Consolidation and Political Influence in the Auto Retail Industry

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Abstract

This paper provides novel empirical evidence on the causal link between consolidation and political influence. Focusing on the auto retail industry, we show that mergers lead to higher levels of industry lobbying, on the order of +70%. This increase is driven by mergers that resolve the collective action problem, leading firms to internalize a greater share of lobbying benefits. Further, this lobbying translates into more favorable legislation for the industry; we estimate a 7ppt increase in enactment probability for bills that car dealers support. Our findings underscore the distinction between concentration and size in economic models of lobbying.

Keywords: Collective Action, Lobbying, Mergers, Policy Formulation, Trade Associations

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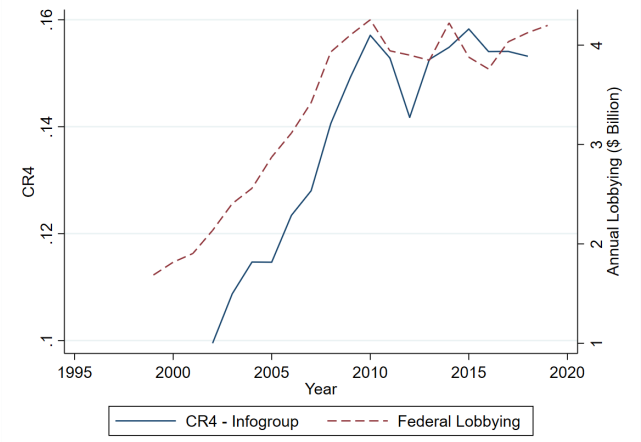
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1 Introduction

> *While the statutory text of the antitrust laws speaks solely of economic concepts, their passage was motivated in no small part by concerns that concentrated economic power can lead to concentrated political power, which is widely seen as unhealthy in a democracy.*
>
> Edlin, Melamed, Miller, Scott Morton, and Shapiro (2024)[1]

The apparent increase in lobbying and industry concentration over the past two decades (Figure 1) has renewed concerns that concentrated economic power leads to concentrated political power. However, the two trends have largely been considered as separate phenomena in the academic literature.[2] Indeed, it is not clear that the patterns in Figure 1 reflect a causal link from consolidation to lobbying. A third, external factor could drive both the observed increase in concentration and the increase in lobbying.[3] Alternatively, political power may beget market power; firms skilled at lobbying regulators might be able to grow more, leading to a more concentrated industry structure (Callander, Foarta and Sugaya, 2021).

Figure 1: A Rise in Aggregate Concentration and Lobbying in the US



Note: CR4 is a weighted average of the concentration ratio of the largest four firms across all industries in the US. Data on federal lobbying from Kim (2018) and data on firm-level sales from Infogroup (2021).

[1] Single-Firm Conduct Working Group, California Law Review Commission Study of Antitrust Law (Edlin, Melamed, Miller, Morton and Shapiro, 2024).

[2] Studies of increasing lobbying include Kim (2017). Studies of increasing market power include Berry, Gaynor and Scott Morton (2019); De Loecker, Eeckhout and Unger (2020); Ganapati (2021). However, we note that there is disagreement in the literature about whether concentration is, in fact, increasing. For example, Benkard, Yurukoglu and Zhang (2023) show that concentration has declined at the product market level. Figure 1 compares *national* measures of concentration with *federal* lobbying. With respect to lobbying, we view the relevant market as the political market.

[3] Consider, for example, the use of consumer data by firms. The economies of scale in data use increase the benefits to consolidation, while the fact that this is a relatively new, previously unregulated, technology, leads to scrutiny by lawmakers and more scope for lobbying in order to influence regulation. As another example, consider a shift in the political sphere. If the government becomes more pro-business, regulators may allow more consolidation and might also be more sympathetic to corporate lobbying, potentially increasing the returns to lobbying.

This paper provides the first empirical evidence on the causal link between consolidation and political influence. We also examine the underlying mechanism, elucidating how consolidation changes firms' incentives to shape the law to favor their industry. Our findings underscore the nature of lobbying as a public good (Olson, 1965). When firms within an industry stand to benefit from similar legislation, firms have an incentive to free-ride on the lobbying activities of their rivals, leading to underinvestment. This collective action challenge is alleviated through consolidation; in the limit, a monopolist internalizes the full benefit of its lobbying and so lobbies more.

We focus on one retail trade industry: new car dealers. We collect new data on state-level lobbying and the outcome of that lobbying, as measured by bill enactment, before and after large auto dealer groups merge. We find that both lobbying and enactment rates for bills favored by auto dealers increase following a merger. We then compare mergers in product markets that are entirely contained within a state's boundaries (the political market) with mergers that occur in product markets that cross state borders. The increase in lobbying post-merger is driven by mergers that increase dealer concentration in the political market; these are precisely the markets where a merger can alleviate the collective action problem. Taken together, our results provide evidence that consolidation increases political influence by enhancing coordination in lobbying, which can encompass both alignment on *which issues* to lobby and on *how much* to lobby overall.

We contribute to the lobbying literature more generally by constructing a novel dataset on lobbying clients and compensation based on public lobbying records in 27 states. We note that there is substantial lobbying at the state level that is understudied. Total lobbying at the state level amounts to about $2 billion per year, about half of annual federal lobbying over the same period (National Institute on Money in Politics, 2020). Despite the magnitude of spending and the scope of policies and regulations determined by state government, the vast majority of academic research on lobbying focuses on the federal lobbying.[4] Our empirical approach, which leverages state-level variation in the alignment of political and product markets, can be generalized and applied to other industries with considerable consumer welfare implications.[5]

The automobile retail industry is a good fit for studying our research question for four reasons. First, auto dealers have significant political interests. Auto dealers are notorious for their alleged influence in local policy, such as their role in bolstering franchise laws that restrict entry (Lafontaine and Scott Morton, 2010; Murry, 2018).[6] A second advantage is that auto retail product markets

[4]In fact, Zhao Li calculated that only 5% of academic work on lobbying focuses on the state-level (Google Scholar, 2023).

[5]For example, dialysis (Wollmann, 2024).

[6]Most policies of concern to automobile dealerships are decided at the state level, including franchise laws, document fees for new car purchases, electric vehicle tax incentives, and sales taxes.

are geographically segmented (Murry, 2017; Yavorsky, Honka and Chen, 2021). This segmentation is crucial for our empirical strategy, which leverages variation in the alignment of local political and product markets. A third advantage of this micro approach is that, because concentration in the auto retail industry falls far below the levels that typically draw regulatory attention, we need not worry that auto dealers lobby to get mergers approved.[7] Finally, our focus on auto retail highlights the distinction between size and political power. While some commentators in the recent antitrust debate focus on firm size per se, this paper shows that consolidation in industries like auto retail, where firms are small, can still have sizable political influence.

Our empirical strategy compares lobbying at the state level before and after a large in-state merger or acquisition. We find that lobbying increases in the range of 55%-70% after a large auto retail merger—an increase of $135,000 to $175,000 spent each year on lobbyists in the average state. Of course, mergers are endogenous, raising the concern that this pattern might be driven by a change in the business or political environment that simultaneously increases the returns to scale in the product market and the returns to lobbying. We therefore use an observation from the theory of collective action: a merger should resolve the collective action problem only if the merging parties operate in the same political markets. We develop a stylized model that illustrates how and why a merger between auto dealers that operate on either side of a political border should realize relatively smaller gains from internalizing the benefits of lobbying the state regulator. Consistent with this prediction, we find that mergers along state borders do not lead to higher levels of lobbying.

Further, we construct a state-level measure of *congruence* between each state's political and product markets. This measure captures the potential for border mergers due to the geographical distribution of population centers within the state. In a difference-in-differences regression, we compare lobby spending before and after a large merger in states with congruent versus misaligned political and product markets. Our results confirm that consolidation increases lobbying in states where the political and product markets are aligned (e.g., Texas) but not in states where population centers are near state borders (e.g., New York). Our results imply that annual industry lobbying does not change after a large merger in the states with *less* than average product and political market alignment. Instead, the results are driven by the most congruent states, where lobbying increases by 86%, translating to an additional $200,000 per year in lobbying expenditures on average ($145,000 at the median).

[7] Of almost 3,000 cases listed on the FTC website since 2010, only 43 concern auto dealerships (https://www.ftc.gov/legal-library/browse/cases-proceedings). None of these 43 cases are related to mergers or acquisitions. Instead, they fall under the consumer protection group at the FTC, which levies fines against auto dealers for deceptive ads, junk fees, and fraud.

Our data reveals that auto dealers typically lobby through trade associations. Each state has its own auto dealer association (ADA), and these associations engage in lobbying virtually every year (a 98% probability of lobbying in any given state and year).[8] In contrast, individual auto dealers rarely lobby. The ascendancy of trade associations at the local level mirrors patterns that Bombardini and Trebbi (2012) document in the federal lobbying data. The dominance of these associations in lobbying might suggest that these associations allow auto dealers to resolve the public goods problem and act in their collective interest. In that case, mergers and acquisitions should not affect lobbying expenditures in the industry.[9] Our finding that consolidation increases lobbying suggests that there remain gains to coordination that are unrealized by the trade association. In fact, we find that the political effects of the large mergers and acquisitions that we study operate explicitly through trade associations. Trade association revenues increase by about $120,000 post-merger, which is consistent with the increase in lobbying that we estimate. Because industry lobbying is intermediated via trade associations, we can rule out that increased lobbying following a merger is due to the high fixed costs of lobbying.

Although auto dealers typically lobby together through their state trade association, individual dealers and smaller (regional) trade associations sometimes lobby independently. We explore strategic interactions between these entities in the wake of a large merger. Specifically, we take our merger analysis to the firm level, and study what happens to independent lobbying by regional ADAs and individual dealer groups that are *not* party to the mergers in our sample. We find evidence of free-riding: regional ADAs and individual dealers are *less* likely to lobby after mergers that significantly increase lobbying by the state ADA (i.e., mergers in congruent states) and they are *more* likely to lobby after mergers that do not much affect state-level ADA lobbying (i.e., border mergers). We note that in congruent states, free-riding is small relative to the increase in lobbying by state ADA and merging firms, so that on net, total industry lobbying increases following a merger.

We then explore what this additional lobby spending buys in terms of political outcomes, focusing on bills passed in the state legislature. Here, we observe auto dealers lobbying on a variety of different policies: issues specific to the auto retail industry (lemon laws, franchise laws, direct to consumer sales) and issues of interest to retailers more generally (sales taxes, consumer protection, employee relations). Post-merger, enactment rates are 7.2 percentage points (16%) higher for bills favored by the auto lobby. The magnitudes of our estimates imply an enactment elasticity with respect to lobbying of 0.21-0.32.

[8] Larger states sometimes will have multiple auto dealer associations.

[9] Except insofar as changes in the product market (e.g., higher prices) change the incentive to lobby. In the case of sales taxes, for example, higher prices imply a lower return to lobbying to reduce taxes.

Finally, we calibrate a simple model of auto dealer lobbying using our estimates from the merger analysis in order to understand the economic importance of the political coordination achieved through mergers. In conjunction with a behavioral assumption that dealers lobby to maximize expected profits from regulatory change, our estimates imply a bill enactment payoff of approximately $5.42 million per bill. Given that auto dealers typically lobby in support of 7.2 bills per state each year and that the mergers we study increase bill enactment probabilities by 7.2 percentage points, our back-of-the-envelope exercise suggests that these mergers achieve $2.80 million in revealed-preference payoffs for the industry in the year following the merger. For comparison, this payoff is equivalent to a one-year profit increase of about $20 per car sold, or an increase in profits of 3-6% on the sale of a $35,000 new car.

While there is a growing literature on the link between firm size and lobbying (Callander, Foarta and Sugaya, 2021; Cowgill, Prat and Valletti, 2022; Huneeus and Kim, 2021), this paper is unique in its focus on the collective action problem. The theory of collective action is well-established (Olson, 1965), and both Pecorino (1998) and Magee (2002) introduce models of free-riding specific to the lobbying context. However, the empirical literature to this point relies on cross-industry evidence (Bombardini, 2008; Gawande, 1997). Bombardini (2008) develops a model of lobby formation and provides empirical evidence consistent with the model—industries with greater size dispersion lobby more and this translates into more trade protection. We provide the first empirical evidence that *within-industry* changes in market structure lead to increases in lobbying and favorable regulation, but only in markets where political market concentration increases, as predicted by the theory of collective action.

Our study of corporate political influence in the state legislature also complements a limited literature examining the returns to federal lobbying in the United States, where the difficulty of measuring the aim and outcome of lobbying has stymied empirical analyses (see Bombardini and Trebbi (2020) for a review). Notable exceptions include De Figueiredo and Silverman (2006) and Kang (2016). De Figueiredo and Silverman (2006) study lobbying by universities, estimating an elasticity of academic earmarks with respect to lobbying of 0.20-0.30. Kang (2016) estimates a structural model of lobbying over policies in the energy sector, finding a small effect of lobbying on enactment probabilities and a large return to lobbying, on the order of 130%. Our paper stands out in two respects: first, we focus on lobbying at the state rather than federal level; and second, we are able to measure the outcome of lobbying using data on lobbied bill positions, which are typically unobserved by researchers. The bill position data allows us to directly link auto dealer lobbying to the success and failure of their legislative agenda, which is critical to assessing the efficacy of their

lobbying.

2 Institutional details and data

2.1 Auto Retail in the U.S.

Since the 1920s, the auto retail industry has been characterized by franchises, wherein car manufacturers outsource the retail sale of their vehicles to dealers. As of 2022, there were approximately 16,773 franchised light-vehicle dealerships in the US (National Automobile Dealers Association, 2022). These dealerships make up a significant share of retail employment and local revenues. Combined, dealerships employ about 1.1 million workers at an average annual wage of just under $80,000. Dealerships remit substantial tax revenues, accounting for about $24 billion in state and federal income taxes and $104 billion in state sales tax.[10] The owners of dealerships themselves are often at the top of the income distribution (Smith, Yagan, Zidar and Zwick, 2019). Previous work, such as Lafontaine and Scott Morton (2010), has speculated that car dealers enjoy a favorable regulatory environment due to their large footprint in local economies; comparatively, car manufacturers operate facilities in relatively few states and even fewer municipalities.

The logic underlying the franchise system is that dealers are meant to create value for manufacturers by providing amenities and services to customers, including vehicle repair, advertising, and financing (Grunewald, Lanning, Low and Salz, 2023).[11] They also negotiate vehicle trade-ins and train and maintain knowledgeable sales staff. Because franchisees make upfront investments in facilities, service equipment, and vehicle inventories, they face a potential hold up problem by manufacturers (Murry and Schneider, 2016). Complaints about coercive manufacturer practices vis-a-vis dealers in the early decades of the franchise system inspired both state and federal protection of dealer interests.[12] At that time, dealers were able to secure particularly favorable state regulation, much of which persists today (Lafontaine and Scott Morton, 2010). As an example, state regulations tightly circumscribe the establishment of new dealerships and the termination of existing dealerships. In many states, a manufacturer must prove that the establishment of a new dealership location will not "encroach" on the sales of an existing dealership. These laws make it hard for dealer groups to expand by opening new dealership locations; expansion is driven instead by the acquisition of existing dealerships. State franchise laws also typically bar manufacturers from selling directly to consumers,

[10] This translates to 8% of total retail employment on average and 10-20% of state sales tax revenue.

[11] Dealers spent $8.57 billion on advertising in 2022 (National Automobile Dealers Association, 2022).

[12] At the federal level the 1956 Automobile Dealers' Day in Court Act (ADDICA) provided recourse for a dealer to claim damages from a manufacturer acting against the terms of their franchise agreement.

a statute that Tesla has sought to overturn. Assessing the evidence on car retailing as of 2009, Lafontaine and Scott Morton (2010) conclude that the net result of these laws is a transfer from both manufacturers and consumers to auto dealers.[13]

We learn about current auto dealer political interests from the webpages of auto dealer trade associations. These webpages enumerate key political issues for their constituents, which include the franchise laws we discussed above, but also sales taxes and fees, employment and labor laws, incentives for electric vehicles, and consumer finance regulations.[14] The breadth of regulatory issues concerning car dealers motivate our choice of this industry for study.

Consolidation in the industry. The move toward consolidation in the auto industry began in the 1980s, with the expansion of publicly-traded auto dealer groups such as AutoNation, Sonic Automotive, and Asbury Automotive (Murry and Schneider, 2016). Appendix Figure C.1 shows the distribution of the number of dealerships owned by the top 100 dealer groups, ranked by reported revenues (WardsAuto, 2021). The top four dealership groups each have more than 100 dealerships across the country (AutoNation, Penske, Group 1, and Sonic), while the majority of auto retailers consist of single or dual establishment firms.[15] These large companies own dealerships that sell different car brands from different manufacturers.[16]

Industry reports highlight several drivers of auto dealer M&A activity, including: (i) encroachment laws, which make it challenging to open new dealerships, leaving mergers and acquisitions an attractive avenue for growth;[17,18,19] (ii) succession issues, particularly for family-run dealerships; (iii)

[13]There is no recent empirical work measuring the cost of these regulations to the public. However, a small literature from the 1980s finds that auto retail franchise laws have the effect of increasing prices to consumers (Eckard, 1985; Rogers, 1986; Smith, 1982).

[14]In the New York lobbying data clients are required to list the issues they lobby on. The New York State Auto Dealer Association lists "FRANCHISE REFORM, SALES TAX, WARRANTY EXPIRATION, SALES CONTRACTS, AIRBAGS, FUEL LABELS, LEMON LAW, RECALLS, MOTOR VEHICLE REPAIR SHOPS" in one filing and "GREENHOUSE GAS EMISSIONS, REPAIR SHOPS, USED OIL FILTERS, USED AIR BAGS, RIGHT TO REPAIR ACT, FRANCHISE PROGRAMS, AUTOMOBILE BROKER, LIENS, CERTIFICATE OF TITLE, LEMON LAW" in another.

[15]While size varies substantially among the top 100 dealers, Appendix Figure C.2 shows that the top dealers groups do not differ much in terms of (reported) revenue, when we normalize revenue by total number of dealerships.

[16]Franchise agreements do not preclude dealers from entering additional franchise agreements with other manufacturers (Murry and Schneider, 2016).

[17]For example, the CEO of LaFontaine Automotive explained that their M&A was "growth...centered around...gaps in our portfolio, either with brands we represent or geography" [https://www.automoblog.com/car-dealership-consolidation/].

[18]This motivation is also cited by the Dave Cantin Group, an M&A advisory firm. [https://www.davecantingroup.com/news/financial-analysis-and-modeling-for-dealership-ma-unlocking-the-true-potential-of-deals/]

[19]As a final example, here is an excerpt from Autonation's 10-K: "Our ability to grow our business may be limited by our ability to acquire automotive stores in key markets on favorable terms or at all. The automotive retail industry is a mature industry. Accordingly, the growth of our automotive retail business since our inception has been primarily attributable to acquisitions of franchised automotive dealership groups. ... As a result, we cannot assure you that we will be able to continue to acquire stores selling desirable automotive brands at desirable locations in our key markets or that any such acquisitions can be completed on favorable terms or at all. "

increasing returns to scale in new repair technologies (Lafontaine and Scott Morton, 2010);[20] (iv) increasing returns to scale in advertising (Murry, 2018; Murry and Schneider, 2016); and (v) increasing complexity in financing, insurance, and pricing.[21]

2.2 Data on Market Structure

Our data on auto dealership locations and ownership comes from Infogroup (2021), a directory of U.S. businesses that includes the name, parent company, industry, and address of each business. The Infogroup data accords with administrative data provided by the Departments of Motor Vehicles in Texas, Connecticut, and Florida.

