Political Power and Market Power*

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Abstract

We study the link between political influence and industrial concentration. We present a joint model of political influence and market competition: an oligopoly lobbies the government over regulation, and competes in the product market shaped by this influence. We show broad conditions for mergers to increase lobbying, both on the intensive margin and the extensive margin. 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, both by individual firms and by industry trade associations. Mergers are also associated with extensive margin changes such as the formation of in-house lobbying teams and corporate PACs. We find some evidence for a positive association between mergers and higher campaign contributions.

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1 Introduction

Lobbying and campaign finance are essential elements of modern democracy (Grossman and Helpman, 1994; Ansolabehere et al., 2003; Cage, 2020). On the positive side, they can help elected officials gather information needed to make policy choices, and can help voters become informed about candidates. However, they also both raise legitimacy and fairness concerns, as agents with greater wealth can exercise greater influence over the political process.

In this paper, we study the link between lobbying and industry concentration. 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 affects consumers directly through market power (potentially raising prices and reducing quantities), but also indirectly 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 one that flows through the channel of 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 theoretical section featuring a simple model capturing the relationship between market concentration and political influence. The model examines an oligopoly in which firms' profits may be affected by regulation. Firms engage in lobbying activity to influence their regulation using the menu auction model by Grossman and Helpman (1994).

We characterize the joint equilibrium of the product market and political influence game,

[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).

as well as the effect of a merger between two competitors on such equilibrium. We provide broad conditions for a merger to increase political influence activity. The intuition is that market competition within an industry partly dissipates the rents that accrue to firms from regulatory protection. By softening competitive pressure, a merger tends to increase the incentive of firms to lobby for regulation. Our model generates predictions for the merging entities and for the industry as a whole. It also distinguishes between the impact of mergers both at the extensive margin (firms' choice to lobby at all) and the intensive margin.

The core of the paper studies data from 1999-2017 about whether mergers are associated with an increase or a decrease in political influence activities. We examine SEC-registered companies in 1999-2017, matching each company with data about their federal lobbying and campaign contributions in the US (both before and after mergers).

To investigate 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 a 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 results suggest that mergers are positively associated with an increase

in firms' spending on political influence activities. The average merger is associated with a $69K to $107K increase in the amount spent on lobbying per period (half year) after the merger, or approximately 22% of the 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.

We particularly link mergers to the extensive margin of influence – i.e., a firm's choice to establish political operations at all. At the beginning of our sample, only 8% of firms lobbied and only 5% of firms had a corporate PAC (a vehicle for corporate campaign contributions). During our sample period, the average merger is associated with a 1.5 to 2.1 percentage point increase in setting up an in-house lobbying operation for the first time in the company's history (at least since government lobbying records were kept). Merging is similarly associated with a 1.6 to 1.9 percentage point increase in initiating a corporate PAC. Although the association between merging and the *amount* of campaign contributions is not always statistically significant, the link with establishing a corporate PAC is stronger.

Once initiated, political operations are highly persistent. Following the establishment of an in-house lobbying operation, an average business lobbies in 87% of the remaining periods in our sample. Once a business sets up a PAC, the average PAC is active in 76% of remaining periods. Kerr et al. (2014) find similar results about persistence.

Across multiple specifications and outcomes, the association of mergers with influence activities is significantly stronger if the merging companies are larger, and if the merging companies belong to the same industry. When we examine results at the industry-level, we find a similar positive association between mergers and political activity by the industry as a whole as well as through industry trade associations.

Finally, we pursue two forms of robustness checks. First, we consider a possible misspecification problem. Merging firms may ramp up their influence activities *before* the merger, perhaps 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).

Second, we measure whether *firm-level political risk* changes with mergers. Following a merger, firms may face more scrutiny from regulators if the merged entity becomes a politicized target of attack. The merged firm may increase lobbying, not because of rent dissipation and externalities (as in our model), but because of a new adversarial environment. Hassan et al. (2019) develop methods for quantifying firm-level political risk based on the contents of quarterly earnings conference calls. Using this data, we find no evidence of higher political risk after a merger. Standard errors are small enough to rule out large effects.

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) study 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 main theoretical contribution consists in combining a lobbying model with a standard

oligopolistic competition model, which allows us to make predictions on the effect of mergers on equilibrium lobbying activity. We study the effect on the intensive margin (change in lobbying activity for firms that were already lobbying), on the extensive margin (probability that a non-lobbying firm starts lobbying), and on the whole industry.[2]

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

[2] Bombardini and Trebbi (2012) study the formation of industry associations as a function of how competitive product markets are for an industry.

[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).

supported by an investor's PAC doubles after the investor acquires a large stake. Like ours, this study uses changes within the same firm over time (in their case, changes to ownership).

A series of recent empirical papers documents firm mark-ups, higher aggregate industry concentration, a decline in the 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) shows 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 empirical evidence linking 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. By contrast, 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). Our theory model shows an example of a non-market strategy (lobbying to erect regulatory barriers to entry) complementing a marketplace strategy (merging and coordinating 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 (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

We now 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 model proceeds in two stages: firms first play the political economy game, making transfers to a regulator who chooses a policy that shapes the market. Second, the firms set prices and quantities given the level of regulation established in the first stage. We detail these two stages below.

We first establish a baseline model of the simplest possible setting: an initial duopoly, to be assessed against a merger to monopoly. Our aim is to study how political influence activity is affected by mergers within an industry. We then extend the baseline in two ways. First, we require firms to pay fixed costs to be paid before lobbying can begin. Then we generalize our model from two firms to n and examine lobbying by the industry as a whole (e.g., by trade associations). Proofs are in Appendix A.

