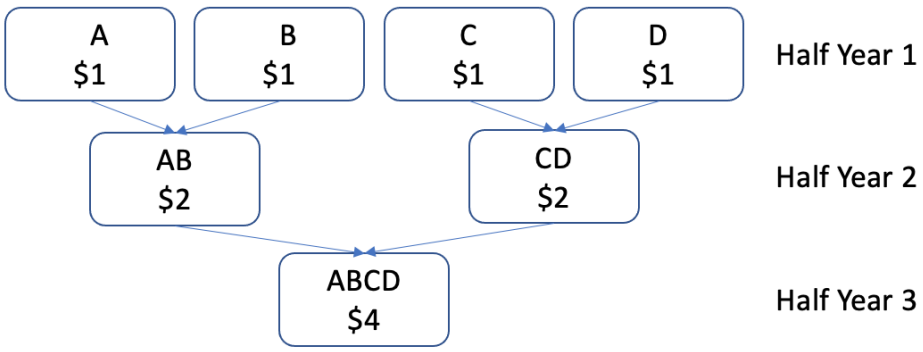

Table 1: **Tabular Representation of Figure 4, Composite Firm "ABCD"**

HalfYearID	CompositeFirmID	Total Revenue (Size)	MergerIndex_{it}		
			# 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 Codifying 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, 42% are involved in multiple mergers or acquisitions. This number rises to 68% if unlisted companies are included. 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 58% of all lobbying spend (83% if unlisted companies are included). 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*[37] (Kim, 2018), and 4) corporate PAC contribution data from the Center for Responsive Politics' *OpenSecrets* project.[38]

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.

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.

[37] https://www.lobbyview.org/
[38] https://www.opensecrets.org/bulk-data/

We begin by removing all M&A observations after 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 have a direction (i.e., target $\rightarrow$ acquirer), 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 Descriptive Statistics: Correlations

Table 2: **Descriptive Statistics: Correlations**

	Years	Revenue	Lobby	PAC	Individual	Ever Merged
Years	1					
Revenue	0.16***	1				
Lobby	0.13***	0.49***	1			
PAC	0.12***	0.49***	0.84***	1		
Individual	0.18***	0.42***	0.49***	0.49***	1	
Ever Merged	0.37***	0.21***	0.17***	0.17***	0.22***	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.

G Anticipation

As mentioned in Section 5, a key identification challenge is the possibility of pre-merger increases in lobbying activity. 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. To address this, we add terms to Equation (6) to capture the change in each composite firm's MergerIndex_{it} between the current period and one period in the future. We denote these as Δ MergerIndex_{it}, t+1. Our additional term measures lobbying one period *ahead* of a merger. Table 3 presents these results. Compared to our results without this term in Table 4, we see approximately the same magnitudes.

Table 3: **Merger Anticipation Effects**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-77,995**	-72,040***	-4,780*	-4,016
	(33,742)	(27,897)	(2,452)	(2,533)
Δ # Component Firms, $t+1$	-9,265	-10,381	-457	775
	(21,880)	(27,683)	(1,486)	(2,049)
Additional Controls		Y		Y
Observations	210,344	210,325	210,344	210,325
R^2	.79	.83	.32	.47

Notes: This table shows the result of our main specification (Equation 6) with an anticipation term added as described in Appendix G (immediately above). The additional term, Δ MergerIndex$_{it}$, t+1, measures lobbying one period *ahead* of a merger.

H Extensive Margin Effects: Size and Close/Distant Mergers

Table 4: **Heterogeneity by Firm Size (Panel Event Study)**

Panel A: Lobbying and PAC

	(1) Started Lobbying (Any)	(2) Started Lobbying (Any)	(3) Started PAC	(4) Started PAC
# Component Firms	.0018	-.003	.00023	-.015***
	(.015)	(.0041)	(.0063)	(.004)
Additional Controls	Y	Y	Y	Y
Sample	Below Median Revenue	Above Median Revenue	Below Median Revenue	Above Median Revenue
Observations	76,773	146,249	76,773	146,249
R^2	.84	.86	.88	.9

Panel B: In-House vs Outsourced

	(1) Started In-House Lobbying	(2) Started In-House Lobbying	(3) Started Outsourced Lobbying	(4) Started Outsourced Lobbying
# Component Firms	-.0071	-.013***	.0023	-.0039
	(.011)	(.0038)	(.016)	(.0039)
Additional Controls	Y	Y	Y	Y
Sample	Below Median Revenue	Above Median Revenue	Below Median Revenue	Above Median Revenue
Observations	76,773	146,249	76,773	146,249
R^2	.86	.88	.84	.86

Notes:
This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We include interactions with how many industries are included among the merging firms using NAICS codes. For additional discussion of this specification, see Section 5.