The data shows that the market structure of the auto retail industry is characterized by many small local chains. Table 2 reports the number of dealerships and parent companies in our sample. The majority of dealerships in the U.S. are single-establishment firms that sell cars locally. This pattern squares with findings in the literature that most consumers search for and purchase cars from a dealership located close to home.[22] This geographic segmentation of demand will be important for our empirical strategy.

Because we focus on the state as relevant political unit of analysis, we construct a state-level HHI for auto dealers. At the state level, ownership is quite diffuse, with an average HHI of around 75 (Table 2). HHIs are certainly higher at the CBSA level, which is likely a better approximation to the product market. This disconnect between product and political market will help us to identify the effect of market structure on political activity. We also note that the size of the largest auto dealer groups is growing over time, echoing the broader trend toward concentration shown in Figure 1. In Section 4.1, we describe how we use the Infogroup data to identify large mergers and acquisitions.

2.3 Data on Political Spending

We construct a new data set of state-level lobbying from state-maintained administrative records. We focus on the 27 states that mandate reporting on lobbying clients and compensation, for which we observe expenditures by client, state, and year.[23] To give a sense for the magnitude of state lobbying,

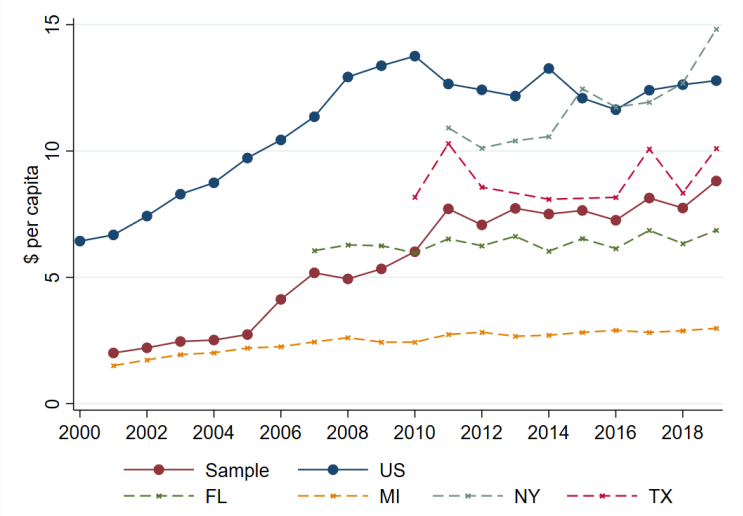
[20] Liz Fedor for Kerrigan Advisors, "Consolidation Sweeps Across Auto Dealerships During Pandemic" [https://www.kerriganadvisors.com/in-the-news/consolidation-sweeps-across-auto-dealerships-during-pandemic]

[21] In the same article from Kerrigan Advisors on auto dealer consolidation, the CEO of Morrie's Auto Group in the twin cities stated: "Manufacturers are asking us to do more and more...You have to have scale to compete within those complexities." The article explains that these include "needing expertise on new and used vehicle pricing, finance, insurance, information technology and human resources."

[22] Yavorsky, Honka and Chen (2021) finds that the median distance from home to dealership is 5.2 miles in Texas, while Murry (2017) finds that it is 8 miles in Virginia.

[23] Appendix Figure A.1(a) displays a map of the states with data, and Figure A.1(b) displays availability over time.

Figure 2: State vs Federal Lobbying Per Capita



Notes: This figure shows per capita lobbying in our sample of states compared to the federal lobbying data. We collect data on state lobbying directly from state lobbying portals, while federal lobbying data is from Kim (2017). The state lobbying is in red and the federal lobbying is in blue. The dashed lines highlight individual states in our dataset.

Figure 2 plots total federal and state lobbying per capita from 2000-2019 for all industries. State lobbying is substantial; average per capita expenditures are about 50% of federal lobbying. There is also considerable variation across states. In New York, lobbying per capita is at least as great as lobbying at the federal level.

Automobile dealers rank in the top third of lobbying industries.[24] Table 1 shows that the auto dealer industry spends about $250,000 in lobbying annually per state ($170,000 at the median). An important finding is that most auto dealer lobbying is intermediated by state auto dealer associations (ADAs). On average 90% of total industry lobbying is spent by auto dealer associations (100% at the median). In Section 5, we explore the role of the ADAs in coordinating political activities. State auto dealer associations also outspend the National Auto Dealer Association (NADA).[25]

Lobbying is not the only tool that firms use to exert political influence. We investigate auto dealers' campaign contribution activities using data from the National Institute on Money in Politics (2020). We find that lobbying spending exceeds contribution spending considerably. At the state level, the auto retail industry spends 10 times more on lobbying than on contributions.[26] For this

[24]Auto dealers are 72nd of 308 industries (Appendix Table A.1). This is similar to their federal ranking of 79 (Appendix Table E.1). Appendix Figure A.3 shows that state and federal auto dealer lobbying per capita is remarkably similar over the sample—growing five-fold between 2001 and 2018. Appendix Figure A.2(a) shows auto dealer lobbying per capita across states in 2019. Expenditures do not follow a clear geographic pattern; as an example, adjacent states Wisconsin and Michigan have relatively high and low levels of per capita auto dealer lobbying, respectively.

[25]The 27 states in our sample average about $5.8 million in state lobbying per year for the period 2017-19. The National Auto Dealer Associations spent $4.8 million in federal lobbying per year over the same period (National Institute on Money in Politics, 2020). When scaled by population, state ADA lobbying is 163% of federal ADA lobbying.

[26]In Appendix A.1 we compare the relative magnitude of lobbying and campaign contributions.

Table 1: Descriptive Statistics

	States without Border Exposure	States with Border Exposure	Difference
Lobbying			
Total Lobbying ($1,000)	250.77	244.24	6.53
Auto Dealer Associations Lobbying ($1,000)	194.69	227.32	-32.64
Total Lobbying Per Capita ($)	0.02	0.03	-0.01
Bills Lobbied			
Number of Bills Lobbied	12.40	20.00	-7.60
Number of Bills Supported	7.20	9.75	-2.55
Passage Rate of Supported Bills	0.54	0.32	0.22
Auto Dealer Associations			
Revenue from Member Dues ($1,000)	458.79	352.78	106.02
Total Revenue ($1,000)	1,313.06	5,516.58	-4,203.53*
Total Revenue Per Capita ($)	0.24	0.54	-0.29
Merger Event			
# of Dealerships Acquired	7.26	8.25	-0.99
# of Parent Dealerships (same state)	21.84	22.38	-0.53
Year of Acquisition	2013.32	2013.88	-0.56
Border Exposure	0.00	0.27	-0.27***
Market Structure			
State HHI	77.87	42.88	34.99***
State Congruence	0.94	0.80	0.14***

Notes: This table shows the descriptive statistics in the pre-merger period (4 years before the merger event in each state), by treatment and control. The control sample is any state where the merger event occurred in a cross-border product market: KY, MA, MN, NC, NJ, NY, TN, and VA. The treatment sample includes the remaining 19 states. Data on lobbying is collected by the authors from each states' lobbying portal. Data on HHI, dealerships acquired and parent dealerships is from Infogroup (2021). Congruence is measured using population in each CBSA (Appendix B). Data on auto dealer association revenue is collected by the authors from publicly available Form 990s. Here, NY and NJ, in the 'States with Border Exposure' column, are revenue outliers. Total revenue drops from $5.5M to $2.9M when we drop NJ alone. This is because the NJ ADA (NJCAR) has a title service program which generates a substantial amount of revenue. Data on bills lobbied come from lobbying records in six states: CO, IA, MA, MT, NE, and WI. Bill outcomes for these lobbied bills come from each states' legislative records.

reason, we focus on lobbying as the political influence lever.

Lobbying Outcomes. Understanding the returns to lobbying requires a measure of lobbying success. We collect publicly available bill-level data on the position of the auto lobby (e.g., whether auto dealers lobbied in support of or against a bill) and whether the bill was enacted into law. This data allows us to test whether the auto dealers are more likely to achieve their legislative goals following a merger. Our data comes from six states that require lobbyists to both report the exact bills that they lobbied on behalf of each client and the position their client takes on the bills they lobby. We merge the lobbied bills to states' legislative records in order to track the outcome of each bill.

Table 1 reports statistics on "Bills Lobbied" for the years before the merger event. We report the number of bills lobbied, but restrict to bills where we can identify the position (either "Support" or

"Oppose").[27] On average, the auto dealers lobby 13.3 bills per year (with a standard deviation of 8.6 bills).[28] Auto dealers support about 55% of the bills that they lobby, and the bills that they support are enacted at a rate of 43% in the pre-merger period.

3 Theoretical Framework

3.1 Background

Our analysis investigates how lobbying activities change in response to large mergers and acquisitions in the auto retail industry. In this industry, we argue that there are three main reasons that the incentive to lobby could change following a merger. (i) There may be gains to coordination in the political market, as the merged firm should internalize more of the benefits of lobbying. This mechanism, which we term the *collective action effect*, is our main object of interest. (ii) Coordination in the product market increases profits, which can change lobbying incentives. We refer to this as the *market power effect*.[29] (iii) Another factor may simultaneously change the returns to consolidation and lobbying, such as a technological change or a change in the dominant political party in the state legislature.

In principle, two additional explanations might contribute to a change in lobbying following a merger, though we believe these are irrelevant in our context. (iv) Firms may lobby over the merger *itself*. This is unlikely to be important in the auto retail industry because ownership is relatively diffuse; there has been little regulatory scrutiny over merger activity in auto retail. (v) Firms may be more likely to lobby post-merger due to fixed costs involved in hiring a lobbyist. In this case, there can be a scale effect of lobbying if the two merging firms, on their own, derive too small a benefit from lobbying to justify incurring the fixed cost, but combined, the benefit to the merged firm exceeds the fixed cost. We can rule out this sort of scale effect as important in the auto retail industry due to the ascendancy of trade associations in lobbying; auto dealers lobby together via state and local trade associations, and so the relevant adjustment is on the intensive rather than extensive margin.[30]

Our baseline estimates will measure the net effect of the merger. We interpret these estimates

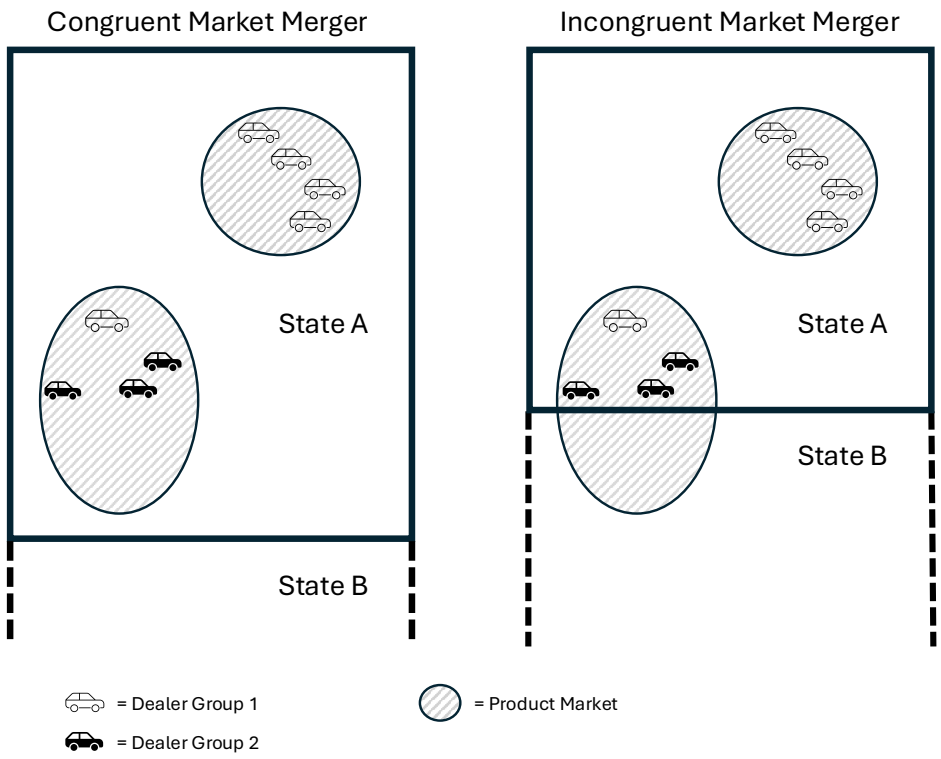
[27] One quirk of the data is that position typically takes one of three values:"Support", "Oppose", or "Monitor." In 5 of 6 states in this sample "Monitor" bills are in the minority. We briefly discuss how we think about "Monitor" bills in Section 6 and Appendix B.6.

[28] When we include the bills that auto dealers "Monitor", the number of bills lobbied per year grows to 48 at the mean, but 14 at the median. The large number of bills monitored is driven by one state—Iowa.

[29] We note that this can either sharpen or dull lobbying incentives, depending on the policy. A merger that leads to higher prices, for example, reduces the incentive to lobby over sales taxes. However, a merger that increases joint profits can sharpen the incentive to lobby over franchise laws.

[30] We observe ADA lobbying in 98% of state-years in the sample, this includes pre-merger years.

Figure 3: Mergers in Congruent and Incongruent Markets



as the combined collective action and market power effects, but we acknowledge that the estimates might also reflect an omitted variable that affects both consolidation and lobbying. We isolate the collective action effect by noting that a merger addresses lobbying coordination problems only when the firms operate in the same political market. Our empirical strategy will therefore compare mergers in product markets located entirely within a single political market to those that span the borders of political markets. We refer to these as *congruent* and *incongruent* markets, respectively, in reference to the alignment between political and product markets. By comparing mergers in congruent vs. incongruent markets we intend to difference out the market power effect and/or any omitted variables driving mergers in the industry, and therefore recover only the collective action effect.

Figure 3 illustrates our approach. Consider an acquisition in state A: dealer group 1 acquires dealer group 2. The left panel depicts a congruent market, wherein both firms operate solely in interior product markets—product markets contained within the political boundary of the state. Successful industry lobbying (e.g., to reduce new car sales taxes or strengthen franchise laws in state A) benefits all dealership locations of the merged firm. We contrast this with lobbying in an incongruent market (the right panel), wherein dealer 2's locations lie along the border with state B . In this case, a regulatory win in state A confers fewer benefits on the merged firm. For example, reducing sales

taxes in state A brings relatively smaller benefits to border dealerships because many consumers in the border product market live in state B and must pay sales tax to state B.[31] Similarly, because consumers can shop across the border, strengthening franchise laws in state A will offer limited benefits to border dealerships if competition is fierce in state B. Consequently, a congruent market merger increases lobbying incentives more sharply than a similarly-sized expansion in an incongruent market. The next section formalizes this intuition and shows how it maps into testable hypotheses.

3.2 A simple model of lobbying and market competition

This section presents a simple model of lobbying to illustrate how a merger can alter the incentive to lobby and how those incentives differ in congruent and incongruent markets.

Congruent markets. Consider two auto dealers competing in a single product market for new cars. The product market is entirely contained by a single political market. We make the following assumptions:

1. Symmetry between dealerships: Absent lobbying, each dealer earns duopoly profit $\pi_D < \frac{1}{2}\pi_M$.
2. Multiplicative benefit to successful lobbying: Successful lobbying results in a benefit τ for both dealers that scales with individual dealer profits.
3. Diminishing marginal returns to lobbying: Lobbying success, g, is a function of total industry lobbying L, where $g'(x) > 0$ and $g''(x) < 0$.

Duopoly. In the duopoly case, firm j faces the following optimization problem:

$$\max_{l_j \geq 0} \quad \pi_D \cdot (1 + \tau \cdot g(l_j + l_{j'})) - l_j$$

There is a symmetric Nash equilibrium where firm j's optimal lobbying satisfies the following first order condition:

$$\text{FOC} : g'(2l_j^*) = \frac{1}{\tau \cdot \pi_D}. \tag{1}$$

Monopoly. If instead there is only one dealer in the product market, the firm faces the following optimization problem:

$$\max_{L \geq 0} \quad \pi_M \cdot (1 + \tau \cdot g(L)) - L.$$

The monopolist's optimal lobbying choice is given by the following first order condition:

$$\text{FOC} : \quad g'(L^*) = \frac{1}{\tau \cdot \pi_M}.$$

[31] Note that for new car purchases, consumers pay sales tax based on their residency, not based on the location of the dealership where they purchase the car. Unlike for other products, tax arbitrage is difficult because vehicles must be registered with the DMV.

Proposition 1. *In congruent markets, industry lobbying is higher under monopoly than duopoly.*

Proposition 1 follows from the concavity of $g(\cdot)$. The ratio of industry lobbying under monopoly vs duopoly can be written as:

$$\frac{L^*}{2l^*} = \frac{g'^{-1}\left(\frac{1}{\tau\cdot\pi_M}\right)}{g'^{-1}\left(\frac{1}{\tau\cdot\pi_D}\right)} = \underbrace{\frac{g'^{-1}\left(\frac{1}{\tau\cdot\pi_M}\right)}{g'^{-1}\left(\frac{1}{\tau\cdot 2\pi_D}\right)}}_{\text{Market Power}} \times \underbrace{\frac{g'^{-1}\left(\frac{1}{\tau\cdot 2\pi_D}\right)}{g'^{-1}\left(\frac{1}{\tau\cdot\pi_D}\right)}}_{\text{Collective Action}} > 1.$$

The equation above shows that a merger increases industry lobbying for two reasons:

1. Market Power Effect: The monopolist makes greater profit in the product market than the duopolists, increasing the returns to lobbying ($\pi_M > 2\cdot\pi_D$).

2. Collective Action Effect: The monopolist internalizes the full benefit of its own lobbying.

Incongruent markets. Suppose instead that the two dealers compete in a single product market but are located in two separate political markets, where each can lobby its local regulator to secure a benefit τ_j.[32] The likelihood of success in jurisdiction j is a concave function of lobbying only in that jurisdiction, $g(l_j)$.

Duopoly. Each dealer chooses its lobbying expenditures to maximize its own profit:

$$\max_{l\geq 0} \quad \pi_D\cdot(1+\tau\cdot g(l)) - l.$$

The optimal choice of lobbying satisfies the following first order condition:

$$\text{FOC}: \quad g'(l^*) = \frac{1}{\tau\cdot\pi_D}. \tag{2}$$

Note that the duopolist lobbies more in an incongruent market compared to a congruent market because there is no free-riding in the incongruent market. Each dealer is the sole beneficiary of her own lobbying.