2.1 Preliminaries

Competition. We begin with the industrial organization block consisting of a standard quantity competition model *augmented with regulatory variables*. We consider an industry with 2 firms.[5] Each firm $i = 1, 2$ can set its own quantity q_i, as well as lobby for some

[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.

regulation R. The resulting demand 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. The industrial organization part of the model is completed by a linear cost function that we normalize to zero. Firm i's gross industrial profit is therefore $\pi_i = Pq_i$.

In the absence of lobbying, this would be a standard Cournot model which we have augmented with regulation variables. R represents the effect of regulation on demand for the industry's product. We can think of $R \in \Re$ as government policy that favors the incumbents in the 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 forms of regulation. 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 barrier to entry (either explicitly or implicitly).

By lobbying for R, the incumbents can fend off entry from these competitors by making τ sufficiently high. At first sight, R may appear to be similar to an investment in R&D or advertising that increases demand for a product. However, R is set by the regulator in the lobbying game (discussed next), rather than by each firm non-cooperatively (as in standard R&D or advertising games). In addition to the market activities above, each firm engages in non-market activities (lobbying) by making a transfer $\hat{t}_i$ to a regulator to influence R. We now turn to the lobbying block of our model.

Lobbying. Our lobbying block follows the canonical lobbying model of Grossman and Helpman (1994), which in turn is based on the menu auctions studied by Bernheim and Whinston (1986). In Grossman and Helpman (1994), a regulator chooses a policy vector $\mathbf{P}$. Adapting this model to our setting, the policy vector corresponds simply to the level of regulation $\mathbf{P} = \{R\}$.

The regulator has preferences over the choice of policy. We call the policymaker's pre-

ferred policy in the absence of any lobbying $\overline{\mathbf{P}}$. A common interpretation of this is that $\overline{\mathbf{P}}$ is optimal for society more generally, and the regulator places some weight on social welfare. In our adaptation, we assume the preferred policy (absent lobbying) is normalized to $\overline{R} = 0$ (no regulation). This can be seen as redefining the fixed component of demand to include $\overline{R}$.

The policymaker also cares about firms' lobbying efforts. These lobbying efforts $\hat{t}_i$ can be interpreted as bribes, campaign contributions, informational benefits, policy help, etc. given to the regulator by firm i. The following direct preference function governs how the regulator assesses deviations from the optimal policy $\overline{\mathbf{P}}$:

$$w(\mathbf{P}) = -w\frac{\left(\mathbf{P} - \overline{\mathbf{P}}\right)^2}{2}. \tag{1}$$

This is essentially a "quadratic loss" from the optimal policy $\overline{\mathbf{P}}$. The w coefficients in Equation (1) capture the cost of deviating from the optimal policy in each dimension.[6]

In our setting we have $n = 2$ lobbies (firms) with profit $\pi_i(\mathbf{P})$, where π_i is the profit described in the Cournot setup above. Given that the optimal policy is $\overline{R} = 0$, our results and analysis specialize Equation (1) to $w(\mathbf{P}) = -wR^2/2$. Following Grossman and Helpman (1994), the regulator chooses $\mathbf{P}$ to maximize

$$\sum_i \hat{t}_i + w(\mathbf{P})$$

where $w(\mathbf{P})$ is the policy maker's policy preferences (1), and $\sum_i \hat{t}_i$ is the total lobbying efforts. we can borrow the following useful result from Bernheim and Whinston (1986) to study the main outcome in this paper: the equilibrium amount of lobbying (an observable outcome in our dataset).

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

(i) The policy maker selects

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

[6]We assume these coefficients are large enough to produce an interior solution for the policy choice. As it will become apparent below, in our setting a sufficient condition is $w > 1/2$.

(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

$$\text{for every } I \subset \mathcal{I},\ \sum_{i \in I} g_i(\mathbf{P}^*) \leq \sum_j \pi_j(\mathbf{P}^*) + w(\mathbf{P}^*) - \left(\sum_{j \notin I} \pi_j(\mathbf{P}^*_{-I}) + w(\mathbf{P}^*_{-I}) \right). \quad (2)$$

Theorem 1 states that the regulator chooses the policy vector that maximizes a weighted average of firm profits (π_i) and policy utility (1). Each firm's *transfers* are constrained by what the regulator could do in the alternative coalitions without them. Having established the setup of the model, we can now proceed to our baseline model.

2.2 Baseline: Analysis of Duopoly

Our baseline model features two (unmerged) firms playing the lobbying and market games sequentially. At time $t = 1$, firms play the lobbying game. Both the policy and the transfers are determined. At time $t = 2$, firms play the competition game, when quantities are set. To solve the game, we proceed backwards starting with the second-stage competition game. In the second stage, each firm's profit is equal to:

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

Increasing the common component R can impact positively both firms, and thus there are incentives to lobby in the first stage. In the first stage, the policy maker selects R to maximize

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

with an interior solution[7] of

$$R^* = \frac{4A}{9w-4}. \tag{3}$$

Turning to lobbying spending, Corollary 1 in the Appendix shows that the constraint on the grand coalition is binding (both firms lobby) and thus the sum of lobbying efforts is:

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

The transfers therefore reflect the policy in (3) that maximizes the weighted sum of firm profits and the regulator's policy preferences. The comparative statics around "total lobbying" are sensible: regulation and transfers are higher the larger the affected market (high A), and the cheaper the social cost (low w). Notice in particular that transfers are convex in market size A. In a symmetric equilibrium, the transfers are

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

2.3 The Consequences of a Merger

Suppose the two firms merge to form a monopoly. What is the effect on lobbying activity?

