Consolidation and Political Influence in the Auto Retail Industry

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Abstract

Does competition constrain corporate political influence? Because consolidation should lead firms to internalize a larger share of lobbying benefits, it may therefore lead to higher levels of lobbying. We study this question in the auto retail industry, using new data on state-level lobbying and mergers. Our empirical approach compares mergers that occur within and across political markets. The results confirm that consolidation helps the industry resolve the collective action problem in lobbying: mergers in product markets that cross state borders have no effect on lobbying, while mergers between two firms that share a political market are followed by a dramatic increase in lobbying. We then look at the enactment rate of legislation that auto dealers favor, and find that it increases after the mergers, implying an elasticity of bill enactment with respect to lobbying of 0.13. Using these estimates, we perform a back-of-the-envelope exercise to estimate the value of political coordination in the auto retail industry.

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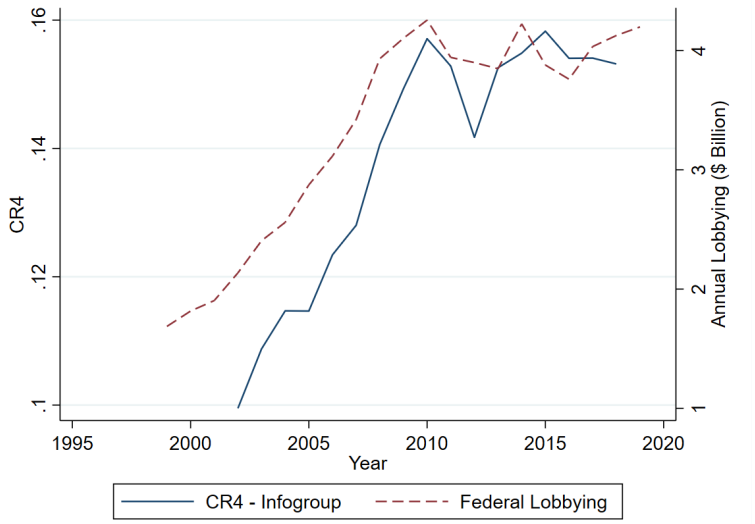
1 Introduction

> *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 interest in the political influence of large corporations. One reason that larger firms might lobby more relates to the public goods nature of lobbying (Olson, 1965). If firms within an industry stand to benefit from similar legislation, then firms have an incentive to free ride on the lobbying activities of their rivals, leading to underinvestment in lobbying. A monopolist, in contrast, internalizes the full benefit of its lobbying and so should lobby more.

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).

The increase in lobbying and concentration, as measured at the national level, has received attention in the academic literature, but the two trends have largely been considered as separate phenomena.[2] Indeed, it is not clear whether and to what extent the patterns in Figure 1 reflect the public

[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.

goods nature of lobbying. A third, external factor could drive both the observed increase in concentration and the increase in lobbying.[3] In addition, political power may beget market power: firms that are skilled at lobbying regulators might be able to grow more, leading to a more concentrated industry structure (Callander, Foarta and Sugaya, 2021).

This paper provides the first empirical evidence on the causal link between consolidation and political influence. 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 group mergers. 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. 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.

The automobile retail industry is a good fit for studying our research question for three 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). A second advantage is that auto retail product markets 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 final 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.[4] While recent media attention on concentration and politics focuses on the tech industry, our work highlights that industries like auto retail, for which standard measures of concentration are low, can still have sizable political influence.

Our empirical strategy compares lobbying at the state level before and after a large in-state

[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.

[4] 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.

merger or acquisition. We find that lobbying increases in the range of 50%-65% after a large auto retail merger—an increase of $125,000 to $165,000 spent 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. Therefore, 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).

Our data reveals that auto dealers typically lobby through trade associations. Each state has its own auto dealer association, and these associations engage in lobbying virtually every year (a 98% probability of lobbying in any given state and year).[5] 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.[6] 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

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

[6]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.

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.

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 almost 10 percentage points (23%) higher for bills favored by the auto lobby. The magnitude of our estimates imply an enactment elasticity with respect to lobbying of 0.13-0.20.

To understand the economic importance of the political coordination achieved through mergers, we calibrate a simple model of auto dealer lobbying using our estimates from the merger analysis. 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 $3.24 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 9.8 percentage points, our back-of-the-envelope exercise suggests that these mergers achieve $2.29 million in revealed-preference payoffs for the industry in the year following the merger. For comparison, this figure is equivalent to a one-year profit increase of about $20 per car sold, or an increase in profits of 3-5% 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 complements a much larger literature examining federal lobbying in the United States (see Bombardini and Trebbi (2020) for a

review). Our paper stands out in two respects: first, we are able to study the *outcome* of lobbying, and second, we focus on lobbying at the state rather than federal level. Our study of lobbying outcomes relates closely to De Figueiredo and Silverman (2006) and Kang (2016), two papers that estimate the return to lobbying. 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%. We leverage new data on lobbied bill positions, allowing us to directly link auto dealer lobbying to the success and failure of their legislative agenda. We use this data to estimate an elasticity of bill enactment with respect to lobbying expenditures, which is similar in spirit to De Figueiredo and Silverman (2006).

We focus on state-level lobbying because many 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. 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. State lobbying 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.[7] 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, for example, dialysis (Wollmann, 2024).

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. Deal-

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

erships remit substantial tax revenues, accounting for about $24 billion in state and federal income taxes and $104 billion in state sales tax.[8] 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).[9] 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.[10] 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. State franchise laws also typically bar manufacturers from selling directly to consumers, 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.[11]

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.[12,13] The breadth of regulatory issues concerning

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

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

[10] 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.

[11] 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).

[12] See Appendix Figure F.4.

[13] 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.

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 E.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.[14] These large companies own dealerships that sell different car brands from different manufacturers.[15] One reason that growth might occur through mergers and acquisitions is that, as described above, encroachment laws make it relatively challenging to open new dealerships. The literature suggests two additional reasons for mergers and acquisition activity in the industry: increasing returns to scale in advertising (Murry, 2018; Murry and Schneider, 2016) and high returns to scale in new repair technologies (Lafontaine and Scott Morton, 2010).

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 market structure of the auto retail industry is characterized by many small local chains. Table 1 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.[16] This geographic segmentation of demand will be important for our empirical strategy.

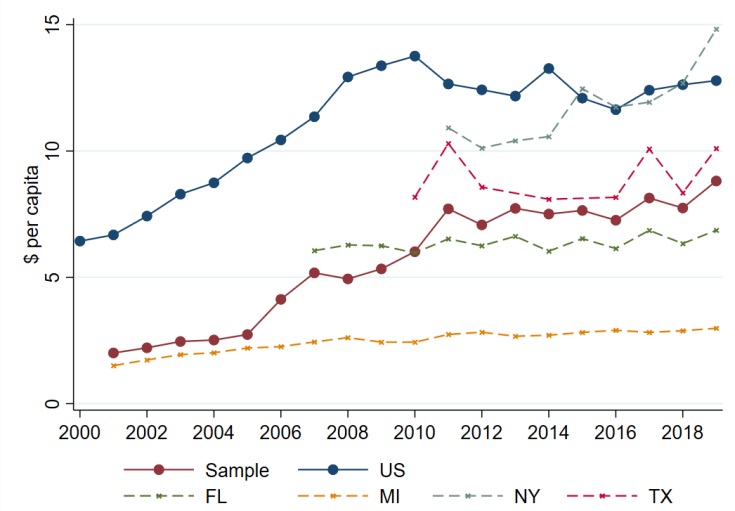
Because we focus on the state as relevant political unit of analysis, we construct a state-level HHI for auto dealers. At the state level, ownership is quite diffuse, with an average HHI of around 75 (Table 2). HHIs are certainly higher at the CBSA level, which is likely a better approximation to the

[14] While size varies substantially among the top 100 dealers, Appendix Figure E.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.