Monopoly. Consider now a merger between the two dealerships. For simplification, let $\frac{\pi_M}{2}$ be the profit that the monopolist earns in each political market, so that total monopoly profits in the product market remain π_M. The monopolist's lobbying problem is:

$$\max_{L_j\geq 0, L_{j'}\geq 0} \quad \frac{\pi_M}{2}\cdot(1+\tau\cdot g(L_j)) + \frac{\pi_M}{2}\cdot(1+\tau\cdot g(L_{j'})) - L_j - L_{j'}.$$

The monopolist's optimal lobbying in political market j satisfies the following first order condition:

$$\text{FOC}: \quad g'(L_j^*) = \frac{1}{\tau\cdot\frac{\pi_M}{2}}.$$

[32] For simplicity, dealers in the incongruent market are modeled as serving clientele on either side of a state border. In reality, dealerships located in a border product market likely serve a mixed customer base. Our empirical strategy adopts a continuous measure of congruence to account for this possibility.

Proposition 2. *In an incongruent product market, industry lobbying is higher under monopoly than duopoly.*[33]

The ratio of industry lobbying under monopoly vs duopoly in political market j can be written as:

$$\frac{L_j^*}{l_j^*} = \underbrace{\frac{g'^{-1}\left(\frac{1}{\tau \cdot \frac{\pi_M}{2}}\right)}{g'^{-1}\left(\frac{1}{\tau \cdot \pi_D}\right)}}_{\text{Market Power Effect}} > 1 \tag{3}$$

where the inequality follows from the concavity of the lobbying success function. In incongruent markets, consolidation increases lobbying due solely to the market power effect. The collective action effect does not operate in these markets.

Proposition 3. *Fixing π_M and π_D, consolidation leads to a larger increase in lobbying in congruent markets than in incongruent markets.*

The denominators in equations (2) and (3) are the same, but the numerator is smaller in eq. (3).

The magnitude of the market power effect can differ between congruent and incongruent markets because product market profits are split across two political markets in the latter case.[34] Our empirical design is intended to 'difference out' the market power effect by comparing congruent and incongruent markets, allowing us to isolate the collective action effect. Systematic differences in the market power effect between incongruent and congruent markets could therefore bias our estimates. However, this bias renders our estimator conservative,in the sense that it *understates* the collective action effect, under an additional assumption on the elasticity of the lobbying success function, which is similar to (but weaker than) requiring log concavity of the marginal return to lobbying $g'(L)$.[35] Even if the lobbying success function does not exhibit this property, our estimator is still likely to yield a conservative estimate of the collective action effect due to endogenous merger selection, which we discuss below.

[33] This is true for both political markets separately and does not require symmetry. A weaker condition suffices: the monopolist must earn higher rent in each political market than the duopolist for a fixed level of lobbying ($\pi_{M,j}(L) \geq \pi_{D,j}(L)$). This condition precludes, for example, the possibility that the monopolist closes one of the dealer locations to save on fixed costs of operating a dealership.

[34] In congruent markets, consolidation increases profits in the political market from $2\pi_D$ to π_M, giving rise to the market power effect. In incongruent markets, profits within the political market increase from π_D to $\frac{\pi_M}{2}$.

[35] The following assumption on the lobbying success function $g(L) : R_{\geq 0} \to [0, 1]$ is necessary and sufficient. Define $f(x) := g'^{-1}(x)$, which maps the sensitivity of lobbying success to lobbying $\frac{\partial g(x)}{\partial x}$ to lobbying itself. Holding fixed π_M and π_D, the market power effect is smaller in congruent markets when the elasticity of $f(x)$ with respect to x, $\frac{x \cdot f'(x)}{f(x)}$, is weakly decreasing in x. In words, this property states that for higher levels of lobbying, proportional increases in lobbying yield diminishing proportional changes in the marginal return to lobbying. This property is satisfied, for example, by the lobbying success function in Kang (2016): $g(L) = \frac{a+L^\gamma}{1+L^\gamma}$ where $a \in [0, 1]$ and $\gamma \in (0, 1)$. Another example of a function that satisfies this property is $g(L) = 1 - e^{-L}$.

Merger selection. If increased lobbying secures a more favorable regulatory environment, then firms should account for this coordination benefit in their merger decisions, potentially changing the set of mergers that are consummated in equilibrium. Let C be the fixed cost of merging. The dealers will merge if total monopoly profits (including political benefits) less C exceed joint duopoly profits. Absent lobbying, the merger condition is the same in both congruent and incongruent markets: merge when the product market gains exceed the cost of merging, $\pi_M - 2 \cdot \pi_D > C$. Incorporating lobbying into the model increases the incentive to merge in both incongruent and congruent markets, as illustrated below in equations 4 and 5.

In *congruent* markets, dealers merge if:

$$\pi_M \cdot (1 + \tau \cdot g\Big(g'^{-1}\Big(\frac{1}{\tau\pi_M}\Big)\Big)) - g'^{-1}\Big(\frac{1}{\tau\pi_M}\Big) - C \geq 2\pi_D \cdot (1 + \tau \cdot g\Big(g'^{-1}\Big(\frac{1}{\tau\pi_D}\Big)\Big)) - g'^{-1}\Big(\frac{1}{\tau\pi_D}\Big). \quad (4)$$

In *incongruent* markets, dealers merge if:

$$\pi_M \cdot (1 + \tau \cdot g\Big(g'^{-1}\Big(\frac{1}{\tau\frac{\pi_M}{2}}\Big)\Big)) - 2g'^{-1}\Big(\frac{1}{\tau\frac{\pi_M}{2}}\Big) - C \geq 2\pi_D \cdot (1 + \tau \cdot g\Big(\Big(g'^{-1}\Big(\frac{1}{\tau\pi_D}\Big)\Big)\Big) - 2g'^{-1}\Big(\frac{1}{\tau\pi_D}\Big). \quad (5)$$

Proposition 4. *The benefits of political coordination expand the set of mergers that occur in equilibrium.*

In an incongruent market, the only political benefit of consolidation stems from product market power. In congruent markets, a merger provides both market power and collective action benefits. Thus, mergers will occur in congruent markets even when the market power gains are small. This differential selection of mergers between congruent and incongruent markets can lead to a bias in our empirical design, making our estimate of the collective action effect conservative.

Hypotheses Our simple model of lobbying and market power gives rise to two hypotheses that we will test in our data:

1. *Mergers are followed by increases in industry lobbying.* Under the assumptions in our model, a test of hypothesis 1 is a joint test of the market power and the collective action effects.

2. *The increase in lobbying following a merger is greater in congruent markets than incongruent markets.* Under the assumptions in our model, a test of hypothesis 2 constitutes a conservative test of the collective action effect.

4 Empirical Analysis

4.1 Merger & Acquisition Sample

We begin by identifying a sample of relevant mergers. There are two challenges. First, there are many small acquisitions in each state and year. Second, our analysis will be at the state-year level, because the auto dealers lobby together via the trade association.

The industry is characterized by many, small dealers: franchisees that own a single or a couple of dealership locations. Dealerships are typically privately held and many dealerships can change hands in a given year, resulting in many small acquisitions in the data. Individually, these small ownership changes are unlikely to amount to meaningful consolidation within the industry. Further, small acquisitions by disparate dealerships do not aggregate in a natural way; if Auto Group 1 grows from one to two locations while Auto Group 2 shrinks from three to two locations, it is not clear whether net industry consolidation has increased or decreased. We therefore set aside these small acquisitions and divestitures.

We focus instead on the largest ownership change observed in each state during our panel. For each dealer-state-year, we calculate the annual ownership change as the number of dealerships owned by that car dealer in year t less the number of dealerships owned in year $t-1$.[36] For each state, we define the merger event of interest as the largest annual ownership change observed across all dealer-years in the data. This measure is not mechanically tied to the size of the acquirer or target. In fact, many of the events are akin to a "rollup" where a single firm simultaneously acquires several mom-and-pop operations to create a meaningful year-on-year change in the acquirer's holdings (not unlike Asil, Ramos, Starc and Wollmann, 2024).[37] Because ownership changes appear in the Infogroup data with a lag, we assign the event year as the year before the increase is observed in Infogroup.[38,39]

The average event in the sample comprises an acquisition of 7.5 dealerships. Because there are many small acquisitions each year, we need to provide evidence that the acquisitions we study (the sample events) are unique in size and frequency. Figure 4(a) shows the average acquisition size across

[36] By dealership, we mean the physical retail outlet where cars are sold.

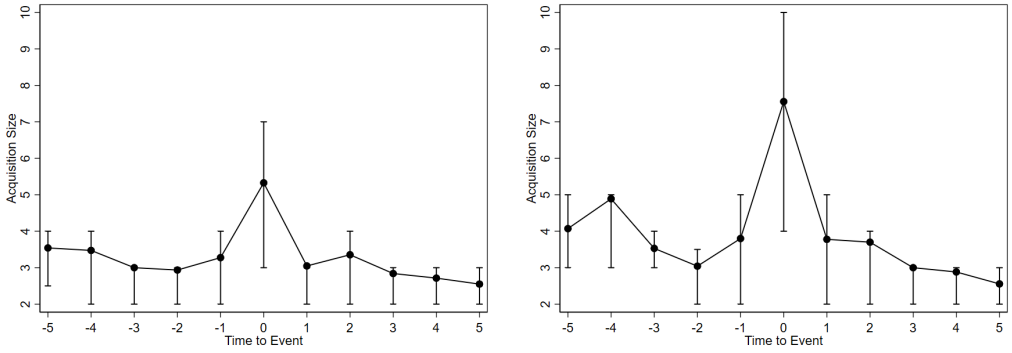
[37] See, for example, this description of the acquisition strategy from Group 1 Automotive's 10-K: "We have a disciplined two-tier acquisition program that is designed to enhance brand and geographic diversity, create economies of scale and deliver a targeted return on invested capital. Under our acquisition program, we pursue: (1) "platform" acquisitions of large, profitable and well managed multi-franchise dealership groups in large metropolitan and suburban geographic markets that we do not currently serve, (2) "tuck-in" acquisitions, which are key, single-point dealerships that are added to existing platforms. They allow us to increase brand diversity, capitalize on economies of scale and offer a greater breadth of products and services in each of the markets in which we operate. "

[38] We know this from hand-checking Infogroup "events" with press releases for the publicly traded firms.

[39] If there are multiple dealer-years with the same size increase, we take the first one that occurs as the event. For robustness we also run the analysis but use the last event instead of the first, this does not change our results.

all acquisitions in a state-year where at least two dealerships are acquired. We use event time, so that year "0" is the year in which the largest acquisition took place in the state (our merger event year). The figure plots the mean and the 25th and 75th percentile. This figure shows that the acquisitions we study are a meaningful departure from typical industry ownership churn. Figure 4(b) shows the size of the *largest* acquisition in each year. The largest acquisition is significantly larger in the event year, and there is no pattern of large acquisitions directly before or after the event. These figures suggest that the event-study design is appropriate to study large acquisitions at the state level.

Figure 4: Size of Acquisitions by Event Time



(a) Any Acquisition $\geq$ 2 dealerships (b) Largest Acquisition

Notes: These figures show the size of acquisitions across all dealer-state-years in the sample, with respect to event time. The "event" is the largest acquisition in the state. Panel (a) shows the average acquisition size by event time, within each state. Panel (b) shows the size of the largest acquisition, by event time and state. Both panels plot averages as well as the 25th and 75th percentiles.

Appendix Figure B.1(a) shows the distribution of event sizes along with the in-state count of dealerships owned by the acquirer, and Appendix Figure B.1(b) shows the distribution of all ownership changes compared with the ownership changes that we study (the merger "events"). The acquiring firms in these events include national dealer groups like AutoNation and Penske, but also smaller chains that primarily operate in one or two states. In order to verify that the mergers we study represent meaningful changes in the market, we perform a placebo test where we swap event dates across states (Appendix Section B.3).

Appendix Table B.1 shows the event year, lobbying data availability, and sample years for each state in our sample. For the majority of states we can analyze only one event; we are limited by the number of years of lobbying data in that state. In addition, there are a few cases where the large merger event we identify occurs before lobbying data is available in that state. These are used as control states. In five states (CA, MI, NC, NE, NJ), we have almost 20 years of lobbying data. For these states we use a non-overlapping window to provide a second large merger event, if one occurred

Table 2: Mergers and Dealership Concentration

	# of Dealers	# of Parents	Pre-Merger HHI	Post-Merger HHI	%Δ HHI
State-Level					
Mean	1,869	738	66	80	22.4
Median	954	534	46	59	28.0
CBSA-Level					
Mean	631	221	263	273	3.8
Median	210	110	162	197	21.8

Notes: This table shows the number of dealerships (establishments), parent dealer groups (firms), and HHI, before and after the sample merger. HHI is measured using the number of dealerships a firm owns, as we have incomplete data on sales. We calculate average HHI in each state 4 years before and 4 years after the merger. We then show the same at the product market (CBSA) level. Data on dealership location and ownership is from Infogroup (2021).

in that period, or an additional control. The main analysis sample has 28 merger events and 221 state-year observations, over 27 states.

HHI. The merger events in our sample constitute economically significant changes in concentration. Table 2 shows the average state-level HHI before and after the merger events that we study. We focus on the state-level HHI because we are interested in concentration in the *political* market, which, in our context, is the state. We also show the same statistics at the product-market level (CBSA). Because we do not have detailed sales data, HHI is calculated using the number of dealerships each auto group in a state owns. On average, state HHI, as measured by number of dealerships, increases from 66 to 80 post-merger. Appendix Figure B.5 shows the increase using a standard event study design. These descriptive patterns suggests that the events we study reflect a meaningful degree of consolidation at the state-level.

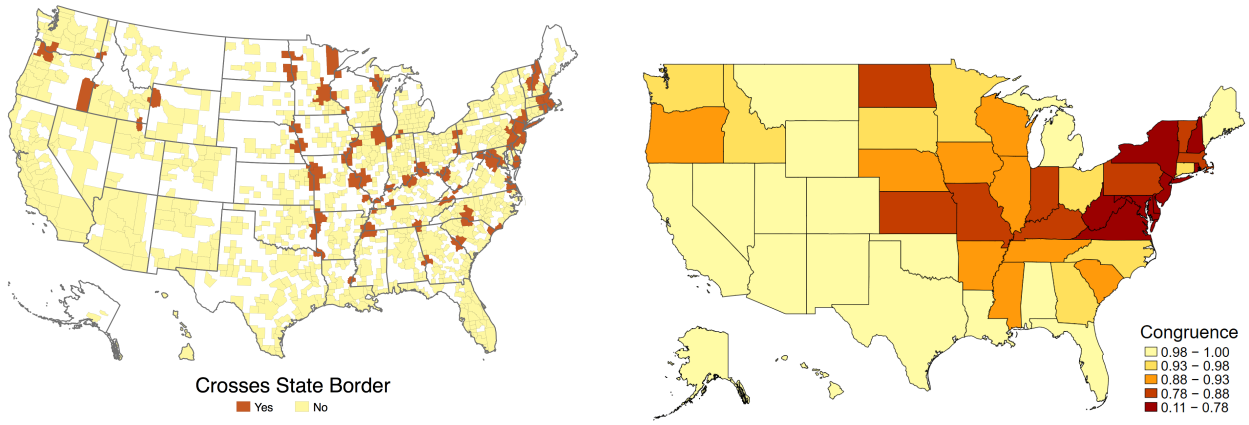
Border Mergers. Many of the mergers in our sample involve the acquisition of dealerships across multiple product markets. We create a "border exposure" measure which ranges from 0 to 1, where a value of 1 represents a merger event where all of the acquired dealerships are located in border Core Based Statistical Areas (CBSAs).[40,41] Figure 5(a) maps the border CBSAs. Eight states in the sample have mergers located in product markets that cross a state border: KY, MA, MN, NC, NJ, NY, TN, and VA.

We also calculate the congruence of each state, which measures the alignment between political and product markets, as described in Section 3.2. This measure is not merger-specific, but instead

[40] See Appendix B.4 for the exact calculation of our border exposure variable.

[41] CBSAs are regions designated by the Census comprising an urban core and surrounding area of economic integration through commuting patterns. See https://www.census.gov/programs-surveys/metro-micro/about/glossary.html. We use CBSAs to measure the product market because consumers buy cars very close to where they live (Murry, 2017; Yavorsky, Honka and Chen, 2021).

Figure 5: (Mis)Alignment of Product and Political Markets



(a) Cross-Border CBSAs (b) Congruence

Notes: The map on the left shows the CBSAs that cross state borders in orange, and the CBSAs that do not share a border in yellow. The map on the right shows the congruence measure for each state. A darker red denotes a lower congruence, while light yellow states are entirely congruent (have no cross-border CBSAs).

captures the potential for a border merger based on the geography of population centers across the state. State congruence is a weighted average across product markets (CBSAs) of the share of in-state consumers in that CBSA. Intuitively, this measure captures the probability that a firm acquiring an additional dealership at random within its product market is in the same state (i.e., the same political market). If all product markets are contained within the state, then our measure of congruence is 1. Appendix B.4 provides more details about the exact construction of this measure. Figure 5(b) maps the geographic distribution of state congruence.

Table 1 presents pre-merger statistics for the variables of interest: lobbying, bills lobbied, and auto dealer association finances. We split the sample according to whether the state has a border-CBSA merger in our sample. We show that the merger events look similar across the two groups in terms of the number of dealerships acquired, the number of parent dealerships, and the year of acquisition. As expected, states with border-CBSA mergers differ substantially when it comes to measures of border exposure and congruence because this is how the treatment concept is defined.

4.2 Regression Specification

Our baseline specification measures changes in lobbying following a merger, where s denotes state and t denotes time:

$$\ln(lobbying_{st}) = \beta \cdot Post_{st} + \mu_s + \lambda_t + \epsilon_{st}. \tag{6}$$

Lobbying is measured as the combined lobbying of the state auto dealer association plus any lobbying by the acquiring or acquired party in the event.[42] Our annual lobbying measure ranges from $200 to over $1,000,000 during the sample period, with a mean of $195,000 and a median of $119,000.[43] State and time fixed effects are included as μ_s and λ_t. We are primarily interested in β, the coefficient on $Post_{st}$, which takes a value of one for time periods including and after the year of the merger in state s and zero otherwise.

Our difference-in-differences specification augments Equation 6 by interacting the $Post_{st}$ indicator with T_s, which is one of our measures for the alignment of political and product markets in state s:

$$\ln(lobbying_{st}) = \alpha \cdot Post_{st} \times T_s + \beta \cdot Post_{st} + \mu_s + \lambda_t + \epsilon_{st}. \tag{7}$$

We focus on lobbying and other measures of political influence in the four years before and after a merger. The challenge of applying our empirical design to a wider time window is twofold: first, it would require data on lobbying in earlier periods, which is not readily accessible; and second, over a longer time horizon it becomes more plausible that other factors drive differences in lobbying between states.