Proposition 1 (Mergers Increase Lobbying)**.** *A merger increases equilibrium lobbying efforts, as well as the amount of industry-favorable regulation.*

Our proof in Appendix A shows that a merger increases the marginal value of lobbying. In a duopoly, the rents generated by an increase in regulation R are partly dissipated by competition between the two firms. For intuition, consider a very large number of firms: all rent generated by R would be dissipated because competition would lower profits to zero.

By contrast, a merger to monopoly leads the two firms to take into account the price externality they impose on each other. The merger thus allows the firms to fully capture the benefit of an increase in R. This in turn generates incentives to raise lobbying activity.

[7] Footnote 6 stated our assumption that the w coefficients are large enough to produce an interior solution; a sufficient condition is $w > 1/2$.

There could be additional reasons why mergers lead to more lobbying activity, which are not captured by Proposition 1. Lobbying for regulation can be seen as a public-good provision game for incumbents. Higher R benefits all firms. In Grossman and Helpman's equilibrium, the public good is provided at the efficient level from the perspective of firms, and there is no mis-coordination. However, one could imagine other models where some mis-coordination occurs around public good funding (perhaps because of asymmetric information). In this case, Proposition 1 would hold for an additional reason: the merger eliminates mis-coordination.

Proposition 1 relies on our assumption that regulation is a common good for the incumbents. Both firms have an interest in higher regulation. However, the model could be extended to other types of industry regulation, which could generate results in the opposite direction. For instance, in some settings regulation could be a purely private good. For example, regulation could divide competitors by helping some at the expense of others. 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 diminish.

2.4 Fixed Cost of Lobbying

A majority of U.S. firms spends zero dollars on lobbying activities. A merger could potentially affect this choice to lobby at all —i.e., the *extensive margin*. This is distinct from the *intensive margin* of lobbying, or the intensity of lobbing among those who have chosen to participate. Extensive margin changes are visible in our data when a firm establishes an in-house lobbying or corporate PAC for the first time.

We now introduce extensive margin choices into our model, and show how they are affected by merging. To model these choices, we require firms incur a fixed set-up cost to begin lobbying. Prior empirical work by Kerr et al. (2014) suggest that up-front costs are an important component of lobbying. Fixed costs are also present in Bombardini's 2008 model and data about business lobbying.

Formalization. To incorporate set-up costs, we add an initial stage. At $t = 0$, each firm independently decides whether to pay a set-up cost F. To begin lobbying, the firm must incur this cost F. Then, at stage $t = 1$, only the firms that have paid set-up costs can engage in the lobbying game, and market competition proceed afterwards with the resulting amount of regulation. The level of F is exogenous, and we will derive thresholds of F under which paying the cost is profitable. We model the decision at $t = 0$ as a choice each firm makes individually, in contrast with the transfers and policy that are decided jointly with the regulator.

The fixed cost F can be thought of as setting up a public policy department, and hiring staff with the necessary relationships, and skills. In our data, we observe lobbying by "in house" lobbyists separately, in addition to "outsourced" lobbying through third-party agencies (so-called "K-Street" agencies for-hire). Insofar as outsourcing involves lower startup costs, our model results should be particularly relevant for in-house lobbying. In our empirical section we will study both types.

Results. We now show the effect of a merger on firms' choice to lobby. We first characterize the equilibrium in the absence of a merger. Which firms lobby at all in the presence of fixed lobbying costs?

Proposition 2 (Extensive Margins without Merging)**.** *Imagine each firm needs to spend F in order to lobby. There are thresholds $k_2 < k_1$ such that*

- *If $F/A^2 \leq k_2$ there is lobbying, with both firms lobbying;*
- *If $k_2 \leq F/A^2 < k_1$ there is lobbying, with only one firm 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. By contrast, firms in more niche industries will find it too costly to spend the fixed costs. How does a merger change these results?

Proposition 3 (Extensive Margin with Merging)**.** *For a given market size, merged firms can justify paying higher set-up costs for lobbying than without the merger.*

Our results show that a merger increases lobbying both at the intensive margin *and* at the extensive margin. The result is intuitive: If firms merge, the profitability of lobbying can justify set-up costs, even if they are relatively high. Without a merger, set-up costs can be justified only if they are relatively inexpensive.

2.5 Trade Associations and Non-Merging Firms: Beyond Duopoly

Two-firm mergers to monopoly are very rare. Although our setup thus far establishes sensible mechanisms and intuition, we now expand our theory to an n-firm industry rather than a duopoly. Larger $n > 2$ industries are much more common. Political influence activity could come both from merging and non-merging firms, or from industry-level trade associations. In our empirical section, we have data about lobbying activity by all these actors.

We therefore 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. As is well known, with 3+ 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, the "merger paradox" concern is much diminished in the presence of lobbying.

Our technical analysis closely follows the steps about a duopoly (Sections 2.2 and 2.3), except that we now aggregate across all firms. In particular, we show the following result in Appendix A.

Proposition 4. *In an industry with n firms, a merger between two firms increases the total lobbying efforts of the industry.*

A merger increases the industry's spend on lobbying because it reduces rent dissipation. The proof shows that a marginal increase in R has a larger effect on total industry profit when the number of firms is smaller. Thus, at any R, the marginal industry incentive to lobby is greater when the number of firms shrinks.