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

[16] 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.

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.

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 3.1, we describe how we use the Infogroup data to identify large mergers and acquistions.

2.3 Data on Political Spending

We construct a new data set of state-level lobbying from state-maintained administrative records. We focus on 27 states that mandate reporting on lobbying clients and compensation, for which we observe expenditures by client, state, and year.[17] To give a sense for the magnitude of state lobbying, 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 the same level as the federal lobbying, if not higher.

Automobile dealers rank in the top third of lobbying industries.[18] Table 1 shows that the auto dealer industry spends about $250,000 in lobbying annually per state ($170,000 at the median). An

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

[18] Auto dealers are 72nd of 308 industries (Appendix Table C.1). This is similar to their federal ranking of 79 (Appendix Table B.1). Appendix Figure C.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 C.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.

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 D). Data on auto dealer association revenue is collected by the authors from publicly available Form 990s. 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.

important finding is that most auto dealer lobbying is intermediated by state auto dealer associations (ADAs). On average 90% of total lobbying is spent by auto dealer associations (100% at the median). In Section 4, we explore the role of the ADAs in coordinating political activities.

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.[19] Another advantage of the lobbying data is frequency; we observe lobbying annually, instead of only in election years. For these reasons, 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

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

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").[20] On average, the auto dealers lobby 13.3 bills per year (with a standard deviation of 8.6 bills).[21] 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 Lobbying Analysis

Our main analysis investigates how lobbying activities change in response to large mergers in the auto retail industry. In this industry, we argue that there are three main reasons that the incentive to lobbying before and after a merger or acquisition could change: (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 is our main object of interest. (ii) Coordination in the product market can change lobbying incentives. We note that this can either sharpen or dull lobbying incentives, depending on the policy.[22] (iii) Another factor may simultaneously change the returns to consolidation and lobbying, such as a technological change or change in the dominant political party in the state legislature.

Our baseline estimates measure the net effect of the merger. We interpret these estimates as the combined effect of higher coordination in both the political and the product market, but we acknowledge that these might also reflect an omitted variable that affects both consolidation and lobbying. To isolate the political channel, we then compare mergers that occur in more versus less politically congruent product markets.

Before turning to the analysis, we note that, in principle, two other explanations might account for a change in lobbying following a merger. However, we believe these are not relevant in this context. First, firms may lobby over the merger *itself*. This is unlikely to be important in the auto retail

[20] One quirk of the data is that the position can 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 5 and Appendix D.4.

[21] 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.

[22] A merger that leads to higher prices, for example, reduces the incentive to lobby over sales taxes, as illustrated in Appendix A. However, a merger that increases joint profits can sharpen the incentive to lobby over franchise laws.

industry because ownership is relatively diffuse; there has been little regulatory scrutiny over merger activity in auto retail. Second, 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.[23]

3.1 Merger & Acquisition Sample

We begin by identifying a set of relevant mergers. While there are many small acquisitions in the auto retail industry during our sample period, our analysis focuses on large ownership changes that could meaningfully alter the returns to lobbying. For each state in our lobbying data, we define the merger "event" to be the largest year-to-year dealership increase. 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.[24,25]

The average event in the sample comprises an acquisition of 7.5 dealerships.[26] The average year-to-year change in the number of dealerships for a parent company is zero. Figure 3(a) shows the distribution of event sizes along with the in-state count of dealerships owned by the acquirer, and Figure 3(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.

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

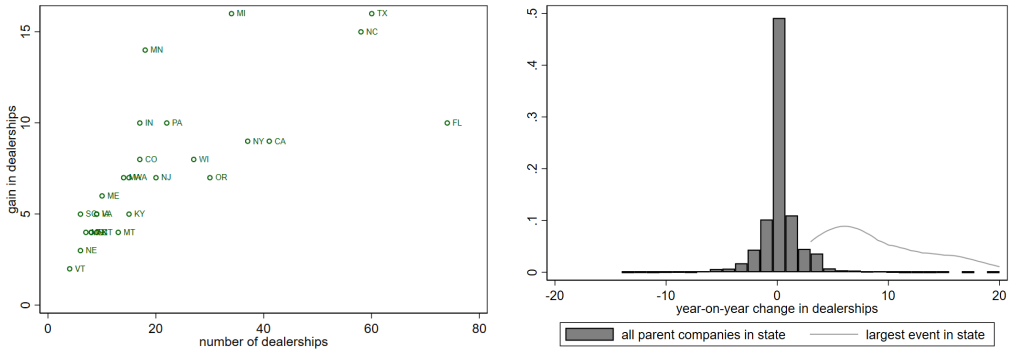
[23] We observe ADA lobbying in 98% of state-years in the sample, this includes pre-merger years.

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

[25] 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.

[26] We have 27 events, for the 27 states with lobbying data. However, the event for 4 states occurs before we have lobbying data. Therefore, for those states we do not have pre and post period lobbying, and they serve as controls.

Figure 3: 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 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

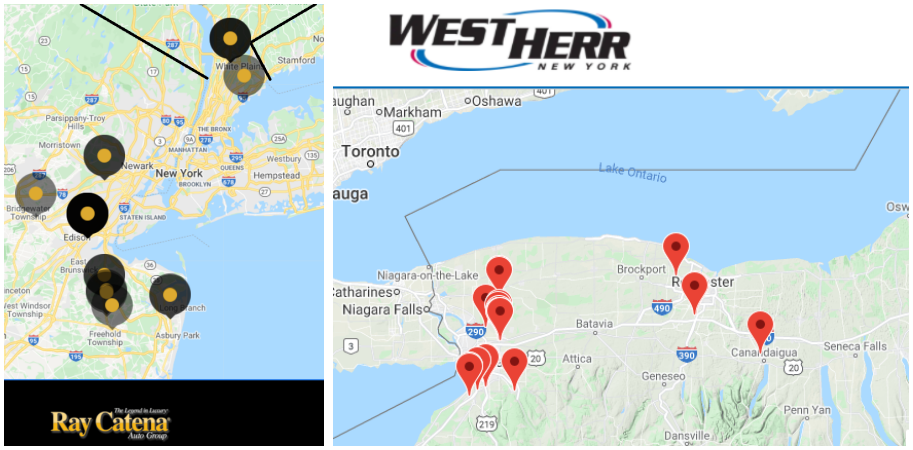
Notes: This table shows the number of dealerships (establishments), parent dealer groups (firms), and HHI, before and after the sample merger. HHI is measured using the number of dealerships a firm owns, as we have incomplete data on sales. We calculate average HHI in each state 4 years before and 4 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 a state owns. On average, state HHI, as measured by number of dealerships, increases from 66 to 80 post-merger. Appendix Figure D.1 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.