Table 5: **Extensive Margin: Close vs Distant Mergers**

Panel A: Lobbying and PAC

	(1) Started In-House Lobbying	(2) Started In-House Lobbying	(3) Started Outsourced Lobbying	(4) Started Outsourced Lobbying
# Component Firms	-.017***	-.019***	-.013**	-.015**
	(.0058)	(.0059)	(.0064)	(.0066)
# Component Firms × Unique NAICS	.0022***	.0022***	.0023***	.0017*
	(.0006)	(.00063)	(.00085)	(.00097)
Additional Controls		Y		Y
Observations	223,043	223,022	223,043	223,022
R^2	.86	.88	.83	.86

Panel B: In-House vs Outsourced

	(1) Started In-House Lobbying	(2) Started In-House Lobbying	(3) Started Outsourced Lobbying	(4) Started Outsourced Lobbying
# Component Firms	-.017***	-.019***	-.013**	-.015**
	(.0058)	(.0059)	(.0064)	(.0066)
# Component Firms × Unique NAICS	.0022***	.0022***	.0023***	.0017*
	(.0006)	(.00063)	(.00085)	(.00097)
Additional Controls		Y		Y
Observations	223,043	223,022	223,043	223,022
R^2	.86	.88	.83	.86

Notes:
This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We include interactions with how many industries are included among the merging firms using NAICS codes. For additional discussion of this specification, see Section 5.

I Intensive Margin Effects

Given these results, one might also wonder about intensive margin effects. We study this here using our panel event study design. We examine how mergers change political influence spend among firms that were already lobbying and/or donating via PACs. Because these activities are rare, our sample for this analysis is much smaller. While the coefficients are all negative, we are underpowered to rule out large or small effects. Table 6 presents these results.

Table 6: **All Firms, Intensive Margin Effects**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
# Component Firms	-78,994	-43,951	-4,762	-581
	(50,291)	(26,839)	(3,478)	(1,822)
Additional Controls		Y		Y
Observations	43,897	43,897	25,021	25,021
R^2	.79	.83	.3	.46

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We include interactions with how many industries are included among the merging firms using NAICS codes. For additional discussion of this specification, see Section 5.

J 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 7 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 8, 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 7: **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	-.00041	.00093**		
	(.0003)	(.0004)		
Industry Average, Component Firms in Period 0			-.004***	.0046***
			(.00059)	(.00064)
Constant	5.3e-09	-6.4e-06	5.3e-09	-.000048
	(.00052)	(.00074)	(.00052)	(.00074)
Controls	Y	Y	Y	Y
Observations	221,994	209,390	221,994	209,390
R^2	.99	.89	.99	.89

Notes: All variables have been standardized, and regressions include half-year fixed effects and controls for revenue.

Table 8: **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***	7.1***	1.2***	1.6***
	(.27)	(.3)	(.18)	(.51)
Instrument × Large Firm	.35***	.24*	.74***	.78***
	(.1)	(.14)	(.044)	(.056)
Instrument Version	#1	#1	#2	#2
Controls		Y		Y
Observations	221,994	221,994	221,994	221,994
R^2	.86	.86	.64	.67

Notes: All variables have been standardized, and regressions include half-year fixed effects and controls for revenue.

K Details of Investor Call Sample

Our investor call data comes the method developed by Hassan et al. (2019). Data from this measure are distributed at `https://firmlevelrisk.com`. Political risk measures are available only for the subset of firms that have regular investor calls. The original format of this data indexed in CUSIP identifiers. We merged these into our composite firms format using the following rules. Mergers in our sample fell into three categories:

1) Mergers where all merging firms were in the investor calls. In this case, the composite firm was included in the investor call sample. We measured the overall political risk for the composite firm i at time t as the revenue-weighted average of all the component firms.

2) Mergers where some (but not all) of the merging firms held regular investor calls. This occurred when a large firm with regular calls acquired a smaller firm that did not have regular calls. We measured the overall political risk for the composite firm i at time t as the revenue-weighted average of all the component firms that held calls. We included these instances in the investor call sample.

3) Finally, mergers where none of the merging firms were in the investor call subsam-

ple. We excluded these firms from our investor call sample.