In practice, lobbying can be done directly by firms or through trade associations. Conceivably, a merger could affect the balance between individual and collective lobbying. Our

theory is silent on this aspect. In the empirical part below, we examine both types of lobbying.

3 Empirical Overview

We now turn to measuring these 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. Measuring the impact of mergers requires a careful identification approach.

In this section we lay out our empirical 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 methodological papers (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 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.

3.1 Data Structure: Composite Firms

Our approach uses a new unit of analysis called a *composite firm*. Composite firms are clusters of multiple firms that eventually merge together. 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. We developed the concept of composite firms 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. Composite firms do not exist in standard merger databases, but can be assembled from datasets about mergers and their timing.

Appendix B presents a visualization of a multi-merger composite firm as a graph, and how we represent this firm in regression-friendly panel data. 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.[8] 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.[9] 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.

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.

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

3.2 Regression Equations

Our results come from estimating two panel regressions.

Composite-Firm Panel Regressions. The first examines a panel of composite firms.

$$\sum_{f \in \mathcal{F}_{it}} y_{ft} = \beta_0 + \beta_1 \text{MergerIndex}_{it} + \beta_2 X_{it} + \delta_i + \gamma_t + \epsilon_i. \tag{5}$$

As outcome variables, we examine two measures of political influence: Federal lobbying spend and donations from political action committees. These measures are analyzed separately as different y outcomes, and are described in detail in our data section (next). The LHS $\sum_{f \in \mathcal{F}_{it}} y_{ft}$ represents the sum of these activities over all component firms in composite firm i at time t.[10] We include fixed effects for composite firms (δ_i) and time periods (γ_t). Standard errors are clustered by composite firms.

The coefficient of interest is β_1, the coefficient on the 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. This decreases each time a merger occurs, and allows β_1 to be interpretable as the effect of a merger. 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]

In light of our theory model, an interesting outcome variable is also 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 component firm lobbies (at all, and through in-house lobbyists) or contributes through a corporate PAC, and use these as outcomes variables in Equation 5.

This specification allows us to measure the effects of merging on the activity of the merging

[10] y_{ft} represents political influence spending of component firm f at time t. $\mathcal{F}_{it}$ represents the composite firm ownership partition for a composite firm i at time t.

[11] Equation 5 admits other measures of concentration for MergerIndex_{it} as well, such as the Herfindahl-Hirschman Index (HHI), adapted to our application within composite firms (where size is based on revenue). Appendix L implements this approach, and shows that our empirical results are qualitatively similar to using this alternative.

firms, using the non-merging firms (and pre-periods) as controls. Of course, non-merging firms may also change their spend in reaction to the merger. This is part of our motivation for our next specification.

Industry Panel Regressions. Our industry level regressions are identical to Equation (5), but the cross-sectional unit is different. Rather than studying a panel of composite firms, we study a panel of industries. $\sum_{f \in \mathcal{F}_{it}} y_{ft}$ describes the sum of all lobbying of all component firms in industry i at time t.[12] We include fixed effects for industries (δ_i) and time periods (γ_t). Standard errors are clustered by industry. For this portion of the analysis, each composite firm is assigned to a single industry classification for the entire sample.[13] As we describe in our data section, we use hand-coded OpenSecrets industry classifications (≈60 industry classifications) in order to merge with data about trade association activity in the OpenSecrets data.

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

Like our first specification, the coefficient of interest is on the MergerIndex_{it}. Following the above, we implement a simple count of the number of component firms within each industry firm i at time t. This decreases each time a merger occurs, and so the coefficient can be interpreted as the effect of a merger. As with before, mergers *decrease* the number of firms within the industry. So negative coefficients mean that mergers *increased* political spending.

Identification. Because mergers are endogenous, we examine several different approaches to identifying effects (outlined below). We vary controls X_{it} in coordination with our identi-

[12] 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.

[13] In any period where a composite firm contains unmerged entities from more than one industry, we select the industry where revenues are higher.

fication strategies. Because of the potential importance of size, we control for total composite firm $Revenue_{it}$ in all specifications. We also use controls to increase precision of our main estimates, to report descriptive patterns of interest, and as checks on the robustness of our findings (Altonji et al., 2005; Oster, 2019). 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 next section.

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 the key properties of our data. In Appendix D, we describe the data in more detail including how they are merged.

4.1 Sample

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

studies of mergers between public firms.[14]

Our sample dates are affected 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. 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 D, we produce the composite firm graph. Once calculated, we then track the evolution of composite firms over time. The key output from this procedure is a panel dataset with a MergerIndex_{it} variable for each composite firm i at time t. 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. For this variable, negative coefficients mean that the outcome variable increased as concentration increased.

[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.

4.3 Political Influence Data

Our federal lobbying data comes from *LobbyView*,[17] an NSF-funded project compiling federal lobbying data (Kim, 2017, 2018). *LobbyView* contains disclosures for in-house lobbyists as well as lobbying performed by external firms hired by each company. Lobbying firms are required to identify their clients in these disclosures, so we can sum each company's in-house and outsourced lobbying. We also use data from the Center for Responsive Politics' *OpenSecrets* project about campaign contributions from corporate PACs.[18]

Both datasets include each company's own lobbying and campaign funds, but does not include funds sent from a company through an intermediary organization such as an industry association or non-profit.[19] We describe our data about industry associations in the next section, but we cannot link this back to individual companies (except through broad categories).