3.2 Border Merger Strategy

The mergers in our sample are not random, but are endogenously chosen by the merging parties. We do not see this as hindrance; our interest lies in understanding whether consolidation facilitates coordination in the political market, which can operate through merger selection. Holding fixed a set of merging parties, a merger reduces the incentive to free ride and so should increase lobbying

Figure 4: (Mis)Alignment of Product and Political Markets



(a) Ray Catena (b) West Herr

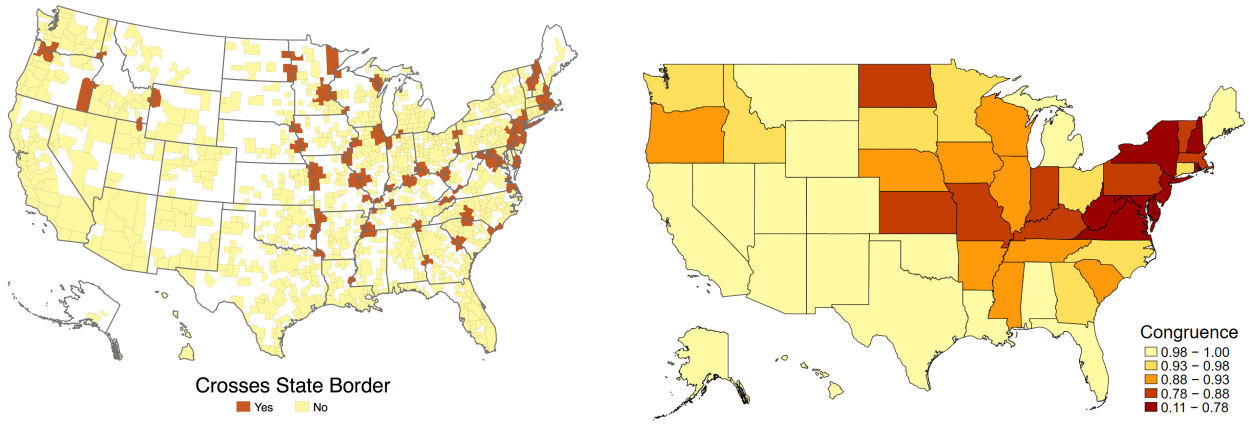
Notes: This figure shows the dealer network for two auto dealer groups, Ray Catena and West Herr. Sources: https://www.raycatena.com/dealerships/ and https://www.westherr.com/locations/.

expenditures. 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 occur in equilibrium. We want to incorporate this effect.

Firms may also merge in response to changes in the economic and/or political climate that simultaneously drive an increase in lobbying and consolidation but are unrelated to lobbying as a collective action problem. For example, a change in the political party in power in a state could change both the return to consolidation in the product market and also the return to lobbying. We therefore draw on an insight from the theory of collective action to identify our effect of interest: a merger should only help resolve the collective action problem of lobbying if the merging parties operate in the same political markets. Appendix A illustrates this using a toy model of lobbying over sales taxes. To shed light on the collective action mechanism, we therefore compare mergers among dealerships that operate within the same political market to mergers among dealerships that cross state borders.

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 4(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 4(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

Figure 5: Congruence: Product Markets & State Borders



(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).

lobby over the sales tax policy compared to a similarly-sized expansion by the Ray Catena group.

We operationalize this intuition in two ways: we compare mergers where the acquired establishments are, or are not, located in markets that cross a border; and second, we construct a state-level measure of *congruence* between political and product market, and then compare mergers in more or less congruent states. Starting with the first approach, we create a "border exposure" measure which ranges from 0 to 1, where a value of 1 would represent a merger event where all of the acquired dealerships are located in border Core Based Statistical Areas (CBSAs).[27,28] Figure 5(a) maps the border CBSAs. Eight states in the sample have mergers located in markets that cross a border: KY, MA, MN, NC, NJ, NY, TN, and VA.

We also create a novel measure of the alignment between political and product markets, which we call "congruence." This measure is not merger-specific, but instead 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 D.2 provides more details about the exact construction of this measure. Figure 5(b) maps the geographic distribution of state

[27] See Appendix D.2 for the exact calculation of our border exposure variable.

[28] 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).

congruence.

In Table 1 we present 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.

3.3 Regression Specification

As a baseline for changes in lobbying following a merger, we estimate the following regression where s denotes state and t denotes time:

$$\ln(lobbying_{st}) = \beta \cdot Post_{st} + \mu_s + \lambda_t + \epsilon_{st}. \tag{1}$$

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. 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.[29] 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.

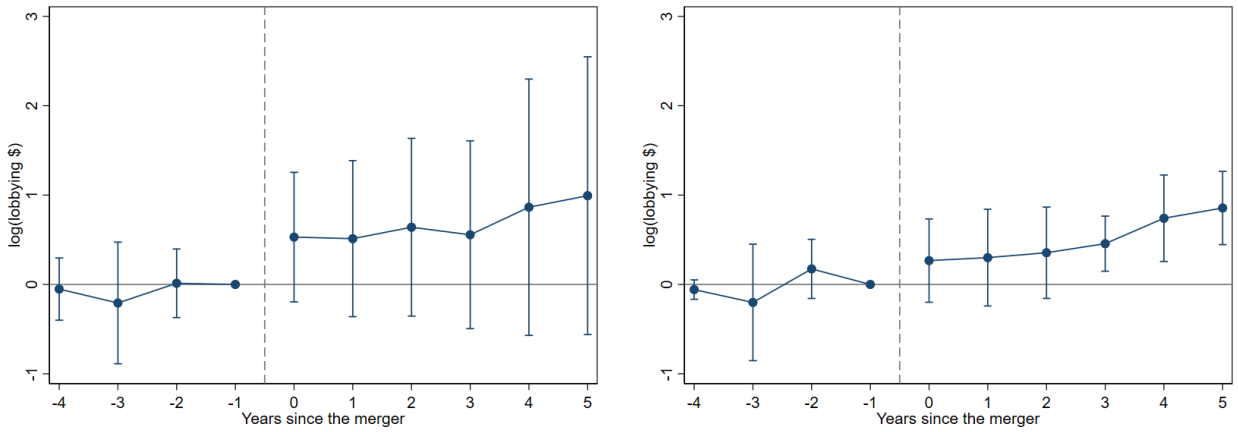
Our difference-in-differences specification augments Equation 1 by interacting the $Post_{st}$ indicator with T_s, which is one of our two measures for the alignment of political and product markets in state s:

$$\ln(lobbying_{st}) = \alpha \cdot Post_{st} \times T_s + \beta \cdot Post_{st} + \mu_s + \delta_k + \lambda_t + \epsilon_{st}. \tag{2}$$

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.

[29] 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: Baseline Results



(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 8 (Appendix D). 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, but the sample is unbalanced—we do not always observe state lobbying for the 10 years around the merger event.

3.4 Main Results

Table 3 shows the baseline results (Equation 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 50% 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 50-65% increase in lobbying in the post-merger period. For the average state, this amounts to $125,000 to $165,000 per year, roughly the cost of hiring one additional lobbyist.

We next investigate how lobbying expenditures change following mergers that occur along a state border. Table 3 shows the results. The sign of the coefficient on the interaction between $Post_{st}$ and T_s, 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 like Ray Catena in our example above (for which Border Exposure = 1) would not lead to an increase in lobbying. However, an acquisition of a dealership group located in interior

markets, like the West Herr dealer group, would increase lobbying expenditures by 74%, or $186,000 in the average state.

Next, we test whether mergers in congruent states lead to greater increases in lobbying expenditures. As we argue in Section 3, a merger in a more congruent state induces a more meaningful change in the in-state dealership share of the acquiring firm and therefore should have a larger effect on lobbying. 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 40% increase in lobbying. A state at the 90th percentile of congruence, Texas (1.00), is expected to see a 93% 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.[30]

Table 3: Difference-in-Differences Estimates

	log(auto dealer lobbying)$_{st}$			
	(1)	(2)	(3)	(4)
Post$_{st}$	0.66**	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	188	188	188	188
R-squared	0.79	0.79	0.79	0.80

Notes: This table shows the results for Equation 1 (column (1)) and Equation 2 (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. 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

3.5 Placebo Tests

We probe the robustness of our results with two placebo tests.

Event Study Dates. 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

[30]This is not driven by acquisitions by large parents. Appendix Figures E.5(b) and (c) show that congruence is not strongly correlated with parent size or share in-state.

Table 4: Placebo Tests

	Event Study Dates		Revenue Effect	
	Baseline	Placebo	Baseline	Placebo
	(1)	(2)	(3)	(4)
Post	0.66**	-0.24	1.01**	0.42
	(0.31)	(0.33)	(0.41)	(0.45)
Observations	188	170	116	116
R-squared	0.79	0.80	0.70	0.69

Notes: This table shows the results for Equation 1, 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(lobbying $). 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.