4.3 Main Results

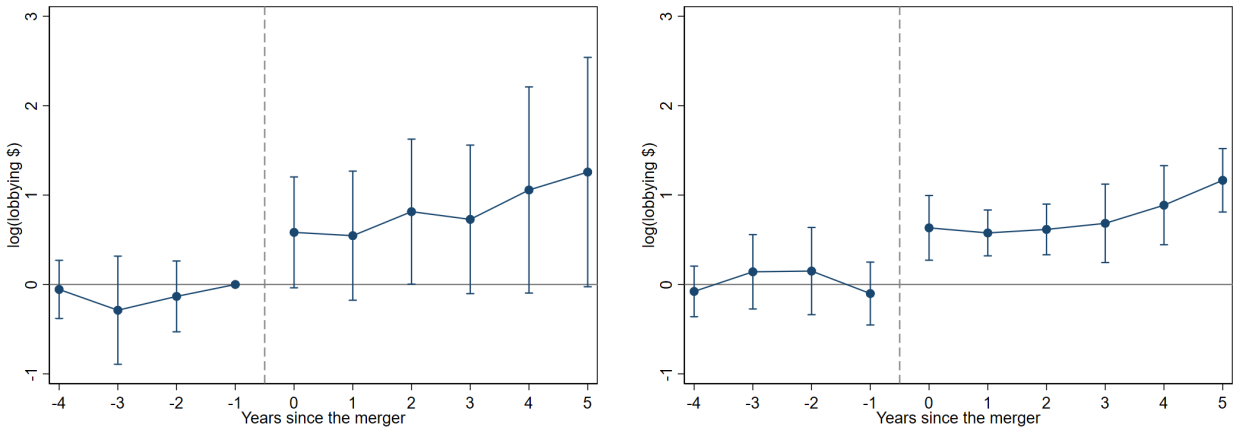
Table 3 shows the baseline results (column (1)) and Figure 6(a) shows the results using an event study approach, estimating a separate β for each year in the pre- and post- period. Figure 6 shows that lobbying increases by about 55% in the year of the merger, and continues to increase thereafter. We do not observe pre-trends in lobbying expenditures. A concern with the event study two-way fixed effects estimator is that if treatment effects are dynamic or heterogeneous, then comparisons of late mergers to early mergers may bias our estimates. Figure 6(b) shows results using the Sun and Abraham (2021) methods in order to avoid the problematic type of comparisons flagged by Goodman-Bacon (2021). The results are consistent, with tighter confidence intervals. Our sample size is small, but the results suggest a 55-70% increase in lobbying in the immediate post-merger period. For the average state, this amounts to $135,000 to $175,000 per year, roughly the cost of hiring one additional lobbyist.

We next investigate how lobbying expenditures change following mergers that occur along a state

[42] Some states have both a state ADA and regional ADAs (i.e. Michigan has the "Michigan Auto Dealers Association" and the "Detroit Auto Dealers Association"). In this case, we include the regional ADA spending if the acquirer is present in that region.

[43] When a state is not observed lobbying in a year (less than 2% of observations) we impute the level as $500, which is the minimum reportable threshold for lobbying activity in most states.

Figure 6: Lobbying Event Study



(a) Two Way Fixed Effects

(b) Sun and Abraham (2021)

Notes: Figure (a) shows the point estimates and confidence intervals for the estimates of β_j, from Equation 13 (Appendix B). This is the standard two-way fixed effects event study, with standard errors clustered at the state level. The outcome of interest is trade association and merging parties lobbying expenditures. For the majority of the sample only the trade association lobbies. Figure (b) estimates the same object using the method from Sun and Abraham (2021). For the event study we use a window of 5 years pre- and post-merger, but the sample is unbalanced—we do not always observe state lobbying for the 10 years around the merger event. The sample is detailed in Appendix Table B.1. The Sun and Abraham (2021) analysis includes the pure control state-years.

Table 3: Difference-in-Differences Estimates

Outcome:	log(auto dealer lobbying)$_{st}$			
	(1)	(2)	(3)	(4)
Post$_{st}$	0.71**	0.78**	-0.62	0.11
	(0.29)	(0.33)	(0.56)	(0.43)
Post$_{st}$ × Border Exposure$_s$		-0.57		
		(0.54)		
Post$_{st}$ × Congruence$_s$			1.52**	
			(0.72)	
Post$_{st}$ × Congruence Dummy$_s$				0.86*
				(0.49)
Observations	221	221	221	221
R-squared	0.79	0.79	0.79	0.80

Notes: This table shows the results for Equation 6 (Column (1)) and Equation 7 (Columns (2)-(4)), where Post =1 for the event year and all years after. The sample is restricted to 4 years before and after the event, Appendix Table B.1 lists the sample states and years, and Appendix Table B.3 shows the results using only one event window per state. The outcome variable is log(lobbying $). State and year fixed effects included in each specification. Standard errors clustered by state. + p<0.15, * p<0.1, ** p<0.05, *** p<0.01

border. Table 3 shows the results. The sign of the coefficient on the interaction between $Post_{st}$ and our measure of border exposure, in column (2), confirms our hypothesis: mergers lead to smaller changes in lobbying when they have high border exposure. Our results imply that an acquisition of a dealership group that straddles a state border would not lead to a meaningful increase in lobbying. However, an acquisition of a dealership group located in interior markets would increase lobbying expenditures by 78%, or about $195,000 in the average state.

Finally, we test whether mergers in congruent states lead to greater increases in lobbying expenditures. Column (3) shows that the data bears out this prediction. In our merger sample, average congruence is high (0.90, with a standard deviation of 0.12). Post-merger, a state at the 10th percentile of congruence, New York (0.77), is expected to see a 55% increase in lobbying. A state at the 90th percentile of congruence, Texas (1.00), is expected to see a 89% increase. Column (4) presents a simpler specification that uses a dummy for above median state congruence (≥ 0.90) as our measure of "treatment." It shows that all of the effect is driven by the most congruent states. These findings suggest a limited role for alternative links between consolidation and lobbying. Mergers in incongruent markets see only modest (and statistically insignificant) increases in lobbying following a merger, indicating that greater coordination in the product market does not lead to markedly higher lobbying in this industry. We probe this further in the following subsection.

4.4 Firm Size and Product Market Power

Our analysis has focused on how a merger can enhance coordination in the political market and therefore increase lobbying. However, we know that a merger might change incentives to lobby for reasons that do not derive from political coordination. We provide evidence in support of the collective action mechanism with our difference-in-differences analysis in Table 3, which compares mergers that should have more versus less gains from political coordination. This section provides additional evidence that post-merger increases in lobbying are not driven by increases in firm size or product market power.

Out-of-State Mergers. First we compare mergers in our sample with the largest out-of-state merger event for the same acquiring parent. The largest out-of-state merger event will capture a year where the firm experienced a similar increase in size, as measured by total dealerships, but did not necessarily increase their dealership network in the state of interest.

Table 4 shows the results. Due to the nature of the exercise, we restrict to parent companies with significant presence outside of our event state. This gives us 14 states with 50% of their dealership

Table 4: Firm Size and Product Market Power

	Placebo Sample		Full Sample		
	In-State Mergers	Out-of-State	Baseline	Heterogeneity	
	(1)	(2)	(3)	(4)	(5)
$Post_{st}$	1.01**	0.42	0.71**	0.52*	0.80***
	(0.31)	(0.33)	(0.29)	(0.29)	(0.27)
$Post_{st}$ ×				0.05	
Δ CBSA dealer share				(0.09)	
$Post_{st}$ ×					-0.06
Δ CBSA dealer share, weighted					(0.12)
Observations	191	170	221	221	221
R-squared	0.70	0.69	0.79	0.79	0.79

Notes: This table shows the results for Equation 6, where Post = 1 for the event year and all years after. The sample is restricted to 4 years before and after the event. The outcome variable is log(auto dealer lobbying $), as in Table 3. In columns (4) and (5) the Post dummy is interacted with a variable that measures the change of product market power for the acquiring firm. The first measure, Δ CBSA dealership share, is the change in the share of dealerships the acquirer experienced in this merger event, averaged over the CBSAs where the merger occurred (column (4)). The measure used in column (5) takes the same Δ CBSA dealership shares, but with weights of share of dealerships the acquirer had in each CBSA in $t-1$. State and year fixed effects included in each specification. Standard errors clustered by state. + p<0.15, * p<0.1, ** p<0.05, *** p<0.01

network outside of our event state. The baseline effect is large for the mergers in our sample for these 14 states, at 1.01 (column (1)). However, there is no significant change in lobbying expenditures following the placebo event years (column (2)). These results provide further assurance that our main results are not driven solely by an increase in firm size independent of political coordination effects.

Merger Heterogeneity. We also test whether mergers with greater expected product market gains lead to higher levels of lobbying. Because we cannot directly measure product market coordination (we do not have data on prices or costs), we focus on heterogeneity in the product market overlap of the merging firms. We expect product market gains to be greatest for mergers between firms that operate within the same product market. Our first measure of overlap, Δ *CBSA dealership share*, is the average change in the share of dealerships owned by the acquiring firm in each CBSA where it operates. Δ *CBSA dealership share* is higher if a firm acquires 10 dealerships in one CBSA rather than one dealership in 10 different CBSAs, all else equal. The second measure is constructed as a weighted average of dealership share changes, where the weights capture the importance of the CBSA to the acquirer.[44] Column (3) reproduces the baseline effect from Table 3. Columns (4) and (5) show that the baseline merger effect is not driven by mergers with greater consolidation in the product

[44]Specifically, the weights are the share of the acquirer's establishments in that CBSA at $t-1$, the year before the merger.

market. In other words, the mergers that should increase coordination in the product market the most do not lead to greater increases in lobbying.

5 Lobbying and the Auto Dealer Trade Association

Our data reveals that the majority of auto dealer lobbying occurs through state auto dealer trade associations (ADAs). ADAs account for 90% of all lobbying expenditures in our sample, as shown in Table 1. This finding is perhaps unsurprising, as an explicit function of ADAs is to coordinate the political activities of their members. Our findings show that despite the dominance of trade associations in the political spending arena (and their stated goal of coordinating political spending), the ADAs have not fully resolved the collective action problem of lobbying. Even in the presence of an ADA, a merger between two dealerships in the same political market leads to greater lobbying. This section describes how trade associations in the auto retail industry raise money and make decisions about lobbying in order to shed light on our finding that mergers increase political spending.[45]

It is challenging to learn about the internal workings of trade associations because they do not publish meeting minutes or annual reports. However, we document important facts from their webpages and the Form 990s they submit to the IRS to maintain non-profit status. Each state has its own trade association, and large states are typically home to additional local ADAs.[46] The stated mission of ADAs is to "improve" or "promote" the auto industry in the area. For example, from Texas: "TADA is committed to promoting and maintaining a competitive auto industry in Texas while protecting the communities our members serve." Apart from lobbying, ADAs organize conferences and member education programs, provide guidance on state regulations, and assist with other small business issues, such as employee insurance plans.

ADAs raise revenue through member dues, contributions, education programs, and events like auto shows. We collect data on total revenue, member dues, and expenses for each ADA in our state lobbying dataset. The average ADA in our sample collected $490,000 in dues in 2019 and had a total revenue of $1.43 million.[47] Total dues collected is tightly correlated with market size (Appendix Figure D.1); a 10% increase in number of dealerships in a state is associated with a 7.8% increase in total dues collected.

[45] These associations are prevalent across industries of all sizes and sectors. A recent literature in IO studies the collusive behavior facilitated by trade associations (see Alé-Chilet and Atal, 2020; Eisenberg, Estay and Mohapatra, 2023). Our paper highlights the role of trade associations in lobbying, building on the work of Bombardini and Trebbi (2012) and Pecorino (2001). This is a relatively nascent literature, and certainly a rich avenue for future research.

[46] For example, Texas has a total of 7 ADAs, while California and New York both have 5.

[47] This excludes a couple of ADAs that collect the majority of their revenue from auto shows, or title registration.

Multiple hypotheses could rationalize our finding of gains to coordination in the presence of an ADA. First, ADAs might have low membership levels, so that they do not actually coordinate lobbying for the parties in our merger sample. This possibility seems unlikely given the high levels of ADA lobbying that we observe, but we verify this with ADA membership where it is available. We find that over 80% of dealers are members of their state ADA. Importantly, membership typically includes the largest dealer groups, which are usually the acquirers in our sample events.[48]

The next hypothesis is that the merging dealer groups, which now internalize more of the gains from lobbying, choose to contribute additional funds to lobbying efforts via the ADA. Most ADAs encourage discretionary contributions to the ADA lobbying fund, as dues are relatively low.[49] These discretionary contributions again raise the specter of the public goods problem.

Finally, mergers among dealer groups within the same state might also influence ADA political spending by facilitating coordination within the trade association. We note that larger dealer groups are more likely to sit on the board of directors, thereby determining how the ADA's resources are allocated across activities, including lobbying.[50] As the board of directors is often large, alignment between the directors may also lead to more agreement about the ADA agenda and resources. For example, the board of directors can increase dues, thereby increasing the ADA's lobbying resources.

We can investigate the mechanism by which mergers affect ADA finances using our data on dues and revenues. Figure 7(a) shows that the total dues collected by the ADAs increases post-merger, although the increase occurs slowly. Figure 7(b) shows that total revenue of the ADAs, which includes contributions for lobbying, increases immediately. Given the median revenues and dues of the ADAs in our lobbying states sample, this amounts to an increase in annual total revenue of about $123,000, and an increase in annual revenue collected from dues of about $70,000 (starting in t+2). This increase in revenue is consistent with the observed increase in lobbying post-merger, and the results suggest that ADA finances are affected by two channels: increases in discretionary contributions to ADA lobbying from individual dealers and increases in revenue from dues.

5.1 Evidence of Free-Riding

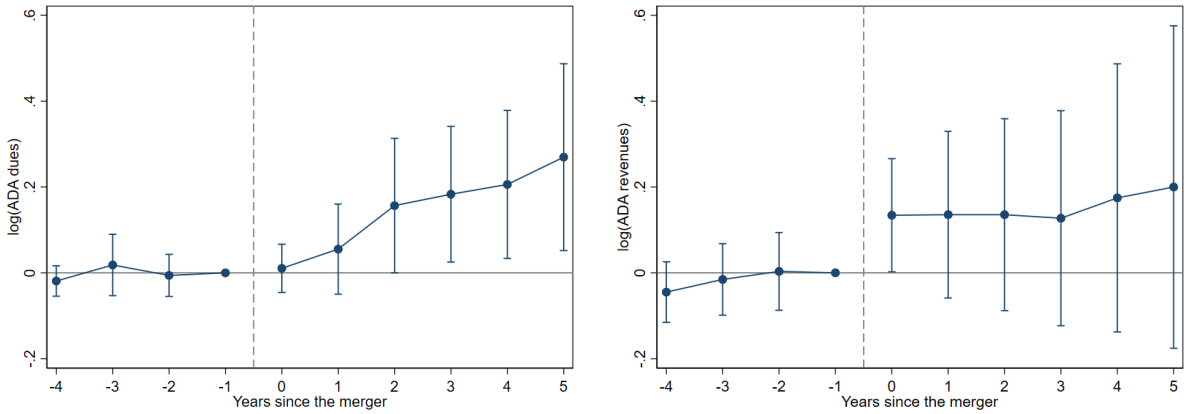
The theory of collective action suggests that when firms within an industry stand to benefit from similar legislation, firms have an incentive to free-ride on the lobbying activities of their rivals, leading

[48] See Appendix D for more details.

[49] Average dues for a dealership that sells 500 cars annually is $915, ranging from $250 in Louisiana to over $1200 in Idaho, California, and Kentucky. See Appendix Figure D.1 for dues schedules in 11 states.

[50] More than a quarter of the top dealers in each state sit on the ADA board, based on a comparison of the top three dealers in each state in 2019 to board composition in 2024. We note that true participation is likely higher because some ADAs do not reveal the composition of the full board.

Figure 7: Auto Dealer Trade Association Finances



(a) Revenue from Member Dues

(b) Total Revenue

Notes: Figures (a) and (b) shows the point estimates and confidence intervals for the estimates of β_j, from Equation 13, using log(ADA revenue from dues) and log(ADA total revenue) as an outcome, respectively. This is the standard two-way fixed effects event study, with standard errors clustered at the state level. ADA revenue from dues and total revenues are collected by the authors from each associations' Form 990s.

to underinvestment in lobbying. Thus far we have studied how mergers alleviate the collective action problem for the firms involved in the merger, providing evidence of increased lobbying by the merging parties and the auto dealer association of which they are a member. In this section, we study the behavior of the *non-merging* dealership groups, i.e. the remaining "rival" firms in the industry. These individual dealers and regional ADAs (to which the merging parties do not belong) have an incentive to free-ride on the increased lobbying efforts of the newly merged entity.

We take every individual dealer and regional ADA that lobbies but is not party to our sample of mergers. This sample consists of 36 individual dealers and regional ADAs that are observed lobbying at least once in the sample period. Unlike the state ADAs, the individual dealers and regional ADAs lobby relatively infrequently: over 60% of the entity-years in the sample have no lobbying. We therefore study the extensive margin of lobbying. Our empirical specification is similar to equation (6), except that we specify the decision to lobby at the firm level. The exact specification follows:

$$\mathbb{1}(\text{lobbying}_{ist} > 0) = \beta Post_{st} + \mu_{is} + \lambda_t + \epsilon_{ist}, \tag{8}$$

where i indexes firm (ADAs and individual dealers), s indexes state, and t indexes year. The dependent variable of interest takes a value of 1 if firm i lobbies at all in state s at time t. The indicator variable $Post_{st}$ equals one for time periods including and after the year of the merger in state s. We also interact $Post$ with our border measure and congruence measures, following equation (7).

Table 5 shows the results. The sample in columns (1) to (3) includes all regional ADAs and

Table 5: Lobbying by Non-Merging Parties

Outcome:	$\mathbb{1}(\text{Lobbying}_{ist} > 0)$					
	(1)	(2)	(3)	(4)	(5)	(6)
Post_{st}	-0.06	-0.14	0.79**	0.12	-0.00	1.04**
	(0.16)	(0.16)	(0.35)	(0.13)	(0.12)	(0.43)
$\text{Post}_{st} \times \text{Border Exposure}_s$		0.67*			0.78+	
		(0.34)			(0.44)	
$\text{Post}_{st} \times \text{Congruence}_s$			-0.96**			-1.10**
			(0.34)			(0.46)
Observations	249	249	249	165	165	165
Sample	ADAs & Dealers (N=36)			Ind. Dealers (N=23)		
Dep. Var Mean	0.39	0.39	0.39	0.30	0.30	0.30
R-squared	0.57	0.59	0.60	0.50	0.54	0.55

Notes: This table shows the result of estimating Equation 8. Observations are at the firm (dealer or ADA)-state-year level. Post = 1 for the event year and all years after. The sample is restricted to 4 years before and after the event. Firm-State and Year fixed effects are included in each specification and standard errors are clustered at the state level.

non-merging individual dealers, while the sample used in columns (4) to (6) include only non-merging individual dealers. A first observation is that we detect no no effect in the baseline event study; the coefficient on *Post* in columns (1) (and also (4)) is small in magnitude and not statistically significant at conventional levels. However, when the interactions between *Post* and the border merger and congruence measures are included, the results are striking. Individual dealers and regional ADAs in congruent states—i.e., the states where we observe dramatic increases in lobbying following a merger for the merging parties—are significantly *less* likely to lobby post-merger (a decrease of 17 percentage points per column (3)). In contrast, the individual dealers and ADAs in states with border exposure mergers—i.e., states where we do not observe any lobbying effect post-merger for the merging parties—are *more* likely to lobby.