4.4 Industry Trade Association Data

Our final dataset is about lobbying expenditures and campaign contributions by identifiable trade associations. To our knowledge, no such dataset exists in prior literature. To assemble it, 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 known list, we can separate trade associations from other organizations within an industry (such as smaller, non-public companies). Appendix D contains more detail about our procedure for gathering this data.

Our approach delivers a set of industry and trade associations, each with an industry identifier that uses the hand-coded OpenSecrets industry classification system. Our sample includes ≈60 industries in the OpenSecrets classification system.[20] When necessary, we map

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

[18] https://www.opensecrets.org/bulk-data/, other papers using this data include Blanes i Vidal et al. (2012); Bertrand et al. (2014).

[19] In our data, 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.

[20] 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.

our trade association data to other industry classifiers using a crosswalk file developed by users of the OpenSecrets.[21]

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

Table 1 and 2 display summary statistics about our composite firms. Six broad patterns are evident. Although some of these patterns have been documented elsewhere in the literature (e.g., Ansolabehere et al., 2003), 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 of small, unlisted companies. 10% of our composite companies feature a merger between Compustat-listed companies.

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

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. **Influence activity 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.[22]

Our descriptive tables present these patterns at the composite level, but we find the same patterns in our disaggregated dataset of individual component firms.

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

Table 2: **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.

The averages in Tables 1 and 2 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 lobbying per year ($670K) in our sample (median of $56K/year). At the top of the distribution, there are firms that spend tens of millions of dollars per year. As the raw correlations in Table F.2 show, these firms tend to be the largest firms and are also more likely to engage in merger activity (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).[23]

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). In this approach, estimation of Equation (5) is straightforward (i.e., 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 (5) 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,[24] as well as controls for differential revenue effects depending

[23] 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.

[24] Our firm-specific political cycle controls would capture the possibility that "Walmart tends to spend a lot in the midterms," or "Boeing spends a lot during the presidential election years," and so forth. 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.

on the number of mergers during the sample. In our regressions about industry- and trade-association spend, we use the equivalents variables at the industry level. 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 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 3 shows results on lobbying and PAC donations using our main specification in Equation (5). 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, coefficients have the same sign: Greater concentration increases composite firms' spend on political influence activities (both lobbying spend and PAC spend). Our results about lobbying are more statistically significant than those about campaign contributions. We find 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).

To visualize these effects, Figures 1 and 2 display event study plots. Each point bar represents the cumulative effect of the merger on per-period spend at each period of time.[25]

[25]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 aggregates for all pre-

Table 3: **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. Additional controls are described in Section 5.

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

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.

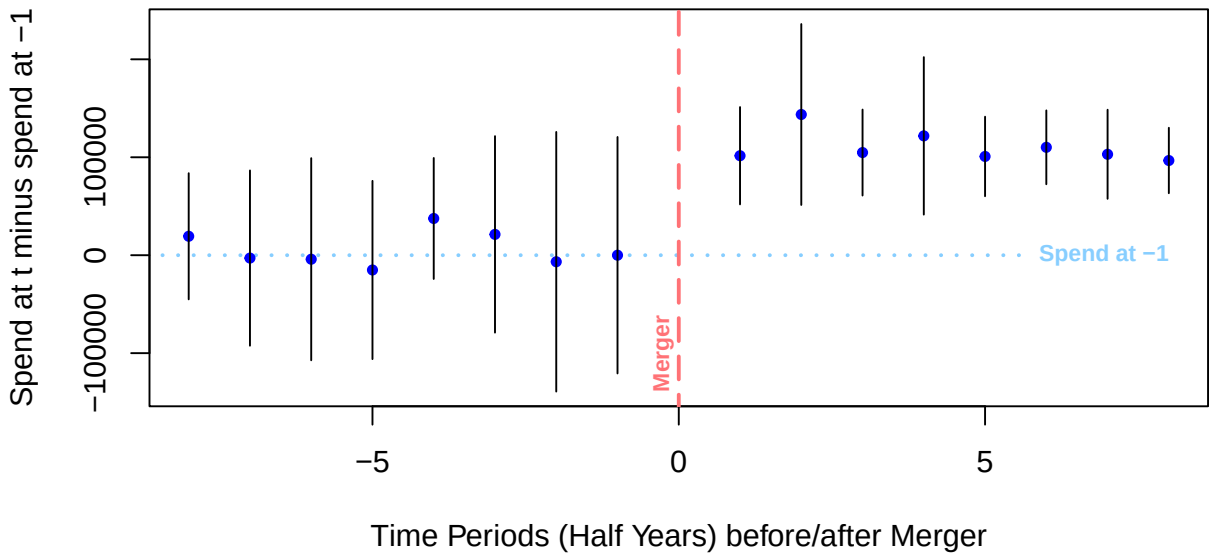
This null result is consistent with the observation that in the period under consideration the U.S. antitrust authorities scrutinized a small proportion of mergers (Wu, 2018). Between 2010 and 2019, the Federal Trade Commission and the Department of Justice issued "Second Requests" to between 2.2% and 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 post- window observations. We have not estimated these coefficients as they significantly decrease our sample size.

Figure 1: **Lobby Spending: Event Study Plots**



Notes: This figure shows an event study plot 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.