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.[31] For these states, we reassign dates within the group.

Table 4 shows the results of this placebo test. Column (1) is the baseline effect (replicated from Table 3), 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 Appendix Figure D.2 confirms this.

Revenue versus Public Goods Effect Our analysis has focused on how a merger can enhance coordination in the political market and therefore increase lobbying. However, a merger might change incentives to lobby for reasons that do not derive from coordination. We already provide evidence in support of the coordination hypothesis with the difference-in-differences analysis in Table 3, which compares mergers that should have more vs less gains from coordination. However, the mergers in our sample vary both in the size of the acquiring parent and the size of the merger event (Appendix Figure E.5). Therefore, as a placebo test, 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. Because of 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 network outside of our event state. The baseline effect is large for the mergers in our sample for these

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

14 states, at 1.01 (the full sample estimate is 0.66). However, there is no significant change in lobbying expenditures following the placebo event years. These results provide assurance that our main results are not driven solely by an increase in firm size independent of coordination effects.

4 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.[32]

It is challenging to understand 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.[33] 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.[34] Total dues collected is tightly correlated with market size (Appendix Figure F.3); a 10% increase in number of dealerships in a state is associated with a 7.8% increase in

[32]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.

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

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

total dues collected.

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 is hard to reconcile with the high levels of ADA lobbying that we observe, but we also check ADA membership when 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.[35]

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.[36] These discretionary contributions again raise the specter of the public goods problem.

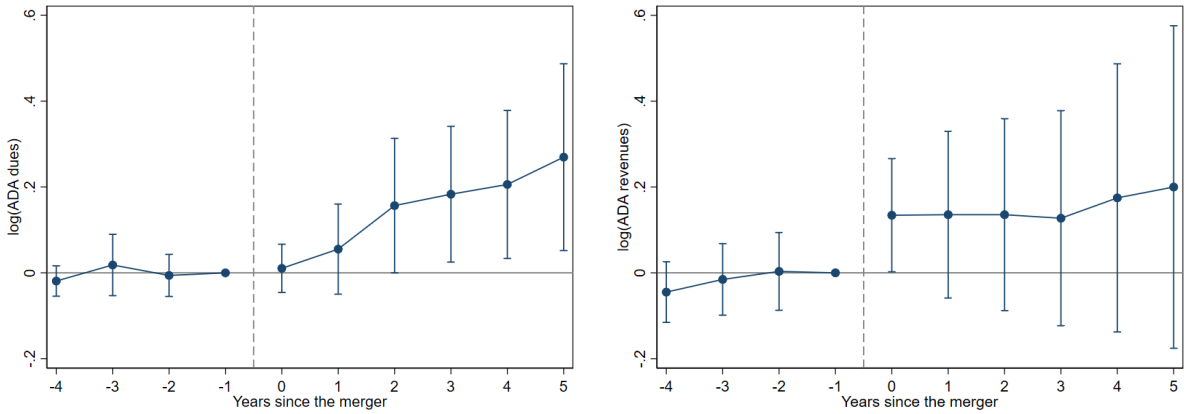
Finally, mergers among dealer groups within the same state might also increase ADA political spending by facilitating coordination within the trade association. We note that larger dealer groups are more likely to sit on the board of directors, thereby determining how the ADA's resources are allocated across activities, including lobbying. 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.

[35] See Appendix F for more details.

[36] 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 F.2 for dues schedules in 11 states.

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 8, 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.

5 Bill Enactment

By revealed preference, increased lobbying brings value to mergingparties 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.[37] 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%.

We employ estimating equation (2) 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).[38] We study the "success" of

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

[38] 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 D.1 we include these

Table 5: Bill Enactment

Outcome:	Success			Pass			N Bills	log(Bills)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Post_{st}$	0.04	-4.04*	0.06	-0.04	-5.52***	0.02	-15.45	0.06
	(0.11)	(1.73)	(0.12)	(0.14)	(1.07)	(0.10)	(13.01)	(0.62)
$Post_{st} \times Congruence_s$		4.54*			6.08***			
		(1.98)			(1.15)			
$Post_{st} \times Border\ Merger_s$			-0.07			-0.33***		
			(0.15)			(0.05)		
Observations	436	436	436	265	265	265	35	35
Sample	Support + Oppose			Support Only			Support + Oppose	
Dep. Var Mean	0.61	0.61	0.61	0.43	0.43	0.43	42.89	2.89
R-squared	0.11	0.12	0.11	0.23	0.24	0.25	0.92	0.86

Notes: This table shows the results for Equation 1 (Columns (1), (4), (7), (8)) and Equation 2 (Columns (2), (3), (5), (6)), where Post =1 for the event year and all years after. 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. Columns (7) and (8) estimate the effect of the merger on the number of bills lobbied. 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). State and year fixed effects included in each specification. Standard errors are clustered by state.

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 5 presents the results. First, we note that mergers are not followed by an increase in the number of bills lobbied (Columns (7) and (8)). 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 5 further reveal that bill enactment increases following a merger, but only in congruent states. In our sample of six states with bill outcomes, the median congruence is 0.924. Therefore, the results suggest a 15.5 percentage point increase in lobbying success (Column (2)) and a 9.8 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 of 0.61 and 0.43, respectively. The increase in auto dealer lobby success is *not* driven by states with border mergers (Columns (3) and (6)). However, these results are imprecise; only one state in this sample has a merger that occurs in a border CBSA.

Our estimates imply an elasticity of bill enactment with respect to lobbying of 0.13; a 76.0% increase in lobbying results in a 9.8ppt increase in the likelihood that a bill favorably lobbied by the

"monitored" bills, but with the assumption that "monitored" bills are actually "opposed" by the auto dealer lobby. The results are consistent with Table 5. We discuss this assumption and ongoing work to disambiguate dealer position for a larger sample of bills in Appendix D.4.

auto dealers is enacted.[39] 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 0.20; a 76.0% increase in lobbying results in a 15.5ppt increase in the likelihood that the bill outcome matches the auto dealer position. Unfortunately, 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.

6 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 5). 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 of the ADA's decision problem (prior to bill enactment, so that the state variable $enactment = 0$) is:

$$V(0, l_t) = \pi(l_t) \cdot \frac{v}{1-\delta} - l_t + (1 - \pi(l_t)) \cdot \delta \max_{\{l_{t+1}\}} \cdot V(0, l_{t+1}). \tag{3}$$

[39] 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 76% increase in lobbying post-merger.