These results provide evidence of strategic interactions between auto dealer groups and their trade associations. Rival firms are less likely to participate in lobbying following a merger that increases lobbying by the merging parties and the state trade association. The extensive margin response is meaningful given that individual dealers seldom lobby independently. However, the decline in rival lobbying has but a small effect on total industry lobbying; the sample of non-merging entities and regional ADAs included in 5 contribute less than 10% of total lobbying in the data. Appendix Table B.4 shows the net effect of the merger on total industry lobbying. It confirms that lobbying increases post merger; the main results presented in Table 3 are not meaningfully dampened by rival firm free-riding.

6 Bill Enactment

By revealed preference, increased lobbying brings value to merging parties within a contiguous political market. The effect of this increased lobbying on other market participants, including consumers, depends on its efficacy. This section presents evidence on the returns to lobbying in promulgating the auto dealer legislative agenda. We leverage data on state-level legislative bill outcomes and, and in particular, whether the enactment rate of a bill depends on the position of the auto dealer lobby.

Our data comes from six states (CO, IA, NE, MA, MT, WI) that provide information on the exact bills that the auto dealerships lobby and their position, i.e., whether the auto dealers lobbied in favor of or in opposition to each bill.[51] We then link the bills that are lobbied by the auto dealers to bill outcomes from state legislature archives. Table 1 shows the number of bills lobbied by auto dealers and associations annually, as well as the number of bills they support and the enactment rates for these bills. Auto dealers support about half of the bills that they lobby, and the bills that they support are enacted with a probability of about 40%. Appendix Table B.5 shows more descriptives for the bill outcome data, both before and after the merger events.

We employ estimating equation (7) to explore how bill enactment changes following large in-state mergers. As in Table 1, we restrict attention to bills for which we can discern the auto dealer position (i.e., whether the auto dealers "Support" or "Oppose" the bill).[52] We study the "success" of each bill pre- and post-merger, where success naturally depends on the auto dealers' position on the bill in question. We classify lobbying on bill b as successful if the dealers support bill b and it passes or if the dealers oppose bill b and it does not pass.

Table 6 presents the results. First, we should note that mergers are not followed by an increase in the number of bills lobbied (Appendix Table B.6). This finding suggests that the post-merger increase in lobbying that we document operates on the intensive rather than extensive margin. The estimates in Table 6 further reveal that bill enactment increases following a merger, but only in the most congruent states. In our sample of six states with bill outcomes, the median congruence is 0.924. Therefore, the results suggest a 15.7 percentage point increase in lobbying success (column (2)) and a 7.2 percentage point increase in pass rates, when we only look at bills that the auto dealers support (column (5)). These effects are sizable, especially given the pre-merger baseline success and pass rates

[51] This is because in these states the ethics authority require lobbyists to report this additional information.

[52] One issue with the data is that the auto dealer lobbyists do not always report their position. In fact, 38% of bills are neither "supported" or "opposed" by the auto lobby, just "monitored." The share of bills that are "monitored" drops to 24% when we drop Iowa, where the auto dealer "monitors" many bills. In Appendix Table B.7 we include these "monitored" bills, but with the assumption that "monitored" bills are actually "opposed" by the auto dealer lobby. The results are consistent with Table 6. We discuss this assumption and ongoing work to disambiguate dealer position for a larger sample of bills in Appendix B.6.

Table 6: Bill Enactment

Outcome:	Success			Pass		
	(1)	(2)	(3)	(4)	(5)	(6)
$Post_{st}$	0.04	-4.13**	0.07	-0.03	-5.37***	0.05
	[-0.15,0.24]	[-6.91,-1.36]	[-0.17,0.31]	[-0.37,0.31]	[-7.47,-3.28]	[-0.18,0.28]
$Post_{st} \times Congruence_s$		4.64**			5.89***	
		[1.51,7.76]			[3.59,8.20]	
$Post_{st} \times Border\ Merger_s$			-0.08			-0.34***
			[-0.47,0.32]			[-0.44,-0.24]
Observations	489	489	489	295	295	295
Sample		Support + Oppose			Support Only	
Dep. Var Mean	0.62	0.62	0.62	0.45	0.45	0.45
R-squared	0.10	0.11	0.10	0.19	0.22	0.21

Notes: This table shows the results for Equation 6 (Columns (1), (4)) and Equation 7 (Columns (2), (3), (5), (6)), where Post =1 for the event year and all years after. We use a 9 year window centered at the event year in order to ensure 2 legislative sessions are included for each state. The analysis for Columns (1)-(6) is at the bill level, and for each bill we estimate the effect of the merger event on bill-level outcomes: "Success" in Columns (1)-(3) for bills the dealers support or oppose, and "Pass" in Columns (4)-(6) for only bills the dealers support. There are six states in this analysis: CO, IA, NE, MA, MT, and WI. Only MA has a merger with any border exposure, so we use a dummy for "Border Merger". There is more variation in state congruence over the sample, which ranges from .87 (MA) to 1 (CO, MT), with a median of 0.92 (WI). Appendix Table B.5 shows the raw means for each state. State and year fixed effects included in each specification. Wild bootstrap confidence intervals.

of 0.62 and 0.45, respectively. The increase in auto dealer lobby success is *not* driven by states with border mergers (columns (3) and (6)). However, only one state in this subsample has a merger that occurs in a border CBSA.

The null result of merging on bill enactment in columns (1) and (4) is inconsistent with an increase in lobbying found in the same baseline specification at the state level (Table 3, column (1)). The baseline bill enactment effect is positive when we drop the bills in Massachusetts, the one state with a border merger (and least congruent state) in this subsample. Without Massachusetts, the effect in Column (1) increases to 0.15, though insignificant, and 0.18 in Column (4), which is statistically significant at the 10% level.

Inference with few clusters. Our main analysis presents standard errors that are clustered at the state level. However, clustering at the state level may be problematic for the bill enactment analysis because it includes fewer states (six states provide bill position data, leaving us with six clusters). We therefore use the wild cluster bootstrap resampling method, and report bootstrapped confidence intervals below the point estimates (Cameron, Gelbach and Miller, 2008). We note that the main results using 32 state clusters in Table 3 and elsewhere do not change when we implement the wild cluster bootstrap.

Elasticity of enactment with respect to lobbying. Our estimates imply an elasticity of bill enactment with respect to lobbying of 0.21; a 78.0% increase in lobbying results in a 16.0% increase in the likelihood that a bill favorably lobbied by the auto dealers is enacted.[53] This elasticity is larger when we also consider the bills that auto dealers oppose. Here, the elasticity of bill "success" with respect to lobbying is 0.32; a 78.0% increase in lobbying results in a 25.3% increase in the likelihood that the bill outcome matches the auto dealer position. There are relatively few papers in the literature with which we can compare this elasticity. However, the estimates are similar to De Figueiredo and Silverman (2006), who report an elasticity of academic earmarks with respect to lobbying of 0.2-0.3 for politically-connected universities.

7 The Implied Value of Coordination

We use our estimates to back out the value that mergers create (for auto dealers) by increasing coordination in lobbying. This calculation requires an understanding of the effect of lobbying on the probability of bill enactment and also the value of bill enactment. We have estimated the probability of bill enactment above (Table 6). To approximate the value of bill enactment, we perform a calibration exercise based on revealed preference from the ADA's choice of lobbying expenditures.

We model the ADA's optimal choice of lobbying under the following assumptions:

1. Once a policy is enacted, it provides flow utility v to the industry each year and that it cannot be overturned (i.e., enactment is an absorbing state).

2. The enactment probability (π) in year t for a policy j that is not yet enacted depends only on contemporaneous lobbying (l) for the particular policy, which takes the following form:

$$\pi_j(l_{jt}) = \alpha_j + \beta \cdot log(l_{jt}).$$

3. The ADA discounts future utility with rate δ.

The dynamics of the ADA's lobbying decision are then quite simple: past lobbying only matters insofar as it affects past enactment because a previously enacted policy need not be lobbied today. We normalize the shadow value of lobbying funds to be 1, so that the choice of lobbying expenditures is separable across policies at time t. Suppressing bill subscripts, the Bellman equation representation

[53] We calculate the expected increase in lobbying for a state with a congruence of 0.924, i.e. the median state in the bill outcomes sample. We use the estimates from Column (3) in Table 3. This results in a 78% increase in lobbying post-merger.

of the ADA's decision problem prior to bill enactment (the state variable *enactment* = 0) is:

$$V(0, l_t) = \pi(l_t) \cdot \frac{v}{1-\delta} - l_t + (1 - \pi(l_t)) \cdot \delta \max_{\{l_{t+1}\}} V(0, l_{t+1}). \tag{9}$$

The first order condition with respect to l_t that is consistent with the optimal choice of lobbying implies:

$$\frac{\partial \pi}{\partial l_t} \cdot \frac{v}{1-\delta} - 1 - \delta \cdot \frac{\partial \pi}{\partial l_t} \cdot \max_{\{l_{t+1}\}} V(0, l_{t+1}) = 0 \tag{10}$$

Because the problem is stationary, $l_t^* = l_{t+1}^*$ for all periods before the policy is enacted. Under the assumption that ADAs are optimally lobbying at l^*, we can rewrite Equation (9) as:

$$V(0, l^*) = \frac{\pi(l^*) \cdot \frac{v}{1-\delta} - l^*}{1 - \delta \cdot (1 - \pi(l^*))}. \tag{11}$$

Finally, we substitute this expression for $V(0, l^*)$ into the FOC to solve for flow utility v:

$$v = \frac{l^*}{\beta} \cdot (1 - \delta + \delta \cdot \pi(l^*) - \delta \cdot \beta). \tag{12}$$

Equation (12) represents the flow utility for a single bill lobbied by the ADA. We calibrate the average flow utility for a bill, $\bar{v}$, using average observed lobbying and bill enactment rates and the estimated slope of enactment with respect to lobbying from the merger analysis (β). Table 7 shows the inputs for each parameter. We focus on the congruent states in our sample because this is the sample of states for which we estimate the effects of mergers on lobbying and bill outcomes.[54] For simplicity, we also focus on bills that the auto dealers support, which comprise about 60% of the bills they lobby.

Taking the parameters from Table 7 and a discount rate of $\delta = 0.95$, the implied average flow utility for a bill supported by the ADA is approximately \$270,777, with a corresponding net present value of enactment of \$5.42 million. Of course, we have argued that the ADAs suffer from a collective action challenge, and so will underinvest in lobbying, which means that this figure is an underestimate of the true bill value. We also note that \$5.42 million is far smaller than the estimated value of policy enactment in Kang (2016), though this is unsurprising as we consider state rather than federal legislation.[55]

[54] This corresponds to the first column in Table 1, "States without Border Exposure", where mean congruence is 0.94. We use the median congruence in our bill outcomes sub-sample, 0.924, to arrive at the bill enactment effect of 0.072 =-5.37 + 5.89*.924 (Table 6, Col (5)). We note that the bill enactment rate comes from bill outcome data for congruent states (congruence $\geq$ .9) in the post-merger period. The pre-merger enactment rate in this sample is 0.54, and we estimate a 0.072 increase in enactment rate for the median congruence state. Therefore, the implied post merger enactment rate (0.61) is very similar to the raw data (0.71).

[55] Another distinction is that Kang (2016) estimates the value of policy enactment while we focus on the value of bill enactment, but it is not clear which should be greater, given the differences between industry sizes and policy/bill

Table 7: Parameters for Calibration Exercise

Parameters	Values	Sources
Bill enactment rate: $\pi(l^*)$	0.71	Lobbying and legislative data
Optimal per-bill lobbying: l^*	\$35,997	Data and reduced-form estimates
Total lobbying (pre-merger)	\$250,770	Table (1)
Number of bills lobbied	12.40	Table (1)
Effect of merger on lobbying	0.78	Table (3) Col (3)
Slope of bill enactment with respect to lobbying: β	0.09	Reduced-form estimates
Effect of merger on lobbying	0.78	Table (3) Col (3)
Effect of merger on bill enactment	0.072	Table (6) Col (5)

Next, we back out the benefit that mergers deliver to auto dealers in congruent states due to superior coordination in lobbying on bills favorable to the auto industry. In congruent states, we find that the mergers we study lead to a 7.2 percentage points increase in the likelihood of bill enactment. Then average gain from coordination in the year following the merger is:

$$\text{Average Gain from Coordination} \approx \underbrace{\bar{N}}_{\substack{\text{number}\\ \text{of bills}\\ \text{supported}}} \cdot \underbrace{\bar{\Delta\pi}}_{\substack{\text{change in}\\ \text{enactment}\\ \text{probability}}} \cdot \bar{V}$$

$$\approx 7.2 \times 0.072 \times \$5.42\text{M} = \$2.80\text{M}$$

As a benchmark, the calibrated gain from coordination (\$2.80 million) is equivalent to an additional \$22.48 of profit per car sold in the year of the merger.[56] The profit margin on new car sales is 1-2%, according to industry reports.[57] Therefore, for a new car sold for \$35,000, the profit margin is \$350-700, and the calibrated gain from coordination translates to a 3-6% increase in profits.

8 Conclusion

The ongoing discourse about the relationship between market structure and political influence often focuses on the tech industry, debating whether large firms like Meta or Amazon wield undue political power. This paper shows that mergers in the auto retail industry, an industry with concentration levels far below the level that typically draws regulatory interest, increase industry lobbying. We argue that this effect is driven by improved coordination, wherein the merger helps to mitigate the

content.

[56] Based on 2022 average new car sales volumes reported by F&I tools for congruent states with lobbying position data (an average of 124,500 vehicles per state).

[57] https://www.acvauctions.com/blog/car-dealership-profit-margin

collective action of problem of securing policies that are favorable to the auto retail industry.

Our empirical strategy isolates the collective action channel by comparing mergers that occur in states where political and product markets are more versus less aligned. Mergers in congruent states lead to an increase in lobbying; those occurring in incongruent markets do not. Further, in congruent states, we find that the post-merger increase in lobbying leads to greater success of the auto dealers' legislative agenda, as measured by the enactment of bills that the auto dealers support. Our estimates imply an enactment elasticity with respect to lobbying of approximately 0.21. We use this estimated elasticity to calibrate a simple model of auto dealer lobbying. The back-of-the-envelope exercise indicates that consolidation provides $2.80 million in payoffs to auto dealers via superior coordination in the political market in the year following a merger.

The implications for policy depend to some extent on whether these gains come at the expense of consumers, employees, or other firms. Appendix Table B.8 presents a breakdown of oppositional lobbying for the bills that the auto dealers support in Colorado, Iowa, and Wisconsin.[58] The bills supported by auto dealers in these states are more than twice as likely to be opposed by consumer groups and unions than auto manufacturers. This pattern lends credence to the concern that lobbying allows companies to tilt regulation in their favor at the expense of consumer welfare.

This paper adds to a broader literature examining the effect of consolidation on non-price outcomes, including Demirer and Karaduman (2024), Prager and Schmitt (2021) and La Forgia and Bodner (2023). Our findings raise the question of whether firms select into mergers in order to consolidate influence in the *political* market and direct future policy. While we observe that more congruent states see a slightly greater number of auto retailer mergers in the raw data, more work is needed to understand whether political influence motivates consolidation and can help explain mergers between firms that do not compete in the same product market.

[58]These are a subset of the bills included in Table 6. We exclude 79 bills in CO, IA, and WI with no oppositional lobbying. We do not include MA, MT, or NE due to challenges of collecting data in those states.

References

Alé-Chilet, Jorge, and Juan Pablo Atal. 2020. "Trade associations and collusion among many agents: evidence from physicians." *The RAND Journal of Economics*, 51(4): 1197–1221.

Asil, Aslihan, Paulo Ramos, Amanda Starc, and Thomas G Wollmann. 2024. "Painful Bargaining: Evidence from Anesthesia Rollups." National Bureau of Economic Research Working Paper 33217.

Benkard, C. Lanier, Ali Yurukoglu, and Anthony Lee Zhang. 2023. "Concentration in Product Markets." *Working Papaer*.

Berry, Steven, Martin Gaynor, and Fiona Scott Morton. 2019. "Do Increasing Markups Matter? Lessons from Empirical Industrial Organization." *Journal of Economic Perspectives*, 33(3): 44–68.

Bombardini, Matilde. 2008. "Firm heterogeneity and lobby participation." *Journal of International Economics*, 75: 329–348.

Bombardini, Matilde, and Francesco Trebbi. 2012. "Competition and political organization: Together or alone in lobbying for trade policy?" *Journal of International Economics*, 87: 18–26.

Bombardini, Matilde, and Francesco Trebbi. 2020. "Empirical Models of Lobbying." *Annual Review of Economics*, 12: 391–413.

Callander, Steven, Dana Foarta, and Takuo Sugaya. 2021. "Market Competition and Political Influence: An Integrated Approach." CEPR Discussion Paper No. DP16210.

Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller. 2008. "Bootstrap-Based Improvements for Inference with Clustered Errors." *The Review of Economics and Statistics*, 90(3): 414–427.

Cowgill, Bo, Andrea Prat, and Tommaso M. Valletti. 2022. "Political Power and Market Power." CEPR Discussion Paper No. DP17178.

De Figueiredo, John M, and Brian S. Silverman. 2006. "Academics Earmarks and the Returns to Lobbying." *Journal of Law and Economcis*, 49(2): 597–625.

De Loecker, Jan, Jan Eeckhout, and Gabriel Unger. 2020. "The Rise of Market Power and the Macroeconomic Implications." *The Quarterly Journal of Economics*, 135(2): 561–644.

Demirer, Mert, and Omer Karaduman. 2024. "Do Mergers and Acquisitions Improve Efficiency: Evidence from Power Plants." *Working Paper*.

Eckard, E. Woodrow. 1985. "The Effects of State Automobile Dealer Entry Regulation on New Car Prices." *Economic Inquiry*, 23(2): 223–242.

Edlin, Aaron, Doug Melamed, Sam Miller, Fiona Scott Morton, and Carl Shapiro. 2024. "Single-Firm Conduct Working Group." California Law Review Commission Study of Antitrust Law.

Eisenberg, Tom, Manuel Estay, and Debi Prasad Mohapatra. 2023. "Welfare Effects of Trade Associations: The Case of the Chilean Salmon Export Industry." Available at SSRN: https://ssrn.com/abstract=4320258.

Ganapati, Sharat. 2021. "Growing Oligopolies, Prices, Output, and Productivity." *American Economic Jounral: Microeconomics*, 13(3): 309–27.

Gawande, Kishore. 1997. "US non-tariff barriers as privately provided public goods." *Journal of Public Economics*, 64(1): 61–81.

Goodman-Bacon, Andrew. 2021. "Difference-in-differences with variation in treatment timing." *Journal of Econometrics*, 225(2): 254–277.

Grunewald, Andreas, Jonathan A. Lanning, David C. Low, and Tobias Salz. 2023. "Auto Dealer Loan Intermediation: Consumer Behavior and Competitive Effects." *Working Paper*.