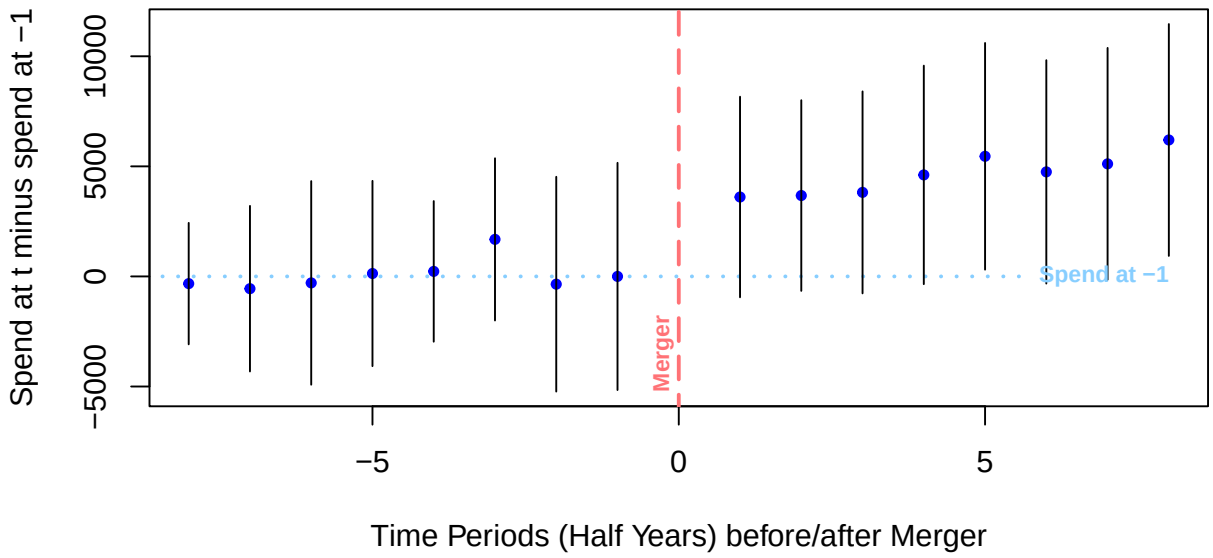
and below the median.[26] In Table 4, we find that although mergers broadly increase lobbying spend across both sets of firms, the effects on large firms are bigger.

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.

Tables 5 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

[26] 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.

Figure 2: **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.

the merging firms are within the same industry.

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 rather than outsourced lobbying. Table 6 shows extensive margin results for all firms. The outcome variables are binary variables that change from zero to one the first time that any component firm lobbies or contributes to political campaigns through a corporate PAC.

Results suggest that mergers increase both lobbying and PACs at the extensive margin. Following a merger, firms who without an in-house lobbying team or corporate PAC were more likely to create them by around 1.5 to 1.7 percentage points. By comparison, only 8% of firms lobby in any form in our first period, and only 5% of firms had a corporate PAC. Effects

Table 4: **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). Additional controls are described in Section 5. For additional discussion of this specification, see "Heterogeneity: Size and Similarity" in Section 5.

are higher and more statistically significant for in-house lobbying than for outsourced.

Appendix Tables H.2 and H.1 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.

5.2 Results: Industry and Trade Association Panel

We now turn to the results at the industry level. Table 7 looks at the impact of a merger on total spend on lobbying and PACs made by industry trade associations in a given industry. Table 8 reports the effect of a merger on spending by all firms in that industry.

As expected, the sample size is much reduced by the aggregation. The number of observa-

Table 5: **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. Additional controls are described in Section 5. For additional discussion of this specification, see "Heterogeneity: Size and Similarity" in Section 5.

Table 6: **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. Additional controls are described in Section 5. For additional discussion of this specification, see "Extensive Margins" in Section 5.

tions 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 impact that is also statistically significant at the level of industry trade associations. Table 7 also indicates that an industry association reacts in a similar way to a merger both on lobbying and on PACs. Results at the industry level are similar for lobbying and more fuzzy for PACs. We will revisit these results in the next section under a different empirical strategy.

Table 7: **Trade Associations, Panel Event Study**

	(1) Lobby Spend, Industry Associations	(2) Lobby Spend, Industry Associations	(3) PAC Spend Industry Associations	(4) PAC Spend Industry Associations
# Unmerged Firms	-154,264**	-208,735**	-49,180	-104,891**
	(72,699)	(84,784)	(34,224)	(50,041)
Additional Controls		Y		Y
Observations	2,206	2,206	2,206	2,206
R^2	.54	.63	.62	.69

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

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

	(1) Lobby Spend, Full Industry	(2) Lobby Spend, Full Industry	(3) PAC Spend, Full Industry	(4) PAC Spend, Full Industry
# Unmerged Firms	-100,208	-222,571***	3,665	-6,556
	(79,742)	(77,868)	(5,027)	(9,823)
Additional Controls		Y		Y
Observations	2,206	2,206	2,206	2,206
R^2	.94	.95	.63	.74

Notes: This table shows results on lobbying and PAC donations using our panel event study specification described in Section 5. Additional controls are 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 (5), including the same set of additional controls when included. But we develop an instrument for the key measure of concentration. 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_{it} for other firms in the same period, *excluding the focal firm* as well as *all other firms in each focal firm's industry.* The first term can be written as:

$$W_{it} = \frac{\sum_{j:S_i \neq S_j} MergerIndex_{j,t}}{N_{S_i \neq S_j}} \tag{6}$$

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 excluding 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.[27] 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 (5) as part of the composite firm fixed 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 is called 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; 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. In

[27] 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.

principle, firms that merge a lot could also be countercyclical with regards to merger waves, e.g., by learning to time acquisitions during periods of inactivity in M&A markets. 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 (5) by using the following first stage regression:

$$\text{MergerIndex}_{it} = \lambda_0 + \lambda_1 Z_{it} + \lambda_2 X_{it} + \zeta_i + \tau_t + \eta_i. \tag{7}$$

This is the same regression as Equation (5), 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 spending 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, both specifications suggest that greater concentration increases composite firms' spend on political influence activities (both lobbying spend and PAC spend).