Table 9 contains descriptive statistics for firms that are in our investor call sample, compared to ones that are not.

Table 9: **Descriptive Statistics: Investor Call Sample**

	Not in Sample	In Sample	Difference
Years in Sample	6.48	13.59	-7.11***
Avg Revenue ($10M, per Half Year)	19.17	154.38	-135.21***
Lobby Spend ($1K, per Half Year)	8.69	148.90	-140.21***
Lobbied at all (per Half Year)	0.03	0.19	-0.16***
Lobbied at all (ever)	0.07	0.36	-0.30***
In-House Lobby Spend ($1K, per Half Year)	3.85	104.17	-100.32***
Lobbying Intermediary Spend ($1K, per Half Year)	4.85	44.73	-39.89***
PAC Donations ($1K, per Half Year)	0.29	6.39	-6.10***
PAC Donations$>$ 0 (per half year)	0.01	0.12	-0.11***
PAC Donations$>$ 0 (Ever)	0.02	0.20	-0.17***
Individual Donations ($1K, per Half Year)	0.11	1.61	-1.50***
Individual Donations$>$ 0 (per Half Year)	0.02	0.14	-0.12***
Individual Donations$>$ 0 (Ever)	0.13	0.63	-0.50***
Individual + PAC ($1K, per Half Year)	0.40	7.99	-7.60***
Individual + PAC$>$ 0 (per Half Year)	0.03	0.21	-0.18***
Individual + PAC$>$ 0 (Ever)	0.14	0.64	-0.50***
# of Component Firms in Compustat	1.05	1.65	-0.60***

Notes: This table displays simple summary statistics for all composite firms and all periods in our sample for which we have measures of political risk (Hassan et al., 2019). This is about 1/3rd of our full panel sample. Our panel dataset is described in Section 4, and composite firms are defined at the beginning of Section 3. Section 7 discusses our use of political risk scores.

Table 10: **Firm-Level Political Risk from Earnings Calls (Additional Measures)**

	(1) Environment	(2) Trade	(3) Institutions	(4) Health	(5) Security & Defense	(6) Taxes	(7) Technology
# Component Firms	-.00059	-.013**	.00092	.0016	-.011	-.0033	-.005
	(.0068)	(.0065)	(.0076)	(.0055)	(.0071)	(.006)	(.0094)
Additional Controls	Y	Y	Y	Y	Y	Y	Y
Observations	69,789	69,789	69,789	69,789	69,789	69,789	69,789
R^2	.51	.46	.55	.52	.54	.51	.54

	(1) Environment	(2) Trade	(3) Institutions	(4) Health	(5) Security & Defense	(6) Taxes	(7) Technology
# Component Firms	-.016	-.021**	-.0043	.0043	-.016	-.013	-.02
	(.012)	(.0094)	(.0096)	(.013)	(.0098)	(.0096)	(.014)
Controls	Y	Y	Y	Y	Y	Y	Y
F-Statistic	276	276	276	276	276	276	276
Observations	69,456	69,456	69,456	69,456	69,456	69,456	69,456

Notes: This table examines firm-level political risk. We have firm-level political risk scores for approximately 1/3rd of our sample using the method in Hassan et al. (2019). We use these values as outcomes. For additional discussion, see Section 7.

L Empirical Results using HHI as Merger Index

In this appendix we employ the Herfindahl-Hirschman Index (HHI) of the composite firm as an alternative measure for MergerIndex_{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 $\text{HHI}_{it} = 10K \sum_{f \in \mathcal{F}_{i,t}} [x_{ft}^2]$, where $x_{ft} = r_{ft} / \sum_{f \in \mathcal{F}_{i,t}} r_{ft}$ and r_{ft} is revenue. It is a term that can take values between 0 and 10,000. An example is provided in Table 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 MergerIndex_{it} appears twice in our exposure design: Once as the variable being instrumented, and again when the instrument itself uses the MergerIndex_{it} of firms outside the focal firm's industry. In our implementation below, we use HHI as the MergerIndex_{it} in both cases.

Table 11: **Results, Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
HHI	6*	7.3*	.37	.39
	(3.5)	(4.1)	(.28)	(.35)
Additional Controls		Y		Y
Observations	223,043	223,022	223,043	223,022
R^2	.79	.83	.32	.47

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We use HHI (implementation described above) as the merger index.