Huneeus, Federico, and In Song Kim. 2021. "The Effects of Firms' Lobbying on Resource Misallocation." Central Bank of Chile Working Papers Central Bank of Chile 920.

Infogroup. 2021. "U.S. Historical Business Database." Accessed via Wharton Research Data Services.

Kang, Karam. 2016. "Policy Influence and Private Returns from Lobbying in the Energy Sector." *The Review of Economic Studies*, 83(1): 269–305.

Kim, In Song. 2017. "Political Cleavages within Industry: Firm-level Lobbying for Trade Liberalization." *American Political Science Review*, 111(1): 1–20.

Kim, In Song. 2018. "LobbyView: Firm-level Lobbying& Congressional Bills Database." Working paper available from http://web.mit.edu/insong/www/pdf/lobbyview.pdf.

Lafontaine, Francine, and Fiona Scott Morton. 2010. "Markets: State Franchise Laws, Dealer Terminations, and the Auto Crisis." *Journal of Economic Perspectives*, 24(3): 233–250.

La Forgia, Ambar, and Julia Bodner. 2023. "Getting Down to Business: Chain Ownership and Fertility Clinic Performance." *Working Paper*.

Magee, Christopher. 2002. "Endogenous trade policy and lobby formation: an application to the free-rider problem." *Journal of International Economics*, 57(2): 449–471.

Murry, Charles. 2017. "Advertising in Vertical Relationships: An Equilibrium Model of the Automobile Industry." *Working Paper*.

Murry, Charles. 2018. "The Effect of Retail Competition on Relationship-Specific Investments: Evidence from New Car Advertising." *International Journal of Industrial Organization*, 59: 253–281.

Murry, Charles, and Henry S. Schneider. 2016. *Handbook on the Economics of Retailing and Distribution.* Elgar Publishing.

National Automobile Dealers Association. 2022. "Driving the United States' Economy: Annual Contribution of the United States' New-Car Dealers." Research and Data https://www.nada.org/nada/research-and-data/auto-retailing.

National Institute on Money in Politics. 2020. "Follow the Money." https://www.followthemoney.org/.

Olson, Mancur. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups.* Harvard University Press.

Pecorino, Paul. 1998. "Is There a Free-Rider Problem in Lobbying? Endogenous Tariffs, Trigger Strategies, and the Number of Firms." *The American Economic Review*, 88(3): 652–660.

Pecorino, Paul. 2001. "Market structure, tariff lobbying and the free-rider problem." *Public Choice*, 106: 203–220.

Prager, Elena, and Matt Schmitt. 2021. "Employer Consolidation and Wages: Evidence from Hospitals." *American Economic Review*, 111(2): 397–427.

Rogers, Robert. 1986. "The Effect of State Entry Regulation on Retail Automobile Markets." Bureau of Economics staff report to the FTC.

Smith, Matthew, Danny Yagan, Owen Zidar, and Eric Zwick. 2019. "Capitalists in the Twenty-First Century." *The Quarterly Journal of Economics*, 134(4): 1675–1745.

Smith, Richard L. 1982. "Franchise Regulation: An Economic Analysis of State Restrictions on Automobile Distribution." *The Journal of Law and Economics*, 25(1): 125–157.

Sun, Liyang, and Sarah Abraham. 2021. "Estimating dynamic treatment effects in event studies with heterogeneous treatment effects." *Journal of Econometrics*, 225(2): 175–199. Themed Issue: Treatment Effect 1.

WardsAuto. 2021. "WardsAuto 2021 MegaDealer 100." Accessed at https://www.wardsauto.com/dealers/wardsauto-megadealer-100-revenues-down-profits-2020.

Wollmann, Thomas G. 2024. "How to Get Away with Merger: Stealth Consolidation and Its Effects on US Healthcare." *NBER Working Paper 27274*.

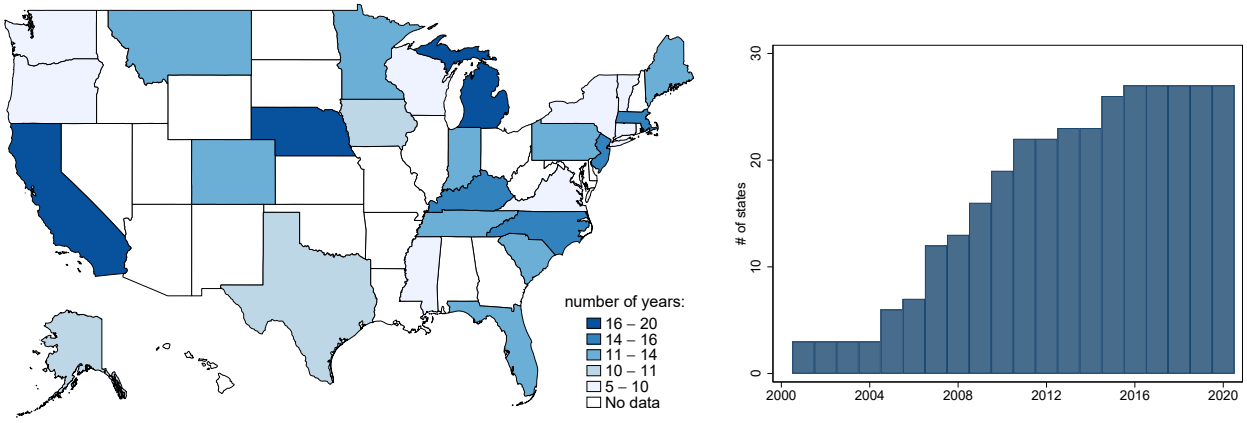
Yavorsky, Dan, Elisabeth Honka, and Keith Chen. 2021. "Consumer Search in the U.S. Auto Industry: The Role of Dealership Visits." *Quantitative Marketing and Economics*, 19(1): 1–52.

Appendix

A State Lobbying

This section provides additional details about the new data set we assembled on state-level lobbying. We download data from public lobbying portals in 27 states. Figure A.1 shows the sample states and years. Lobbying per capita at the state level, for our sample states, tracks trends at the federal level, at a lower magnitude (Figure 2 in the text). Federal lobbying per capita doubles from \$6 to \$13 from 2000 to 2019, state lobbying per capita increases from \$4 to \$8. However, there is substantial heterogeneity across states.

Figure A.1: Lobbying Data Sample

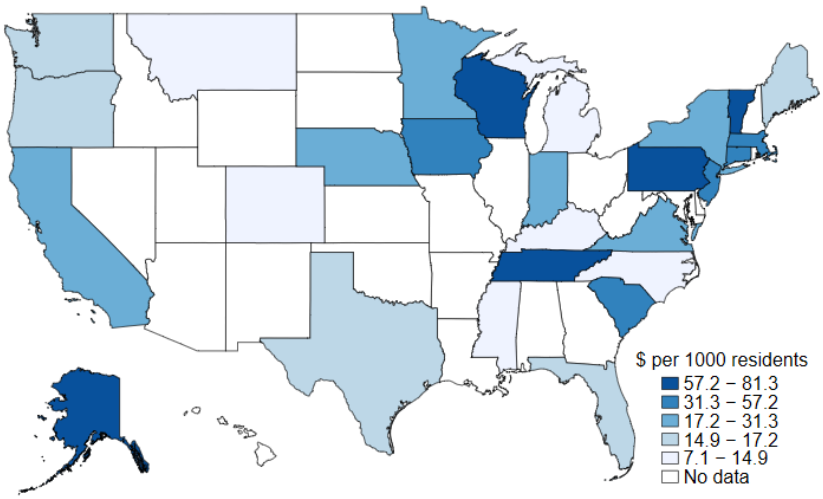


(a) Geographic Coverage

(b) Years Covered

Notes: The figure on the left shows the sample of states in the lobbying data, and the number of years of data available for each state. The figure on the right shows the number of states in the sample for each year.

Figure A.2: Per Capita Auto Retail Lobbying in 2019



Notes: This map shows per capita auto dealer lobbying by state, in the 27 states in the sample. Data on lobbying collected by the authors.

Industry composition looks different at the state level than the federal. Table A.1 shows the top 10 lobbying industries, and auto dealers, for the states in our sample. Outside the top spot for "Business, Professional, Labor, Political, and Similar Organization", this does not track the federal top 10 (Table E.1). At the federal level manufacturing is more prevalent, at the state level we see more lobbbying by non-tradable services industries.

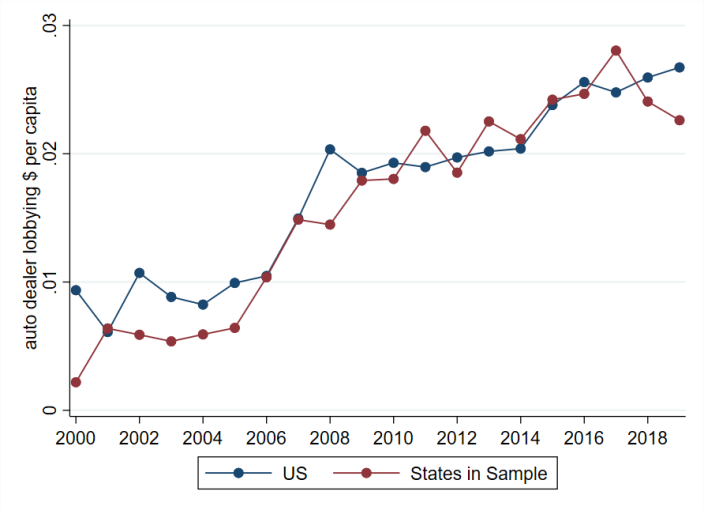
When it comes to the auto retail industry, state and federal per capita lobbying is remarkably in sync (Figure A.3). The majority of states only lobby via the trade association, which we discuss further in Appendix Section D.

Table A.1: State Lobbying by Industry

	NAICS	Code	Total Lobbying ($M)
1	Business, Professional, Labor, Political, and Similar Organizations	8139	896.5
2	Legal Services	5411	543.6
3	Agencies, Brokerages, and Other Insurance Related Activities	5242	541.4
4	Offices of Physicians	6211	472.4
5	Management, Scientific, and Technical Consulting Services	5416	437.7
6	Executive, Legislative, and Other General Government Support	9211	379.5
7	Social Advocacy Organizations	8133	328.1
8	Building Equipment Contractors	2382	281.3
9	Elementary and Secondary Schools	6111	273.7
10	Electric Power Generation, Transmission and Distribution	2211	229.5
72	Automobile Dealers	4411	36.7

Notes: This table lists the top lobbying industries at the state level, for our sample. This match between industry codes and lobbying records may be incomplete, as there are no industry codes in the lobbying data. We parsimoniously identify automobile dealers and auto dealer associations in the data, but the other industries are identified using a fuzzy matching technique.

Figure A.3: State vs Federal Lobbying Per Capita: Auto Dealers



Notes: This figure compares per capita auto dealer lobbying at the state and federal level. Data on state lobbying collected by the authors. Data on federal lobbying from Kim (2017).

A.1 State Lobbying vs. Campaign Contributions

We compare the relative magnitude of different types of political spending at the state level. Table A.2 shows the patterns for Pennsylvania. The trade association in Pennsylvania, PAA, contributed $1.2 million to the campaigns of state house and senate candidates between 2011 and 2020. Over the same period, PAA spent almost $6 million on lobbying. The top contributors in the auto dealer industry all spend a fraction of PAA. The largest individual spender, Robert Bennett of Bennett Automotive Group, contributed less than 5% of the PAA total ($58,600) over the same period. Further, none of the individual campaign contributors lobby independently of PAA.

Outside of Pennsylvania, the pattern is similar, with auto dealer associations heading the list of contributors and comprising 60% of total contributions (Table A.3). Moreover, lobbying spending is much larger, across states. The top contributor to state legislature campaigns in the industry, the California New Car Dealers Association, spends $2.6M on contributions between 2011 and 2020, but over $8.3M on lobbying during the same period. This motivates our focus on lobbying as the main political expenditure of interest.

There are two additional reasons that we rely on the lobbying data instead of the campaign contributions. First, we observe lobbying every year, instead of only in election years. Second, we do not have a data set of auto dealer group owner names. Therefore, in the campaign contribution data we rely on self reported employment data to identify auto dealers. In the Pennsylvania example, we manually match names to dealerships. To extend across states would be a large data undertaking.

Table A.2: PA Auto Dealers: State Leg Contribs vs. Lobbying, 2011-2020

Contributor	Contrib ($)	Lobbying ($)	Affiliation
PAA	1,206,425	5,980,734	Pennsylvania Automotive Association
Bennett, Robert J	58,600		Bennett Automotive Group
Daub, L Anderson	33,000		Brown-Daub Automobile Dealerships
Rothrock, David B	30,500		Rothrock Motors
Alexander, Blaise	30,000		Blaise Alexander Family Dealerships
Rothrock, Dean A	25,000		Rothrock Motors
Sherwood, Donald L	14,500		Sherwood Chevrolet
Paul, Max	12,900		Ardmore Toyota
Baierl, Lee W	10,000		Baierl Automotive (Lithia)
% of total:	89.1	100.0	

Notes: Campaign contributions include state senate and state house/assembly (National Institute on Money in Politics, 2020). Lobbying data collected by the authors.

Table A.3: State Legislature Contributions in the Auto Dealer Industry, 2011-2020

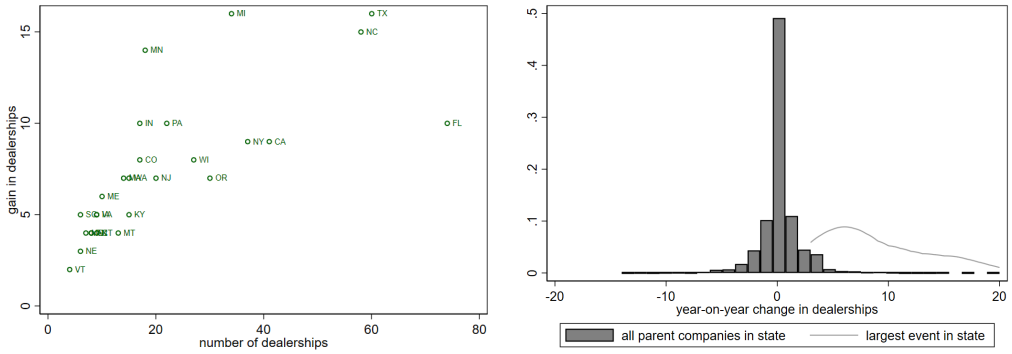
State	Contributor	Contrib ($)
CA	California New Car Dealers Association	2,588,275
VA	Virginia Auto Dealers Association	1,894,356
TX	Texas Automobile Dealers Association	1,621,250
PA	Pennsylvania Automotive Association	1,206,425
AL	Automobile Dealers Association Of Alabama	1,175,000
TX	Friedkin Business Services/Gulf State Toyota	973,668
NJ	New Jersey Coalition Of Automotive Retailers	930,980
NC	North Carolina Automobile Dealers Association	845,430
WA	Washington State Auto Dealers Association	783,850
IL	Chicago Auto Trade Association	780,250
	top 10 % of total:	39.3
	ADA % of total:	61.8

Notes: Campaign contributions include state senate and state house/assembly (National Institute on Money in Politics, 2020).

B Analysis Details and Additional Results

B.1 Event Study Sample

Figure B.1: Sample Mergers



(a) Size of Acquisition and Acquirer (b) Year-to-year changes in dealership count

Notes: The figure on the left shows the distribution of the merger size and the number of dealerships that the acquiring parent has in the state post-merger. The figure on the right compares the average "event" with the mergers we study. The histogram shows the year-on-year change in dealerships, within a state, for each auto group in the sample. The line shows the distribution of the size of the mergers we study. The ownership structure is constructed using Infogroup (2021).

Table B.1: Event Study Sample

State	Event Year	Analysis Sample	# of Years	Pure Control	Lobbying Sample
AK	2009	2013-2020	8	×	2010-2020
CA	2004	2004-2007	4		2001-2020
	2011	2008-2015	8		2001-2020
CO	2009	2008-2013	6		2007-2020
CT	2014	2013-2018	6		2013-2020
FL	2013	2010-2017	8		2007-2020
IA	2009	2013-2020	8	×	2010-2020
IN	2012	2009-2016	8		2007-2020
KY	2013	2010-2017	8		2005-2020
MA	2012	2009-2016	8		2005-2020
ME	2012	2009-2016	8		2008-2020
MI	n/a	2004-2008	5	×	2001-2020
	2012	2009-2016	8		2001-2020
MN	2010	2009-2014	6		2009-2020
MS	2008	2013-2020	8	×	2011-2020
MT	2017	2014-2020	7		2009-2020
NC	2008	2005-2011	7		2005-2020
	2015	2012-2019	8		2005-2020
NE	n/a	2004-2008	5	×	2001-2020
NE	2012	2009-2016	8		2001-2020
NJ	2011	2007-2014	8		2006-2021
	2017	2014-2020	7		2006-2021
NY	2012	2011-2016	6		2011-2020
OR	2018	2015-2020	6		2015-2020
PA	2013	2010-2017	8		2007-2020
SC	2010	2009-2014	6		2009-2020
TN	2013	2010-2017	8		2007-2020
TX	2017	2014-2020	7		2010-2020
VA	2011	2015-2020	6	×	2015-2020
VT	2015	2015-2019	5		2015-2020
WA	2011	2016-2020	5	×	2016-2020
WI	2012	2011-2016	6		2011-2020
		Total:	221		

Notes: This table lists all of the states in the analysis sample, the event year, and the lobbying data availability. Lobbying data was collected by the authors directly from state lobbying portals, in 2021. The "Pure Control" states are those with event years that precede the lobbying data availability, or, in the case of MI and NE, are years that do not overlap with the event window and do not have any large merger event during that period.

Appendix Figure B.1(a) shows the distribution of event sizes along with the in-state count of dealerships owned by the acquirer, and Appendix Figure B.1(b) shows the distribution of all ownership changes compared with the ownership changes that we study (the merger "events"). The acquiring firms in these events include national dealer groups like AutoNation and Penske, but also smaller chains that primarily operate in one or two states. In order to verify that the mergers we study represent meaningful changes in the market, we perform a placebo test where we swap event dates across states (Appendix Section B.3).

Table B.1 shows each state in our sample, the event year (the year of the largest merger in the

state, according to Infogroup (2021)), and the years we have lobbying data for that state. The "Event Year" and "Lobbying Sample" years determine the "Analysis Sample" years, which is 8 for states where we have sufficient data. In other states, the overlap between the event year and the lobbying sample can limit the number of years in the analysis. The "Pure Control" states are those with event years that precede the lobbying data availability. For these states we use the most recent 8 years of lobbying data, when available.

In 5 states (CA, MI, NC, NE, NJ) we have almost 20 years of lobbying data. For these states we can use a non overlapping window to either study a second large merger event, if one occurred in that period, or to use as a control. The main analysis sample has 28 merger events and 221 state-year observations, over 27 states.