Table 6: Parameters for Calibration Exercise

Parameters	Values	Sources
Bill enactment rate: $\pi(l^*)$	0.71	Lobbying and legislative data
Optimal per-bill lobbying: l^*	\$35,593	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	0.76	Table (3) Col (3)
Slope of bill enactment with respect to lobbying: β	0.13	Reduced-form estimates
Effect of merger on lobbying	0.76	Table (3) Col (3)
Effect of merger on bill enactment	0.098	Table (5) Col (5)

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

$$\frac{\partial \pi}{\partial l_t} \cdot \frac{v}{1-\delta} - 1 - \delta \cdot \frac{\partial \pi}{\partial l_t} \cdot \max_{\{l_{t+1}\}} \cdot V(0, l_{t+1}) = 0 \tag{4}$$

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 (3) as:

$$V(0, l^*) = \frac{\pi(l^*) \cdot \frac{v}{1-\delta} - l^*}{1 - \delta \cdot (1 - \pi(l^*))}. \tag{5}$$

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

$$v = \frac{l^*}{\beta} \cdot (1 - \delta + \delta \cdot \pi(l^*) - \delta \cdot \beta). \tag{6}$$

Equation (6) 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 6 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.[40] 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 6 and a discount rate of $\delta = 0.95$, the implied average flow

[40]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 0.098 =-5.52 + 6.08*.0924 (Table 5, 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 0.098 increase in enactment rate for the median congruence state. Therefore, the implied post merger enactment rate (0.64) is very similar to the raw data (0.71).

utility for a bill supported by the ADA is approximately $161,948, with a corresponding net present value of enactment of $3.24 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 $3.24 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.[41]

We next 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 9.8 percentage points increase in the likelihood of bill enactment. Then average gain from coordination in the year following the merger is:

$$\begin{aligned}\text{Average Gain from Coordination} &\approx \underbrace{\bar{N}}_{\substack{\text{number}\\ \text{of bills}\\ \text{supported}}} \cdot \underbrace{\bar{\Delta\pi}}_{\substack{\text{change in}\\ \text{enactment}\\ \text{probability}}} \cdot \bar{V} \\ &\approx 7.2 \times 0.098 \times \$3.24\text{M} = \$2.29\text{M}\end{aligned}$$

As a benchmark, the calibrated gain from coordination ($2.29 million) is equivalent to an additional $18.39 of profit per car sold in the year of the merger.[42] The profit margin on new car sales is 1-2%, according to industry reports.[43] Therefore, for a new car sold for $35,000, the profit margin is $350-700, and the calibrated gain from coordination translates to a 3-5% increase in profits.

7 Discussion and 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 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, we find

[41] 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 content.

[42] 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).

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

that the post-merger increase in lobbying in congruent states leads to a meaningful increase in bill enactment. Our estimates imply an enactment elasticity with respect to lobbying of approximately 0.13. We then use our estimates of the effect of lobbying on enactment probabilities to calibrate a simple model of auto dealer lobbying. The back-of-the-envelope exercise indicates that consolidation provides $2.29 million in payoffs to auto dealers via superior coordination in the political market in the year following a merger.

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.

Lastly, our finding that mergers facilitate coordination in the political market also sheds light on the functioning of trade associations. Our data reveal that trade associations undertake the lion's share of lobbying in the auto retail industry, as they do in many industries. Multiple factors might contribute to the dominance of trade associations. Legislators might find lobbying more persuasive when undertaken by an association rather than a single dealer, as the association ostensibly represents a wide swathe of their constituents. Trade associations may also help mitigate the collective action problem in lobbying, although our results indicate that they fall short of the level of coordination achieved through mergers and acquisitions.

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Appendix

A Theoretical Framework

This section presents a simple model of lobbying over sales tax rates to illustrate the way that mergers can alter lobbying. Consider two auto dealers, A and B, that compete in a single product market for new cars. The market is fragmented so that the firms are located on opposite sides of a state border, states $i \in \{1, 2\}$. Let q_{ij} denote the residual demand for firm j from state i. We assume that total industry lobbying $L = \sum_j l_j$ reduces sales taxes with the following specification: $\tau(L) = \frac{1}{1+L}$. We can solve for the optimal lobbying of firms A and B:

$$\pi_j = p_j \left(q_{1j} \cdot \frac{L_1}{1 + L_1} + q_{2j} \cdot \frac{L_2}{1 + L_2} \right) - (q_{1j} + q_{2j})C - l_{1j} - l_{2j}$$

$$\text{FOC: } l_{1j}^* = \sqrt{r_{1j}} - 1 - l_{1k}$$

$$l_{2j}^* = \sqrt{r_{2j}} - 1 - l_{2k}$$

In the symmetric and asymmetric Nash equilibria, equilibrium industry lobbying in each state is a function of revenue, $L_i^D = \sqrt{\max\{r_{ij}, r_{ik}\}} - 1$. First, we see that if the two firms merge, then the joint firm's optimal lobbying is $L_i^M = \sqrt{r_i^m} - 1$. That is, so long as the monopolist earns higher revenue than the duopolist on a per-firm basis, then merging increases industry lobbying. We will test whether this prediction of the model holds in the state lobbying data.

Second, we note that the increase in lobbying is proportional to

$$\frac{L_1^M}{L_1^D} = \frac{\sqrt{r_1^m} - 1}{\sqrt{\max\{r_{1j}, r_{1k}\}} - 1}, \tag{7}$$

which shows how asymmetries across the border matter for lobbying: Equation (7) decreases in the asymmetry in revenues in market 1. If only firm A sold cars to consumers in market 1, then a merger with firm B would not lead to an increase in lobbying in state 1. If anything, we would expect a decline in state lobbying if the monopolist increased prices, thus reducing revenues.

The price and size effect of the merger is all baked into the revenue term, r. We call this the revenue effect. In short, if dealers A and B merge within a political market we expect to see both a public good and revenue effect. If A and B merge across political markets they do not solve the public goods problem, and equilibrium lobbying only is affected by the revenue effect.

This simple model illustrates how the misalignment of state and product market borders generates differences in equilibrium levels of lobbying holding demand and cost functions fixed. We leverage this variation in our empirical analyses.

B 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.

B.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 B.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.[44] This is less than the mean annual industry lobbying, but substantially larger than the median (Table B.2).

Table B.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

[44] 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 B.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.

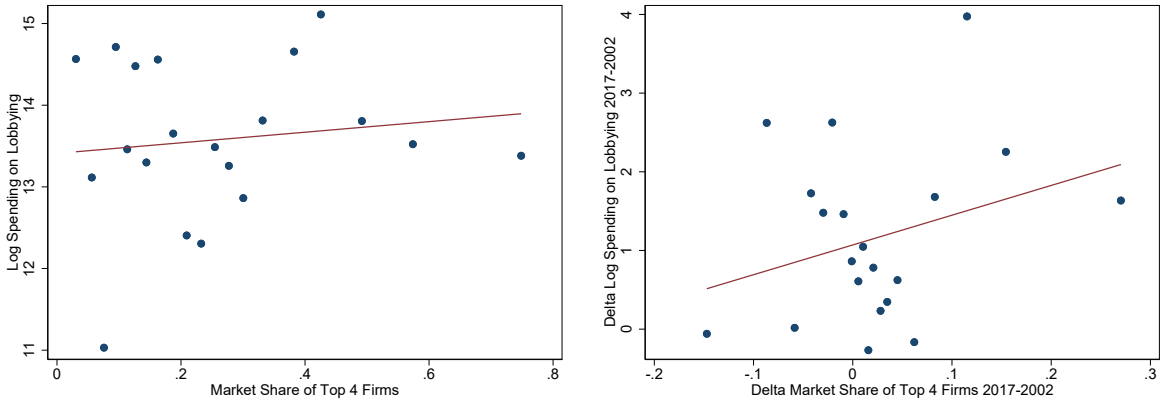
There are 285 unique industries (at the 4 digit NAICS level) in the Economic Census, and 75% of these industries are in the Census each year it is published (2002, 2007, 2012 and 2017). There are 311 unique industries in the Infogroup data, and 96% of those industries have establishment and sales data 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 B.2 shows the mean and median industry CR4 over the sample period, as well as the mean annual lobbying by industry.