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 described in Section 6. Additional controls are described in Section 5.

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 $20K 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 particularly strong for in-house lobbying compared to outsources lobbying.[28]

[28]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 the extensive margin of lobbying and PAC donations using our exposure design described in Section 6. Additional controls are described in Section 5.

6.3 Results: Industry and Trade Association Panel

The final set of results relate to the aggregate industry level and are presented in Tables 11 and 12. When compared to Table 7 and Table 8, findings are remarkably in line with those we found in the event study design.

Table 11: **Trade Associations, Exposure Design**

	(1) Lobby Spend, Industry Associations	(2) Lobby Spend, Industry Associations	(3) PAC Spend Industry Associations	(4) PAC Spend Industry Associations
# Unmerged Firms	-148,308**	-191,182**	-61,163	-120,336*
	(68,919)	(78,903)	(48,311)	(70,515)
Controls		Y		Y
F-Statistic	432	164	432	164
Observations	2,206	2,206	2,206	2,206

Notes: This table shows results on lobbying and PAC donations at the industry level using our exposure design in described in Section 6. Additional controls are described in Section 5.

Table 12: **All Corporate Spend Per Industry, Exposure Design**

	(1) Lobby Spend, Full Industry	(2) Lobby Spend, Full Industry	(3) PAC Spend, Full Industry	(4) PAC Spend, Full Industry
# Unmerged Firms	-130,043	-254,635**	1,261	-8,194
	(97,689)	(114,925)	(6,191)	(10,734)
Controls		Y		Y
F-Statistic	432	164	432	164
Observations	2,206	2,206	2,206	2,206

Notes: This table shows results on lobbying and PAC donations at the industry level using our exposure design in described in Section 6. Additional controls are described in Section 5.

7 Firm-Level Political Risk

Our theory section proposed that a merger helps firms avoid rent-dissipation of lobbying for a common cause. However, another mechanism could also produce an 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 rent dissipation and 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. 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 and the overall level of political risk, but we include the full set of categories.

Sample. 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.

Results. Table K.2 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).

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 K.3 contains all measures of political risk,[29] and Appendix L contains HHI versions.

8 Conclusion

Our paper hopes 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., 2015; Azar et al., 2020; Dube et al., 2020).

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

We contribute to this discussion by introducing 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 set by strategic lobbying. 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.

Our results are indicative of a robust pattern, but they are far from conclusive. We hope this is a starting point for richer and deeper analyses of the political and other non-market effects of mergers. We see at least three avenues for more research. First, future research could explore the link between lobbying activity and government regulation. When a merger occurs, which policies is the additional influence activity directed toward? This type of research will probably focus on one specific industry, as regulation is highly industry-specific.

A second avenue of research relates to the effect of market power on the organization of lobbying. When an industry becomes more concentrated, does its approach to policy influence change? For instance, do firms tend to rely more or less on trade associations? Do they tend to do more or less in-house lobbying? Do they attempt to establish a direct relationship with people close to policy making, like hiring former office holders?

Finally, industry-supported government regulation is by definition likely to benefit industry, but it can benefit consumers (as perhaps in the case of safety and environmental standards) or hurt them (as perhaps in the case of barriers to entry). It would be important to put together the two previous points to understand if the political channel we analyze constitutes another form of consumer harm of market power – one delivered through the channel of regulation rather than directly through markets.

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Appendix: For Online Publication

A Theoretical Appendix

A.1 Proof of Proposition 1

Proof of Proposition 1. We can apply Bernheim and Whinston (1986) to our setup. If we subtract $\sum_{i\in I}\pi_j\left(\mathbf{P}^*\right)$ from both sides of (2) and reverse the signs, we get

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

This constitutes a system of inequalities putting an upper bound on the value of the vector of lobbying effort $\hat{t}$. We can directly specialize this general result to our case.

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

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

and the lobbying efforts must satisfy

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

We now analyze the case with a merger. 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

$$R^*_m=\frac{A}{2w-1}. \tag{8}$$

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

$$\hat{t}_m = w\frac{R_m^{*\,2}}{2} = \frac{A^2 w}{2(2w-1)^2}. \tag{9}$$

Comparing with the results without a merger (see (3)), 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.2 Proof of Proposition 2

Proof for Proposition 2. 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 (3) and (4) 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 firms 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 $\hat{t} = \frac{2A^2 w}{(9w-2)^2}$. The (asymmetric) profits of the firms are

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

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 A1.

Figure A1: Fixed Lobbying Cost

Firm 1/ Firm 2	Lobby	Don't lobby
Lobby	$\pi_{LL} - F, \pi_{LL} - F$	$\pi_{LN} - F, \pi_{NL}$
Don't lobby	$\pi_{NL}, \pi_{LN} - F$	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 $k_1 > k_2$. Proposition 2 follows immediately:[30] □

A.3 Proof of Proposition 3

Proof of Proposition 3. 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 (9),

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

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 $k_m > \max[k_1, k_2]$. 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. □

A.4 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

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

[30] 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.