B.2 Event Study Specification

As a complement to the difference-in-differences regression, we estimate a standard panel event-study. The specification is as follows:

$$y_{st} = \alpha + \sum_{j=2}^{J} \beta_j \mathbb{1}[t = Event_s - j]_{st} + \sum_{k=0}^{K} \gamma_k \mathbb{1}[t = Event_s + k]_{st} + \mu_s + \lambda_t + \epsilon_{st}. \tag{13}$$

The primary outcome of interest, y_{st}, is log(lobbying) in state s and time t, though we also run regressions on state-level HHI (Figure B.5) and auto dealer association finances (Figure 7). State and time fixed effects are included as μ_s and λ_t, and the lags and leads are binary variables indicating that the state is a given number of periods away from its event at time t.

B.3 Event Date Placebo Test

In order to verify that the mergers we study represent meaningful changes in the market, we run a placebo test where we change the event dates. First, we assign each state the date of the expansion of the same parent firm from another state. For example, AutoNation is the parent company with the largest year-to-year increase in multiple states. This occurs in 2010 for CO, 2012 for FL and CA, 2014 in WA and TN, and 2018 in TX. In the placebo, CO gets 2012, FL gets 2010, TN gets 2012, TX gets 2014, and WA gets 2018. CA also has a lot of Lithia dealerships, so they serve as the placebo year for another state that has a Lithia expansion in 2010. In 13 out of 27 states in our sample, the large expansion happens for a dealership that is only present in that state.[59] For these states, we reassign dates within the group.

[59] Or, at least, the dealership is not present in any other state for which we have lobbying data.

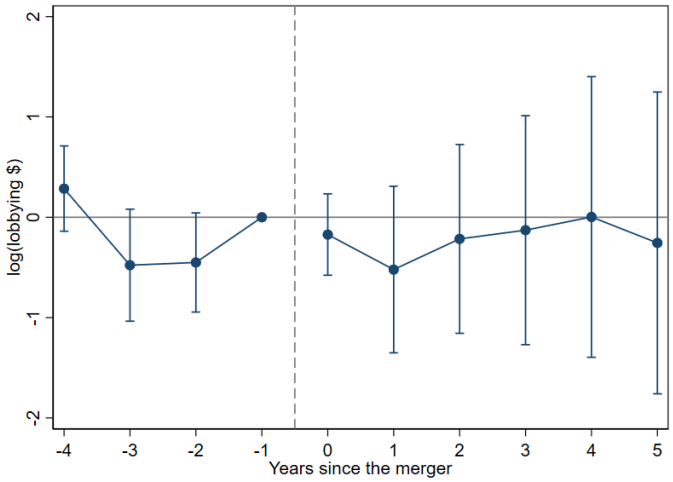
Table B.2: Event Date Placebo Test

	Baseline	Placebo
	(1)	(2)
Post	0.67**	-0.24
	(0.31)	(0.33)
Observations	191	170
R-squared	0.79	0.80

Notes: This table shows the results for Equation 6, where Post = 1 for the event year and all years after. The sample is restricted to 4 years before and after the event. The outcome variable is log(auto dealer lobbying $), as in Table 3. The number of observations for the placebo test in Column (2) is lower than in Column (1), because we do not always have lobbying data for as many years surrounding the placebo year. State and year fixed effects are included in each specification and standard errors are clustered by state.

Table B.2 shows the results of this placebo test. Column (1) is the baseline effect (replicated from Appendix Table B.3, because we restrict to only use one event window per state), and Column (2) shows the effect when we change the dates. We find no effect on lobbying with the placebo event dates, and the event study plot in Figure B.2 confirms this.

Figure B.2: Placebo Test: Changing Dates



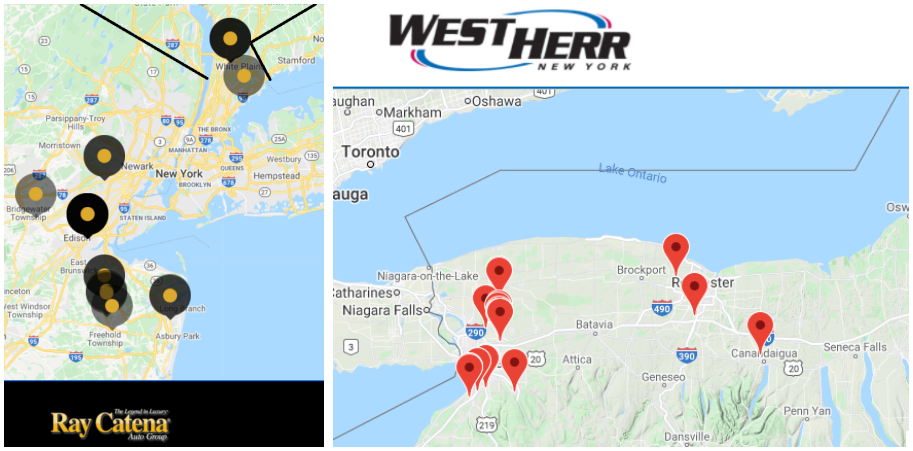
Notes: This figure shows the point estimates and confidence intervals for the estimates of β_j, from Equation 13. This is the standard two-way fixed effects event study, with standard errors clustered at the state level. The outcome of interest is log(lobbying), but the event dates are changed, as described in Section 4.4.

B.4 Measuring Border Exposure and Congruence

We provide an example of two dealership chains in New York to illustrate the intuition of our approach. Consider how a reduction in the New York state sales tax would affect the Ray Catena dealership group, shown in Figure 3(a). This dealership group is located in the tri-state area and so likely serves many New Jersey and Connecticut residents. These out-of-state customers do not pay lower

sales taxes even if New York auto dealers successfully lobby the New York State Assembly to lower the sales tax. In contrast, a much larger share of customers of the West Herr dealer group (Figure B.3(b)), which operates primarily in Rochester and Buffalo, would enjoy such a sales tax reduction. Consequently, expansion by the West Herr group in its home market provides a stronger incentive to lobby over sales tax policy compared to a similarly-sized expansion by the Ray Catena group.

Figure B.3: (Mis)Alignment of Product and Political Markets



(a) Ray Catena (b) West Herr

Notes: This figure shows the dealer network for two auto dealer groups, Ray Catena and West Herr. Sources: https://www.raycatena.com/dealerships/ and https://www.westherr.com/locations/.

Border Exposure. Let m denote product market and s denote the state. For every dealership d acquired in the merger event i in state s, we use the share of consumers in market m that resides in state s, $s_{m\in s}$. Then we take the average $s_{m\in s}$ over all dealerships acquired in the merger event, with n_i representing the total number of dealerships acquired in merger event i. Specifically, we calculate:

$$\text{border exposure}_{is} = 1 - \frac{1}{n_i}\sum_{d\in i} s_{m_d\in s}.$$

We take 1 minus the average, so that a border exposure of 1 represents a merger where all dealerships acquired operate in a product market where *all* of the consumers live out of state, and a border exposure of 0 represents a merger where all dealerships acquired operate in a product market where *all* of the consumers live in the state.

Congruence. Let m denote product market and s denote the state, then congruence is:

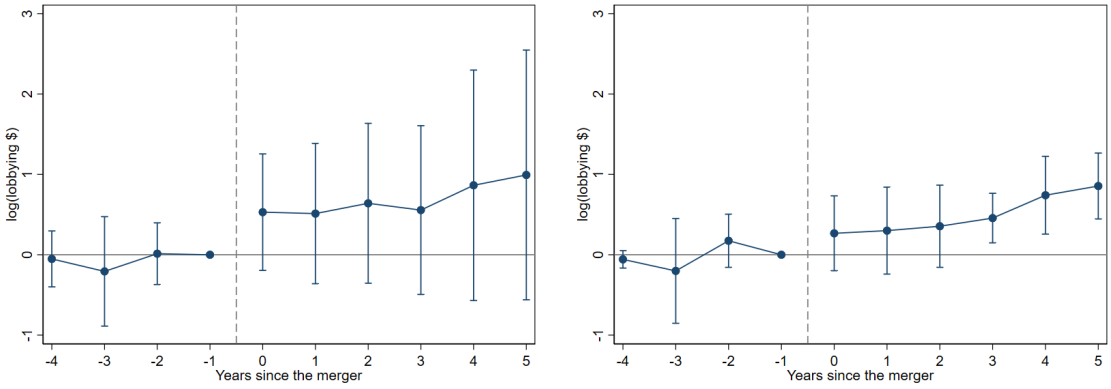
$$\text{congruence}_{st} = \sum_{m \in s} s_{m \in s} \times w_{ms},$$

where $s_{m \in s}$ is the share of consumers in market m that resides in state s and w_{ms} is the share of the population in state s that resides in market m.

B.5 Additional Results

We present additional analyses in the following tables and figures. Figure B.4 and Table B.3 shows the results when we only use one event per state. Figure B.5 shows the event study analysis with log(HHI) as the outcome, instead of log(lobbying). This provides additional evidence that the mergers in our sample represent substantial changes in concentration, as measured by state-level HHI. Figure B.2 shows the event study complement of the placebo test in Table 4.

Figure B.4: Baseline Results (One Event per State)



(a) Lobbying (TWFE) (b) Lobbying (Sun and Abraham, 2021)

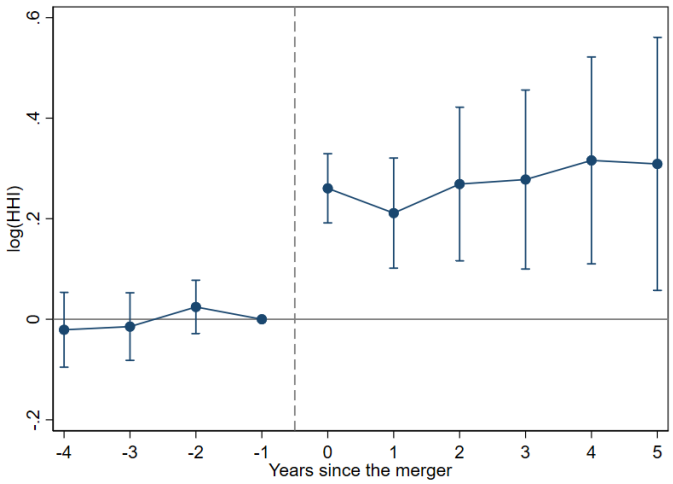
Notes: Figure (a) shows the point estimates and confidence intervals for the estimates of β_j, from Equation 13 (Appendix B). Figure (b) estimates the same object using the method from Sun and Abraham (2021). For the event study we use a window of 5 years pre and post, but the sample is unbalanced—we do not always observe state lobbying for the 10 years around the merger event.

Table B.3: Difference-in-Differences Estimates (One Event Per State)

	log(auto dealer lobbying)$_{st}$			
	(1)	(2)	(3)	(4)
Post$_{st}$	0.67**	0.74**	-1.31	0.06
	(0.31)	(0.36)	(1.22)	(0.50)
Post$_{st}$ × Border Exposure$_s$		-0.73		
		(0.75)		
Post$_{st}$ × Congruence$_s$			2.24+	
			(1.39)	
Post$_{st}$ × Congruence Dummy$_s$				0.86+
				(0.57)
Observations	191	191	191	191
R-squared	0.79	0.79	0.79	0.80

Notes: This table shows the results for Equation 6 (Column (1)) and Equation 7 (Columns (2)-(4)), where Post =1 for the event year and all years after. The sample is restricted to 4 years before and after the event, but only includes one event in CA, NC, and NJ. States where we only observe lobbying post event (VA, IA, WA, AK, MS) are included. The outcome variable is log(lobbying $). State and year fixed effects included in each specification. Standard errors clustered by state. + p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Figure B.5: State-Level HHI



Notes: This figure shows the point estimates and confidence intervals for the estimates of β_j, from Equation 13. This is the standard two-way fixed effects event study, with standard errors clustered at the state level. The outcome of interest is log(HHI), where HHI is measured at the state level using the number of dealerships each parent group owns. Table 2 presents descriptive statistics on state and CBSA level HHI.

Table B.4: Effect of Merger on *Total* State Lobbying

	log(*total* auto dealer lobbying)$_{st}$			
	(1)	(2)	(3)	(4)
Post$_{st}$	0.77***	0.82**	-0.33	0.27
	(0.28)	(0.31)	(0.47)	(0.32)
Post$_{st}$ × Border Exposure$_s$		-0.48		
		(0.47)		
Post$_{st}$ × Congruence$_s$			1.24*	
			(0.67)	
Post$_{st}$ × Congruence Dummy$_s$				0.70*
				(0.40)
Observations	221	221	221	221
R-squared	0.80	0.80	0.80	0.80

Notes: This table shows the results for Equation 6 (Column (1)) and Equation 7 (Columns (2)-(4)), where Post =1 for the event year and all years after. The outcome variable is log(lobbying $), where lobbying $ includes all lobbying done by dealers and ADAs in the state, regardless of whether or not they are part of the merger. State and year fixed effects included in each specification. Standard errors clustered by state. + p<0.15, * p<0.1, ** p<0.05, *** p<0.01

B.6 Bill Enactment

B.6.1 Descriptive Statistics

Table B.5 shows the number of bills, the success rate of supported and opposed bills, and the pass rate of supported bills, before and after the merger event, for each of the six states in the Bill Enactment analysis sample.

Table B.5: Bill Enactment Pre- and Post- Merger

		Border	# of Bills		Success Rate		Pass Rate	
State	Congruence	Merger	Pre	Post	Pre	Post	Pre	Post
CO	1.000		6	23	0.667	0.696	1.000	0.727
IA	0.894		86	51	0.802	0.647	0.444	0.379
MA	0.874	×	63	88	0.524	0.443	0.370	0.197
MT	1.000		22	5	0.682	0.800	0.667	0.800
NE	0.920		45	45	0.733	0.800	0.625	0.778
WI	0.929		34	21	0.324	0.524	0.303	0.412

Notes: This table shows the number of bills, success rate, and pass rate, pre- and post- merger, for each state in the Bill Enactment analysis. The analysis sample includes the 4 years before and 4 years after the event. The table also presents the congruence value for each state in this subsample, and denotes whether or not the event was a merger with border exposure.

B.6.2 Number of Bills Lobbied

Table B.6 shows the analysis of the number of bills lobbied. Columns (1) - (3) show the number of bills and Columns (4) - (6) show the log(number of bills) as the outcomes. There seems to be no effect of mergers on the extensive margin.

Table B.6: Number of Bills Lobbied

	Number of Bills			log(Number of Bills)		
	(1)	(2)	(3)	(4)	(5)	(6)
$Post_{st}$	-3.78	-110.04	-9.01	-0.09	15.73	-0.24
	[-18.44,10.87]	[-699.62,479.53]	[-29.80,11.77]	[-2.11,1.93]	[-8.27,39.72]	[-2.38,1.90]
$Post_{st} \times Congruence_s$		115.06			-17.13	
		[-513.81,743.93]			[-44.02,9.76]	
$Post_{st} \times$ Border $Merger_s$			25.81			0.73
			[-39.24,90.86]			[-1.06,2.51]
Observations	43	43	43	43	43	43
R-squared	0.91	0.91	0.92	0.82	0.85	0.82

Notes: This table shows the results Equation 7, where Post =1 for the event year and all years after. The analysis is at the state, and for each state we estimate teh effect of the merge on the number of bills lobbied. There are six states in this analysis: CO, IA, NE, MA, MT, and WI. State and year fixed effects are included in each specification and wild cluster bootstrap confidence intervals, clustered at the state level, are reported under the coefficients.

B.6.3 "Monitored" Bill Analysis

Lastly, Table B.7 shows an extension to our bill enactment analysis. Here, Columns (1) - (3) replicate Columns (1) - (3) in Table 6. However, in Columns (4) - (6) we add the bills where the auto lobby position is "Monitor." As we mentioned in Section 6, one issue with the bill level data is that the auto dealer lobbyists do not always report their position. In fact, 38% of bills are neither "supported" or "opposed" by the auto lobby, just "monitored." The share of bills that are "monitored" drops to 24% when we drop Iowa, where the auto dealer "monitors" many bills. Here, we include these "monitored" bills, but with the assumption that "monitored" bills are actually "opposed" by the auto dealer lobby.

We make the assumption that "Monitor" is close to "Oppose" based on evidence from the state of Wisconsin. In Wisconsin, we observe not only the position of each bill lobbied during a reporting period, we also observe the amount of lobbying expenditures dedicated to each bill (usually we observe the total expenditure across bills, but no attribution of dollars to exact issues). Here, we see that the auto dealer lobbies "Support" bills with a much higher intensity than "Monitor" or "Oppose" bills—the average bill that the auto dealer lobby supports in WI gets 5.7% of all expenditure during that year, while the bills that they oppose get 2.8% and the monitored bills get 3.4%. Therefore, on a per bill basis, "Supported" bills get almost twice the resources of "Oppose" or "Monitor" bills.

Table B.7 shows that the results are consistent when we include monitored bills. For the purpose of future research, we are working on expanding our sample of auto dealer positions to the monitor bills, and to other states where we know the identity of the bills lobbied but not the position (CA, FL, NY), using natural language processing techniques.

Table B.7: Bill Enactment with "Monitored" Bills

Outcome:	Success (Support → Pass, Oppose → Fail)					
	(1)	(2)	(3)	(4)	(5)	(6)
$Post_{st}$	0.04	-4.13**	0.07	0.04	-1.97**	0.05
	[-0.15,0.24]	[-6.91,-1.36]	[-0.17,0.31]	[-0.04,0.13]	[-3.87,-0.07]	[-0.03,0.13]
$Post_{st} \times Congruence_s$		4.64**			2.23**	
		[1.51,7.76]			[0.10,4.36]	
$Post_{st} \times Border\ Merger_s$			-0.08			-0.04+
			[-0.47,0.32]			[-0.09,0.01]
Observations	489	489	489	1,865	1,865	1,865
Sample	Support + Oppose			Support, Oppose, Monitor		
R-squared	0.10	0.11	0.10	0.09	0.09	0.09

Notes: This table shows the results Equation 7, where Post =1 for the event year and all years after. The analysis is at the bill level, and for each bill we estimate the effect of the merger event on bill-level "Success." There are six states in this analysis: CO, IA, NE, MA, MT, and WI. State and year fixed effects are included in each specification and wild cluster bootstrap confidence intervals, clustered at the state level, are reported under the coefficients.

B.7 Oppositional Lobbying

The table below presents a breakdown of the types of organizations that lobby against the bills that auto dealers support. The "Other Business" category includes groups such as the Wisconsin Grocers Association and the Midwest Food Processors Association, Inc.