B.2 Descriptive Facts

Figure B.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 B.1(b) shows the correlation between changes in concentration and changes in lobbying expenditures. Here, the positive correlation in Figure B.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 B.1: National Industry Concentration and Federal Lobbying



(a) Cross-Sectional Correlation in 2017

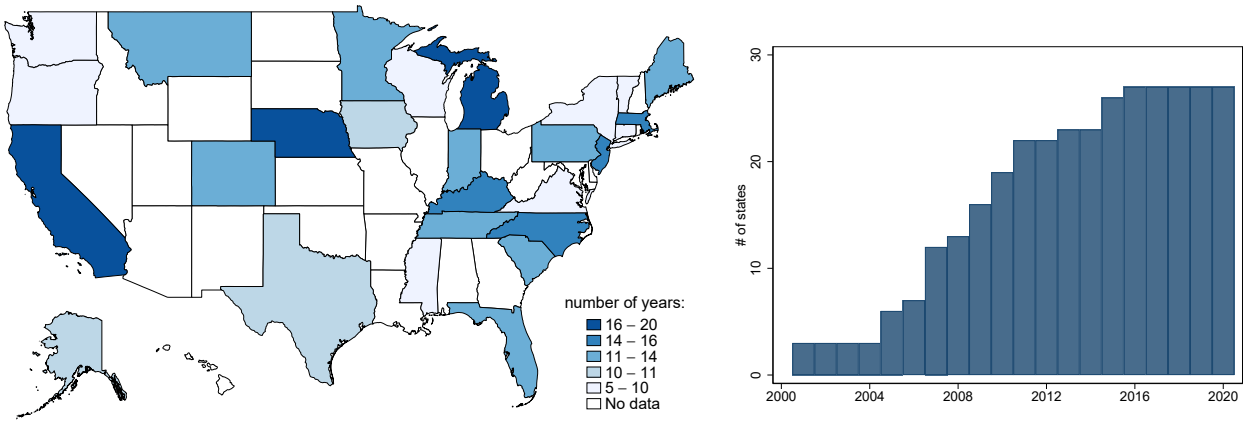
(b) Long Differences 2002-2017

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.

C 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 C.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 C.1: Lobbying Data Sample

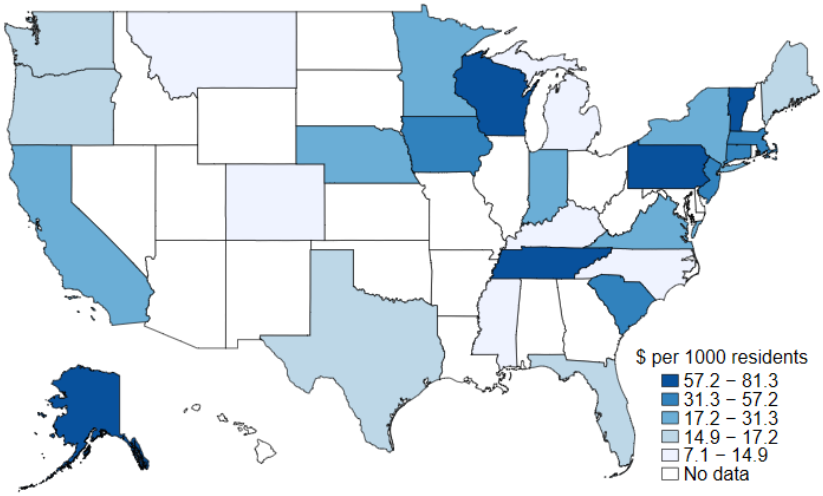


(a) Geographic Coverage

(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 C.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 C.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 B.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 C.3). The majority of states only lobby via the trade association. Even in a large state like NY, we only see 3 non-association firms lobbying, and they are spending considerably less and lobbying less frequently (Table C.2).

Table C.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

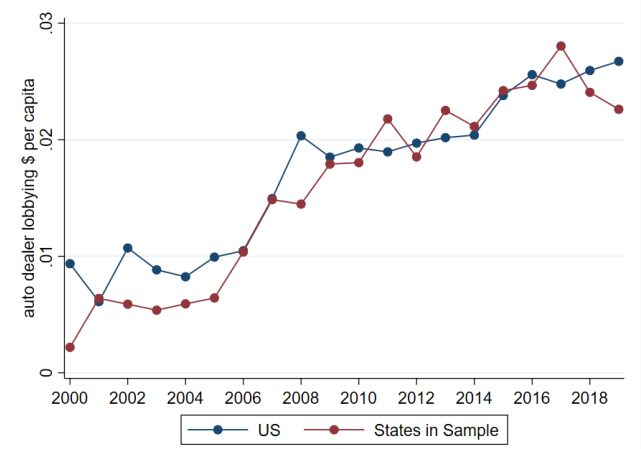
Notes: This table lists the top lobbying industries at the state level, for our sample. This match between industry codes and lobbying records may be incomplete, as there are no industry codes in the lobbying data. We parsimoniously identify automobile dealers and auto dealer associations in the data,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

Table C.2: Auto Dealer Lobbying in NY: Total Spending

Name	Total Lobbying ($)	Annual Avg. ($) | Lobby
GREATER NEW YORK AUTOMOBILE DEALERS ASSOCIATION	2,327,537	290,942
AUTOMOBILE DEALERS ASSOCIATION (NYS)	1,010,003	126,250
PLAZA AUTO MALL	217,500	72,500
ATLANTIC AUTO MALL	171,000	34,200
BAY RIDGE AUTOMOTIVE COMPANY (BAY RIDGE FORD)	103,743	51,872
ROCHESTER AUTOMOBILE DEALERS ASSOCIATION	55,784	18,595
NIAGARA FRONTIER AUTOMOBILE DEALERS ASSOCIATION	55,259	18,420

Notes: This table shows auto dealer lobbying in the state of New York, from 2011 to 2020. Total expenses over the sample, as well as the annual average (conditional on any lobbying) are presented. Most dealers and some ADAs do not lobby every year, for example, Rochester and Niagara ADA only lobby 3 years of the 10 year sample.

Figure C.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).

C.1 State Lobbying vs. Campaign Contributions

We compare the relative magnitude of different types of political spending at the state level. Table C.3 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 C.4). 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 C.3: 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 C.4: 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).

D Analysis Details and Additional Results

D.1 Event Study Specification

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

$$y_{st} = \alpha + \sum_{j=2}^{J} \beta_j \mathbb{1}[t = Event_s - j]_{st} + \sum_{k=0}^{K} \gamma_k \mathbb{1}[t = Event_s + k]_{st} + \mu_s + \lambda_t + \epsilon_{st}. \quad (8)$$

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 D.1) 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.

D.2 Measuring Border Exposure and Congruence

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:

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

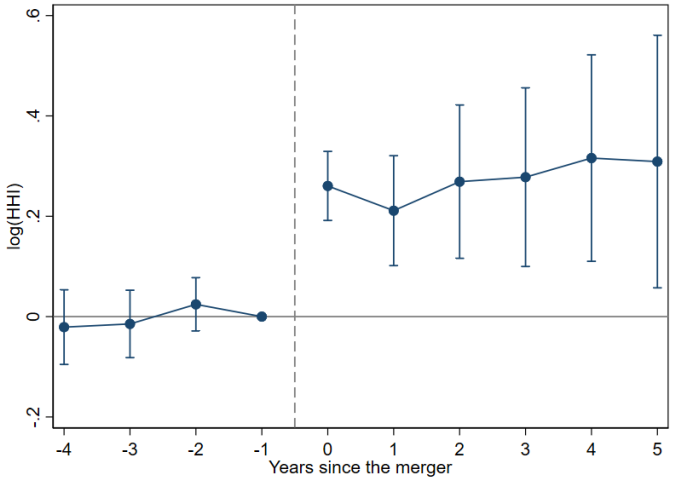
where $s_{m \in s}$ is the share of consumers in market m that resides in state s and w_{ms} is the share of the population in state s that resides in market m.