The first-order condition for profit maximization yields

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

Summing over i we obtain

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

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

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

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

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

The marginal effect after the merger is

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

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 $\sum_{i=1}^{\tilde{n}}\hat{t}_i$.[31]

B Example of a Composite Firm

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

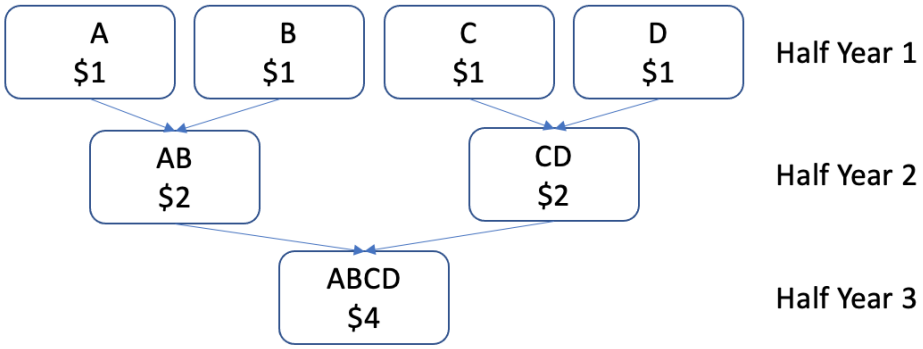
In this example, all component firms' revenue was \$1 for all periods, and there was no organic growth over the three periods. At the end when all four firms are merged, the final firm is worth \$4. This example keeps size/revenue constant for clarity; our actual data include organic growth. In the example, the 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.

Table B.1: **Tabular Representation of Figure B.1, 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	$=(1/1)^2\times 1\times 10K$

[31] 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.

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



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) examine "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 Additional Information: 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*[32] (Kim, 2018), and 4) corporate PAC contribution data from the Center for Responsive Politics' *OpenSecrets* project.[33] Below we list additional details about each dataset, and in Section D.5 we show how these datasets were merged together.

D.1 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).[34] For each acquisition, SDC Platinum identifies the acquirer, target and dates associated with the merger.[35] The date variables are particularly important in our analysis as they allow us to use pre-/post- variation in merger status.

This section includes an overview, and readers interested in even more detail can see the procedures in Appendix E. 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.

We then measure the evolution of each composite firm over time. 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.

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

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

[34] Barnes et al. (2014) independently evaluate the SDC Platinum database for completeness and accuracy 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 the quality of other sources of merger data, including Zephyr (https://zephyr.bvdinfo.com/) and find positive results for SDC.

[35] 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.

The intermediate parent k is a potentially smaller composite firm (i.e. collection of merged firms) that eventually merges into the main composite firm. In cases towards the end of our sample, the intermediate parent k is the final composite firm. Using these intermediate steps, 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.[36]

D.2 Lobbyview

LobbyView data have been used in several other papers (Bombardini and Trebbi, 2020; Huneeus and Kim, 2018; Ellis and Groll, 2018). 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.[37] Importantly, *LobbyView* matches companies not only on its name, but also to a structured identifier that we can merge with our other data.

D.3 OpenSecrets

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.

D.4 Industry Associations

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,[38] or

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

[37] An example of a lobbying disclosure report can be viewed here.

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

2) Appears in the Directory of Associations dataset,[39] or

3) Appears in IRS database of non-profits, with activity codes relating to industry, business or professional associations.[40]

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. Our sample includes ≈60 industries in the OpenSecrets classification system.[41] When necessary, we map our trade association data to other industry classifiers using a crosswalk file developed by users of the OpenSecrets data.[42]

D.5 Merging the Datasets Together

Our merging procedure 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.

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

[40] 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.

[41] 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.

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

E Procedure for Creating the Composite Firm Graph

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

We begin by removing all M&A observations 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 Additional Descriptive Statistics

Table F.1: **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.

Table F.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 (5) 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 G.1 presents these results. Compared to our results without this term in Table 3, we see approximately the same magnitudes.

Table G.1: **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 5) with an anticipation term added as described in Appendix G. 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 H.1: **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 H.2: **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

We study intensive margin effects 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 I.1 presents these results.

Table I.1: **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 J.1 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 J.2, 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 J.1: **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 J.2: **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 Political Risk Analysis

K.1 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 subsample. We excluded these firms from our investor call sample.

Table K.1 contains descriptive statistics for firms that are in our investor call sample, compared to ones that are not.

K.2 Political Risk Results

Table K.1: **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 1/3 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 K.2: **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 1/3 of our sample using the method in Hassan et al. (2019). We use these values as outcomes. For additional discussion, see Section 7.

Table K.3: **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 1/3 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 B.1. When a merger is completed, the number of intermediate parents shrinks, and the revenue share is larger inside the intermediate parent that absorbed one of the firms, resulting in a higher HHI.

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

Implementation Notes. Recall that 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 L.1: **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 L.2: **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 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 L.3: **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 $\times$ 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 use HHI as the merger index. 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 L.4: **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 as the merger index.

Table L.5: **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 merger index. We have firm-level political risk scores for approximately 1/3 of our sample using the method in Hassan et al. (2019). We use these values as outcomes. For additional discussion, see Section 7.

Table L.6: **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 with *HHI* as the merger index. We have firm-level political risk scores for approximately 1/3 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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