Table B.8: Oppositional Lobbying

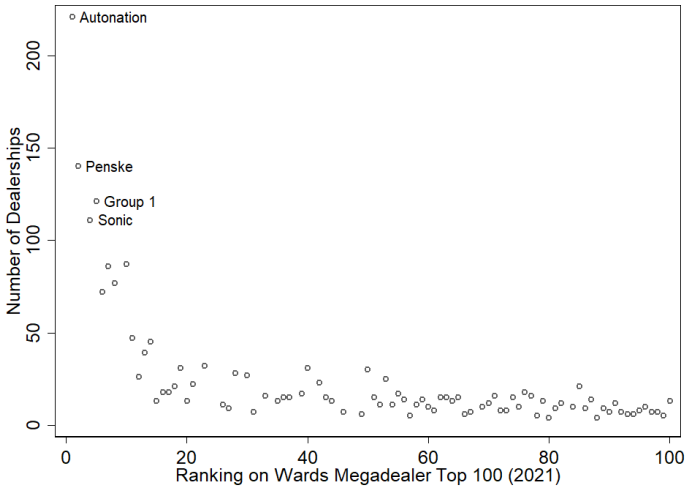
	Share of Bill Opposed
Other Business	0.44
Union	0.39
Consumer	0.37
NGO	0.37
Other Auto	0.21
Health	0.16
Governmental	0.14
Insurance	0.14
Manufacturer	0.14
Unknown	0.09
Environmental	0.04
Observations	57

Notes: This table shows the types of organizations lobbying against the bills that the auto dealers support in Colorado, Iowa, and Wisconsin. Each observation is a bill that the auto dealers lobbied in support of and which at least one group lobbying against. NGO includes groups such as religious associations and the Iowa State Sheriffs' & Deputies' Association, among others .

C Market Structure in the Auto Retail Industry

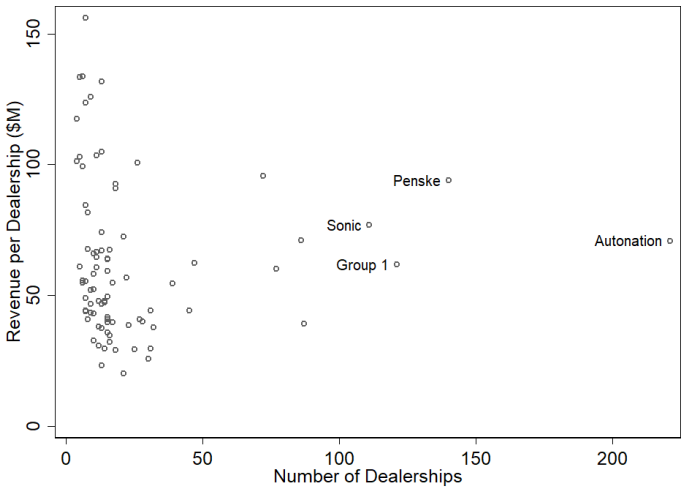
In this section we provide further details on market structure in the auto retail industry. Figures C.1 and C.2 show the number of dealerships and revenue per dealership for the top 100 auto dealer groups, as reported by WardsAuto (2021). WardsAuto (2021) is an industry publication, and these statistics are self reported by the auto dealer groups to the publication each year.

Figure C.1: Top 100 Auto Dealer Groups: Number of Dealerships



Notes: A list of the top 100 auto dealer groups are published by WardsAuto (2021) each year, using self reported revenues data, in the "Megadealer 100." This figure shows the number of dealerships each group owns and the revenue ranking.

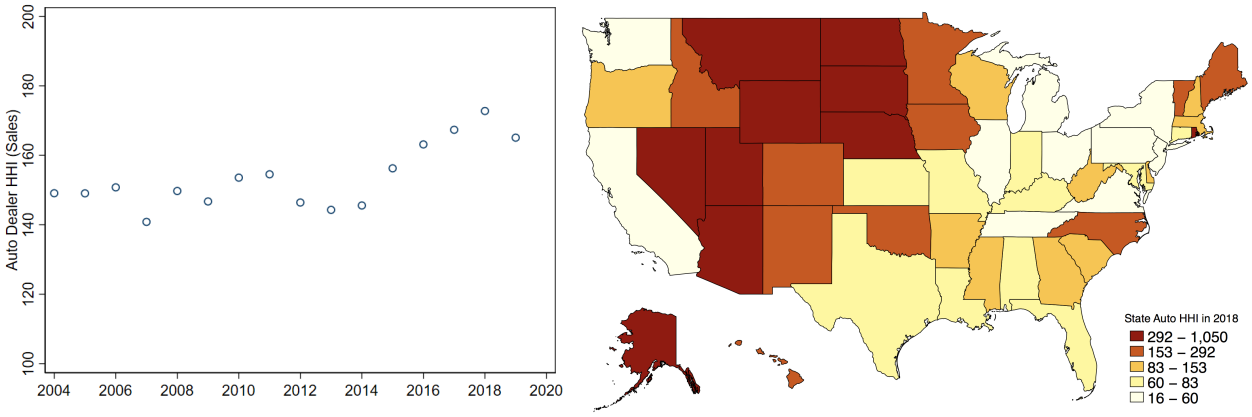
Figure C.2: Top 100 Auto Dealer Groups: Revenue per Dealership



Notes: A list of the top 100 auto dealer groups are published by WardsAuto (2021) each year, using self reported revenues data, in the "Megadealer 100." This figure shows the reported revenue per dealership. The top 4 dealer groups, in terms of both revenue and number of dealerships, are labeled.

Figure C.3 shows the time series of auto dealer HHI (a) and the geographic distribution (b), measuring HHI at the state level, using sales and ownership data from Infogroup (2021). We use number of establishments owned by each auto group in the main text, due to missing data issues in the sales data.

Figure C.3: Concentration at the State Level



(a) Over Time

(b) Across States

Notes: State level HHI calculated using sales data Infogroup (2021). See Figure C.4 for measures of market structure using dealership counts and multi-establishment owners.

Lastly, Figure C.4 show descriptive statistics for the ownership of dealerships across the sample, and then in our sample of mergers, respectively. Figure C.4(a) shows that the share of dealerships with multi-establishment parents has grown significantly over the sample period, from 6% in 2004 to over 10% in 2020. However, conditional on being a multi-establishment firm, there is not a time series trend on the number of establishments owned or the number of states operated in (Figure C.4(b) and (c)). The average multi-establishment dealer group owns between 10-12 dealerships and operates in 2 states. Figure C.4(d) shows the changes for parent groups in our sample.

Figure C.4: Descriptive Statistics: Ownership in Auto Retail Industry



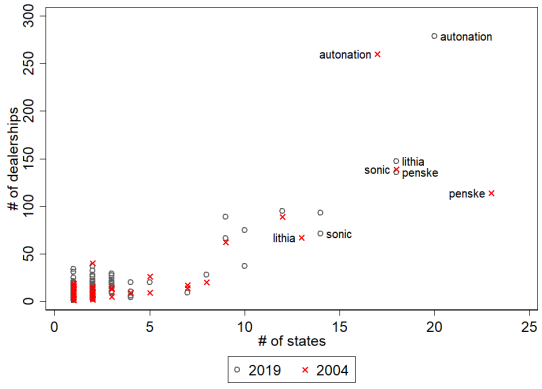
(a) Share of Dealerships with Multi-Estab Parent



(b) Number of Dealerships, Conditional on Multi-Establishment Firm



(c) Number of States, Conditional on Multi-Establishment Firm



(d) Parent Level: Number of States and Number of Dealerships (2004, 2019)

Notes: This set of figures show changes in the market structure in the auto dealer industry, over time. Data on ownership structure and dealership location is from Infogroup (2021).

D Auto Dealer Associations (ADAs)

In this section we provide more details on the trade associations that lobby for the auto dealers in each state. We collect these data from publicly available form 990s and the webpages of the ADAs.

History. The trade associations mostly predate the franchise laws that govern the dealer-manufacturer relationship at the state level. In fact, they were instrumental in getting these laws passed. See Lafontaine and Scott Morton (2010) for more on the auto dealer franchise laws.

The average year that a state ADA was founded was 1934, but new groups are still introduced, the most recent being the North Texas ADA in 2010. The Niagara Frontier Automobile Dealers Association is the oldest that we know of, and was founded in 1903.

Internal Organization and Membership. To understand the composition of ADAs, we collect data on membership directly from their websites (where available). Table D.1 reports the number of members in each ADA relative to the total count of auto dealers in the corresponding state. For the sample with membership data, we estimate that over 80% of dealers are members of their state ADA. This finding suggests that the failure of the trade association to achieve higher levels of coordination is not due to low membership.

The board of directors is important because it makes decisions for the ADA. Member dealers vote for the board of directors, but, as far as we can tell, the directors make decisions without further voting from the members. This is laid out explicitly in the Texas ADA's Form 990: "Members may elect one or more members of the governing body. Decisions of the governing body are not subject to member approval." The board can be fairly large, with representatives from each region. In Pennsylvania the board can have up to 45 members. Given the size of the board and diversity of legislative issues, it might be difficult for auto dealers to coordinate on lobbying within the ADA infrastructure.

It seems that most large auto groups are members of ADAs. For example, AutoNation is a member of the AADA (Arizona) and IADA (Illinois), where it owns ten and six dealerships respectively. Large dealers are also represented on the board of directors. For example, Penske has the largest number of dealerships in CA as of 2019 (38 dealerships). The owner of a Penske dealership, Mark Maxwell, is the president of the Silicon Valley Auto Dealers Association.[60]

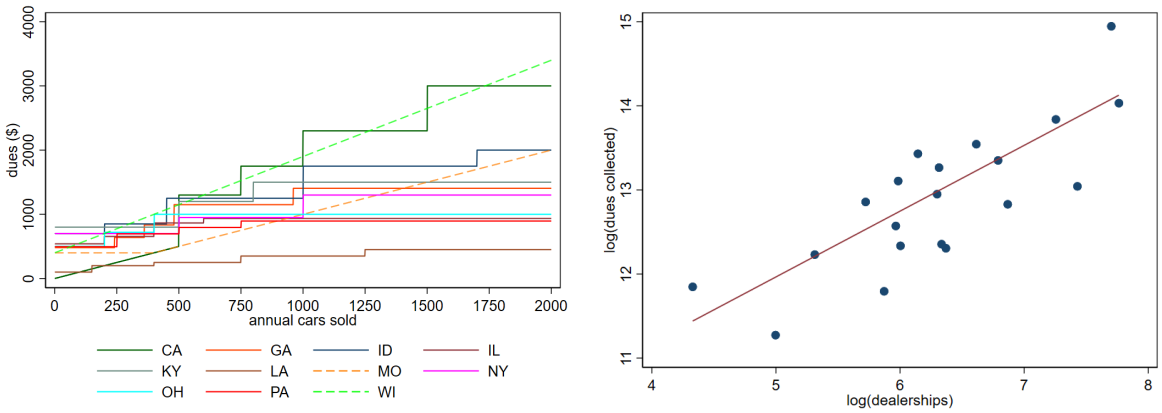
[60] As another example, the top three parent companies in Alaska are Lithia, Kendall, and Continental. The board of directors of AKADA includes Marten Martensen, President, from Continental Auto Group, Tim Toth, from Kendall, and Dennis Trent, from Lithia.

Table D.1: Member Coverage in State ADA

State ADA	Member Dealers	Infogroup Dealers	Coverage	Other ADA in State?
AL (ADAA)	295	393	75.1%	
AZ (AADA)	287	367	78.2%	
DE (DATDA)	68	79	86.1%	
IL (IADA)	584	942	62.0%	Chicago
MI (MADA)	614	726	84.6%	Detroit
MN (MADA)	393	407	96.6%	
MS (MADA)	183	246	74.4%	
MO (MADA)	440	495	88.9%	
NM (NMADA)	110	161	68.3%	
PA (PAA)	877	1,205	72.8%	Philly, Pittsburgh
TX (TADA)	1,400	1,939	72.2%	Multiple
Average: 75.4%				
Solo ADAs Only: 82.7%				

Notes: This table shows the number of dealerships that are members of the ADA and the number of dealerships in the state. The number of dealerships in the state are from the Infogroup Historical Business Database, and the number of dealerships in the ADA is from the ADA website.

Figure D.1: Auto Dealer Association Dues



(a) Dues Schedules

(b) # of Dealerships and ADA Member Dues (2019)

Notes: The figure on the left shows the amount of dues owed to join each state's main trade association Data on the dues schedules are directly from the ADA webpages. The figure on the right is a binned scatter plot of log(ADA member dues collection $) and log(number of dealerships), at the state level, in 2019. The number of dealerships in the state comes from Infogroup (2021). The member dues are collected by the authors from Form 990s. If the state has multiple ADAs we take the sum.

Member Dues. There is certainly variation across states in the dues schedule. TADA received $2.8M in membership dues in 2019. At 1,400 members this would work out to approximately $2,000 per member. PAA collected dues of $875,000 and had 877 members, for about $1,000 per member (dues for PAA are $895 if you sell 751+ units annually, and an additional $450 per dealership). We are able to collect the exact dues schedules for 11 ADAs. Average dues for a dealership that sells 500

cars is $915, ranging from $250 in Louisiana to over $1200 in Idaho, California, and Kentucky. This increases to $350 in LA, and over $1500 in Wisconsin and California, once a dealership sells 750 cars. There is a tight relationship between total dues collected and the number of dealerships in the state, suggesting again that most dealerships are members of their state or local ADA.

E Federal Lobbying

We complement our study of the automobile market by establishing a few facts about lobbying at the national level. This section describes the federal lobbying data and then presents some descriptive facts using this data. First, we show a weak positive correlation between lobbying and concentration across industries. Second, we show that industries that become more concentrated between 2002-2017 see increases in lobbying expenditures. A 10 percentage point increase in the industry concentration ratio is associated with a 14% increase in lobbying expenditures. This correlation is strongest in the retail and wholesale trade industries, where a 10 percentage point increase in industry concentration is associated with a 38% increase in lobbying expenditures.

E.1 Data

We use data on federal lobbying from 2000 to 2018 from LobbyView (Kim, 2017). Kim (2017) cleans reports filed under the Lobbying Disclosure Act of 1995, creating a data set that includes each client's primary NAICS code and total lobbying expenses by quarter. Table E.1 shows the top 10 lobbying industries at the federal level, their total expenditures over the sample, and their average expenditures per year. The automobile retail industry is ranked 79th of over 300 industries, spending about $5.4 million per year.[61] This is less than the mean annual industry lobbying, but substantially larger than the median (Table E.2).

Table E.1: Federal Lobbying by Industry

			Lobbying ($M)	
	NAICS	Code	Total	Mean
1	Business, Professional, Labor, Political, and Similar Organizations	8139	5,978.9	298.9
2	Pharmaceutical and Medicine Manufacturing	3254	3,208.7	160.4
3	Depository Credit Intermediation	5221	2,489.2	124.5
4	Insurance Carriers	5241	2,011.9	100.6
5	Electric Power Generation, Transmission and Distribution	2211	1,826.1	91.3
6	Aerospace Product and Parts Manufacturing	3364	1,805.8	90.3
7	Wired and Wireless Telecommunications Carriers	5173	1,077.6	53.9
8	Other Information Services	5191	1,017.1	50.9
9	Petroleum and Coal Products Manufacturing	3241	957.7	47.9
10	Social Advocacy Organizations	8133	957.4	47.9
79	Automobile Dealers	4411	108.0	5.4

[61] Pharmaceuticals, on the other hand, spend north of $160 million per year, and $3 billion over the last 20 years. One difficulty with this data set is that many of the trade associations will be affiliated with NAICS code 8139, instead of the industry that they are affiliated with. We account for this in our state level auto retail lobbying data, but not in the federal data, or for non auto retail industries in the state data. To the extent that there are trade associations lobbying on the behalf of the pharmaceutical industry, $3.2 billion will be an underestimate of that industry's political spending.

Table E.2: Industry Concentration and Lobbying

	Mean	Median	SD	N
CR4 (Census)	0.25	0.21	0.18	1,017
CR4 (Infogroup)	0.21	0.13	0.21	4,903
Annual Lobbying ($M)	7.73	1.10	24.52	5,422
Conditional on Lobbying > 0	9.37	1.77	26.71	4,473

Notes: This table shows the distribution of industry concentration ratios for the largest 4 firms in the industry (CR4) and annual lobbying at the federal level. Data for industry CR4 comes from the Economic Census and from Infogroup (2021). Data on federal lobbying is from Kim (2017).

Data on industry concentration over the same period come from two sources. The first is the Economic Census. The Economic Census publishes CR4s, the concentration ratio of the largest four firms in an industry (where an industry is defined as a 4-digit NAICS code), every 5 years; we use the data from 2002-2019. The second data source is the Infogroup Historical Business data set, which is published annually. We use reported sales in the Infogroup data to compute industry CR4s.

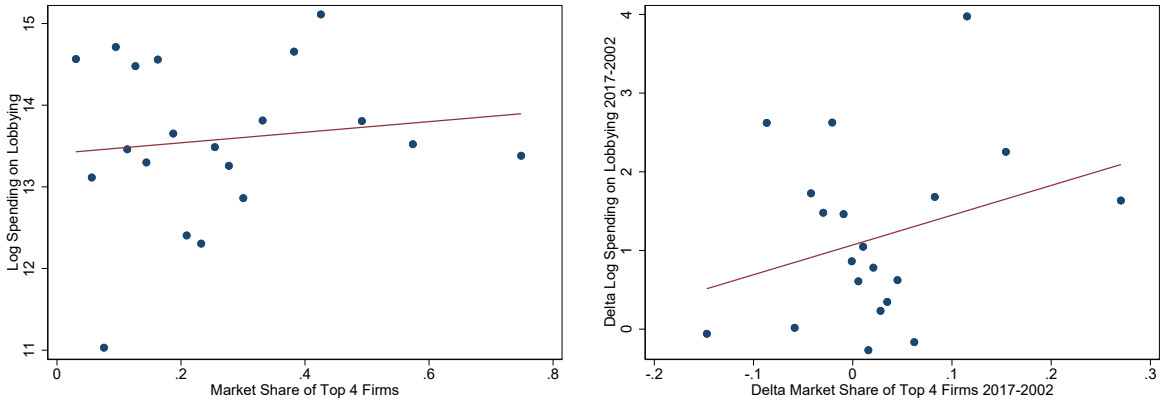
There are 285 unique industries (at the 4 digit NAICS level) in the Economic Census, and 75% of these industries are in the Census each year it is published (2002, 2007, 2012 and 2017). There are 311 unique industries in the Infogroup data, and 96% of those industries have establishment and sales data we can use to calculate a CR4 in each year. We note that the sales data from Infogroup (2021) is incomplete at the firm-year level, but in the aggregate the distribution of CR4s look similar to the CR4s we calculate using the Census data. Table E.2 shows the mean and median industry CR4 over the sample period, as well as the mean annual lobbying by industry.

E.2 Descriptive Facts

Figure E.1(a) shows the correlation between industry structure and lobbying via a binned scatterplot. It shows the relationship between 2017 log federal lobbying expenditures and the CR4. There is a weak, positive correlation between these two variables. As both industry structure and political influence activities are equilibrium objects, they may both reflect other factors beyond the collective action problem in lobbying. Industries with higher concentration and higher lobbying may differ systematically.

Figure E.1(b) shows the correlation between changes in concentration and changes in lobbying expenditures. Here, the positive correlation in Figure E.1(a) becomes more pronounced. While suggestive, neither figure controls for omitted factors that vary over time—for instance, changes in international trade regime could simultaneously affect lobbying and concentration. The patterns could also reflect the possibility that lobbying itself entrenches large firms.

Figure E.1: National Industry Concentration and Federal Lobbying



(a) Cross-Sectional Correlation in 2017

(b) Long Differences 2002-2017

Notes: Binned scatter plots based on CR4 data from the 2002 and 2017 economic census and federal lobbying data from Kim (2017) measured at the 4-digit NAICS level.