Table 12: **Heterogeneity (Firm Size in Revenue): Panel Event Study**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
HHI	.65**	13	.014**	.73
	(.26)	(8)	(.0069)	(.67)
Additional Controls	Y	Y	Y	Y
Sample	Below Median Revenue	Above Median Revenue	Below Median Revenue	Above Median Revenue
Observations	76,773	146,249	76,773	146,249
R^2	.55	.84	.72	.47

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We use HHI (implementation described above) as the merger index. We include interactions with firm size. 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. For additional discussion of this specification, see Section 5.

Table 13: **Close vs Distant Mergers (HHI)**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
HHI	5.9	6.2	-.23	-.3
	(10)	(9.6)	(.47)	(.62)
HHI × Unique NAICS	-2.6	-1.8	.28	.33
	(9.5)	(8.7)	(.5)	(.62)
Additional Controls		Y		Y
Observations	223,043	223,022	223,043	223,022
R^2	.79	.83	.32	.47

Notes: This table shows results on lobbying and PAC donations using our panel event study specification in described in Section 5. We include interactions with how many industries are included among the merging firms using NAICS codes. For additional discussion of this specification, see Section 5. Here we use HHI as the $MergerIndex_{it}$.

Table 14: **Results: Exposure Design**

	(1) Lobby Amount	(2) Lobby Amount	(3) PAC Contribs	(4) PAC Contribs
Composite firm HHI	234**	247**	20	21
	(108)	(99)	(14)	(16)
Controls		Y		Y
F-Statistic	51	50	51	50
Observations	221,994	221,994	221,994	221,994

Notes: This table shows results on lobbying and PAC donations using our exposure specification in described in Section 6. We use HHI (implementation described above) as the merger index.

Table 15: **Firm-Level Political Risk (HHI)**

Panel A: Panel Event Study

	(1) Lobby Amount	(2) PAC Contribs	(3) Political Risk	(4) Econ. Policy Political Risk	(5) Political Sentiment
HHI	24	.49	3.4e-06	6.6e-06	-4.0e-06
	(21)	(1.2)	(6.6e-06)	(6.2e-06)	(6.8e-06)
Additional Controls	Y	Y	Y	Y	Y
Observations	69,789	69,789	69,789	69,789	69,789
R^2	.88	.51	.59	.58	.6

Panel B: Exposure Design, Implementation #1, K_{i0} = Initial # of component firms

	(1) Lobby Amount	(2) PAC Contribs	(3) Political Risk	(4) Econ. Policy Political Risk	(5) Political Sentiment
Composite firm HHI	124*	19	.000021	.000029	.000051**
	(68)	(15)	(.00002)	(.00002)	(.000026)
Controls	Y	Y	Y	Y	Y
F-Statistic	51	51	51	51	51
Observations	69,456	69,456	69,456	69,456	69,456

Notes: This table examines firm-level political risk with HHI as the $MergerIndex_{it}$. We have firm-level political risk scores for approximately 1/3rd of our sample using the method in Hassan et al. (2019). We use these values as outcomes. For additional discussion, see Section 7.

Table 16: **Firm-Level Political Risk from Earnings Calls (Additional Measures, HHI)**

	(1) Environment	(2) Trade	(3) Institutions	(4) Health	(5) Security & Defense	(6) Taxes	(7) Technology
HHI	-9.3e-07	.00001*	-1.9e-06	6.6e-06	3.3e-06	-1.8e-06	4.0e-06
	(5.2e-06)	(5.5e-06)	(5.1e-06)	(8.4e-06)	(5.9e-06)	(5.6e-06)	(6.1e-06)
Additional Controls	Y	Y	Y	Y	Y	Y	Y
Observations	69,789	69,789	69,789	69,789	69,789	69,789	69,789
R^2	.51	.46	.55	.52	.54	.51	.54
	(1) Environment	(2) Trade	(3) Institutions	(4) Health	(5) Security & Defense	(6) Taxes	(7) Technology
Composite firm HHI	.000028	.000037**	7.7e-06	-7.7e-06	.000028	.000024	.000036
	(.000022)	(.000016)	(.000017)	(.000023)	(.000018)	(.000017)	(.000025)
Controls	Y	Y	Y	Y	Y	Y	Y
F-Statistic	51	51	51	51	51	51	51
Observations	69,456	69,456	69,456	69,456	69,456	69,456	69,456

Notes: This table examines additional measures of firm-level political risk using HHI as the $MergerIndex_{it}$. We have firm-level political risk scores for approximately 1/3rd of our sample using the method in Hassan et al. (2019). We use these values as outcomes. For additional discussion, see Section 7.

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