D.3 Additional Results

We present additional analyses in the following tables and figures. Figure D.1 shows the event study analysis with log(HHI) as the outcome, instead of log(lobbying). This provides additional evidence

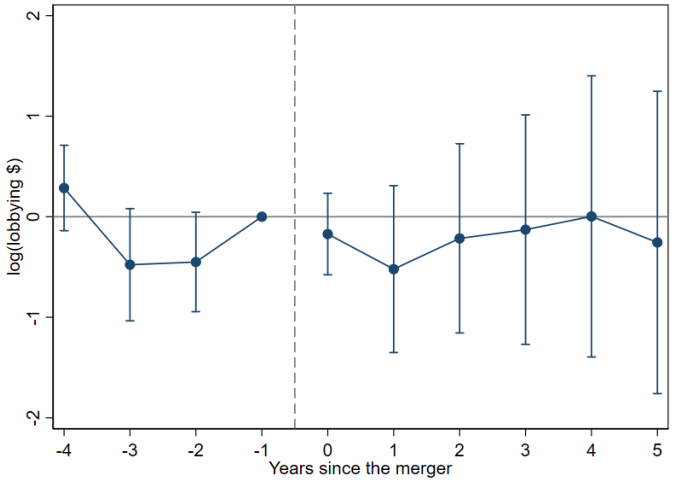
that the mergers in our sample represent substantial changes in concentration, as measured by state-level HHI. Figure D.2 shows the event study complement of the placebo test in Table 4.

Figure D.1: State-Level HHI



Notes: This figure shows the point estimates and confidence intervals for the estimates of β_j, from Equation 8. 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.

Figure D.2: Placebo Test: Changing Dates



Notes: This figure shows the point estimates and confidence intervals for the estimates of β_j, from Equation 8. 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 3.5.

D.4 "Monitored" Bills

Lastly, Table D.1 shows an extension to our bill enactment analysis. Here, Columns (1) - (3) replicate Columns (1) - (3) in Table 5. However, in Columns (4) - (6) we add the bills where the auto lobby position is "Monitor." As we mentioned in Section 5, 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", due to 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.

We are currently 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 D.1: Bill Enactment with "Monitored" Bills

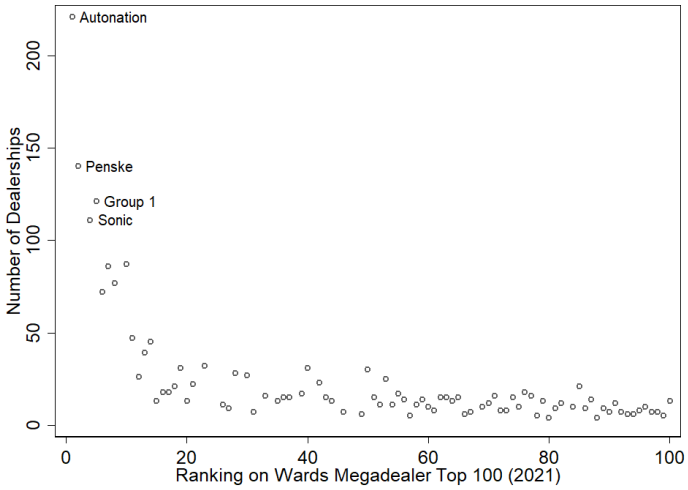
	(1)	(2)	(3)	(4)	(5)	(6)
Post_{st}	0.04	-4.04*	0.06	0.06	-1.63*	0.06
	(0.11)	(1.73)	(0.12)	(0.05)	(0.75)	(0.05)
$\text{Post}_{st} \times \text{Congruence}_s$		4.54*			1.88*	
		(1.98)			(0.86)	
$\text{Post}_{st} \times \text{Border Merger}_s$			-0.07			-0.03
			(0.15)			(0.03)
Observations	436	436	436	1,585	1,585	1,585
Sample	Support + Oppose			Support, Oppose, Monitor		
R-squared	0.11	0.12	0.11	0.09	0.09	0.09

Notes: This table shows the results Equation 2, 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 standard errors clustered by state.

E Market Structure in the Auto Retail Industry

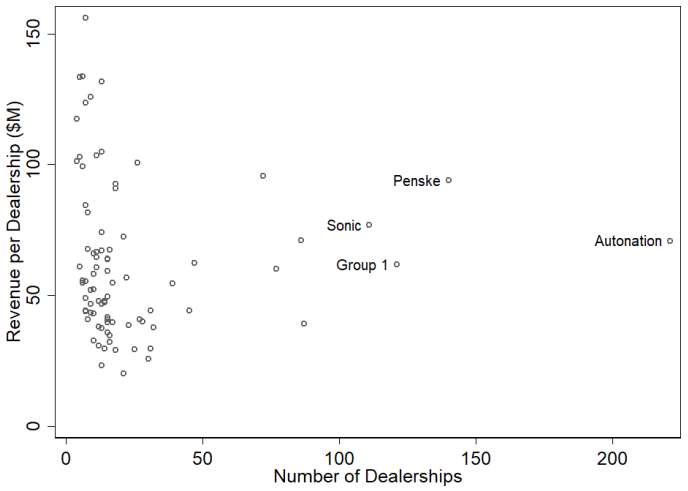
In this section we provide further details on market structure in the auto retail industry. Figures E.1 and E.2 show the number of dealerships and revenue per dealership for the top 100 auto dealer groups, as reported by WardsAuto (2021). WardsAuto (2021) is an industry publication, and these statistics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

Figure E.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.

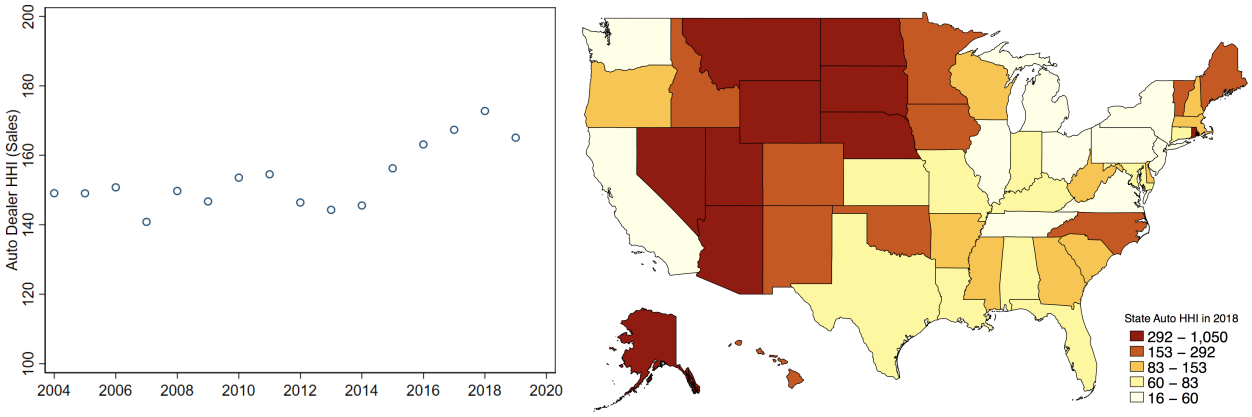
Figure E.2: Top 100 Auto Dealer Groups: Revenue per Dealership



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 E.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 E.3: Concentration at the State Level



(a) Over Time

(b) Across States

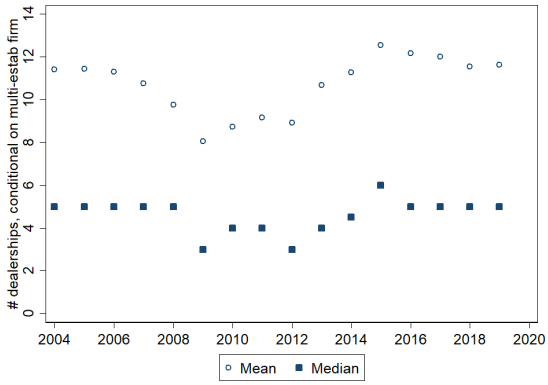
Notes: State level HHI calculated using sales data Infogroup (2021). See Figure E.4 for measures of market structure using dealership counts and multi-establishment owners.

Lastly, Figures E.4 and E.5 show descriptive statistics for the ownership of dealerships across the sample, and then in our sample of mergers, respectively. Figure E.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 E.4(b) and (c)). The average multi-establishment dealer group owns between 10-12 dealerships and operates in 2 states. Figure E.4(d) shows the changes for parent groups in our sample.

Figure E.5 shows the characteristics of the acquiring firms in our merger event sample, and how those relate to our congruence measure. We denote the state in the label of each observation on the scatter plot. Larger parent firms are less likely to have a majority of the dealerships in the state of the merger, and are slightly more likely to be involved in acquisitions in more congruent states—though this is partly driven by the fact some very large states in the sample are also most congruent (CA, FL, TX). There is no relationship between the share of the total parent dealerships in the event state and the congruence of the state.

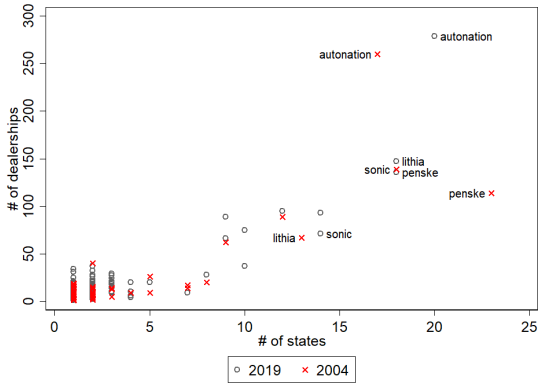
Figure E.4: Descriptive Statistics: Ownership in Auto Retail Industry

(a) Share of Dealerships with Multi-Estab Parent



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

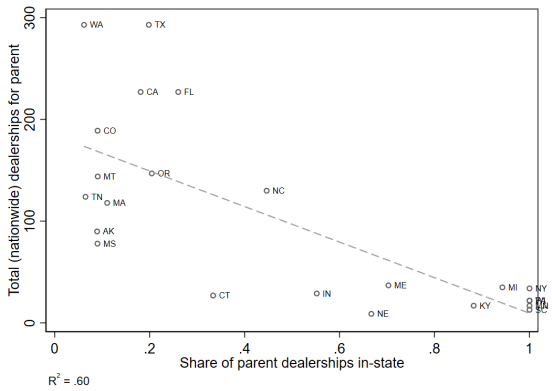
(c) Number of States, Conditional on Multi-Establishment Firm



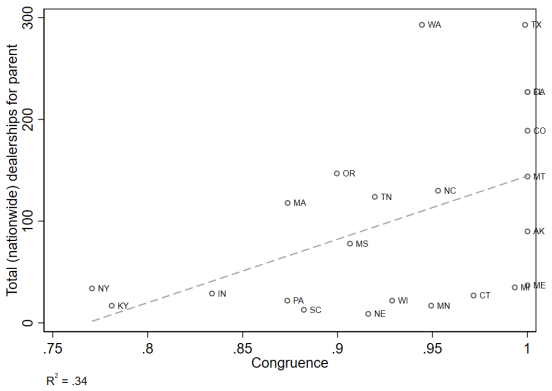
(d) Parent Level: Number of States and Number of Dealerships (2004, 2019)

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).

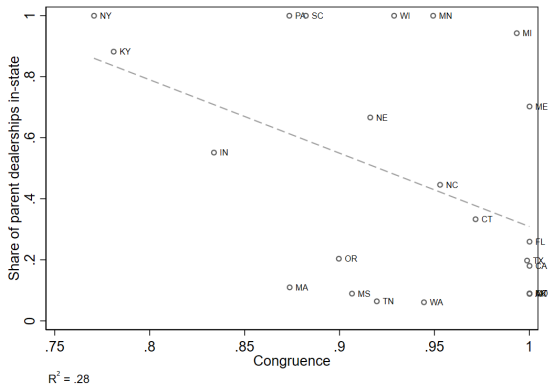
Figure E.5: Events: Parent Size, In-State Share, Congruence



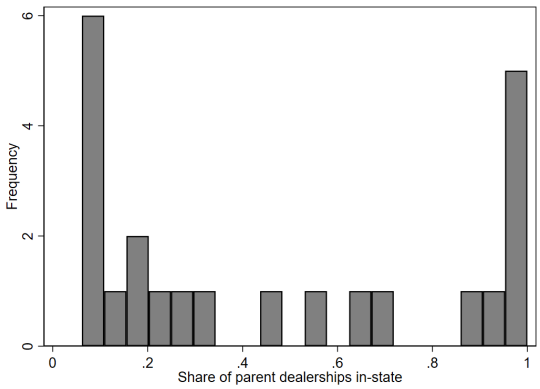
(a) Parent Size v Share



(b) Parent Size v Congruence



(c) Share v Congruence



(d) Distribution of Share In-State

Notes: This set of figures show the relationship between characteristics of the acquiring firm (Infogroup, 2021) and the state-level congruence measure.

F 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 F.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.[45]

[45] 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.

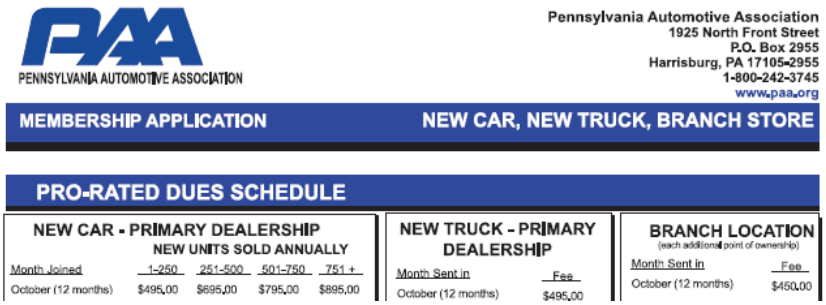
Table F.1: Member Coverage in State ADA

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.

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 (Figure F.1 shows that 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 (Figure F.2. 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 (Figure F.3), suggesting again that most dealerships are members of their state or local ADA.

Figure F.1: PAA Dues Schedule


PENNSYLVANIA AUTOMOTIVE ASSOCIATION

Pennsylvania Automotive Association
1925 North Front Street
P.O. Box 2955
Harrisburg, PA 17105-2955
1-800-242-3745
www.paa.org

MEMBERSHIP APPLICATION — NEW CAR, NEW TRUCK, BRANCH STORE

PRO-RATED DUES SCHEDULE

NEW CAR - PRIMARY DEALERSHIP
NEW UNITS SOLD ANNUALLY

Month Joined	1-250	251-500	501-750	751 +
October (12 months)	$495.00	$695.00	$795.00	$895.00

NEW TRUCK - PRIMARY DEALERSHIP

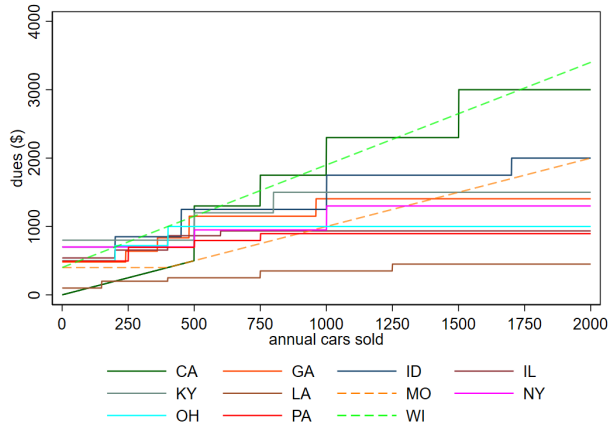
Month Sent in	Fee
October (12 months)	$495.00

BRANCH LOCATION
(each additional point of ownership)

Month Sent in	Fee
October (12 months)	$450.00

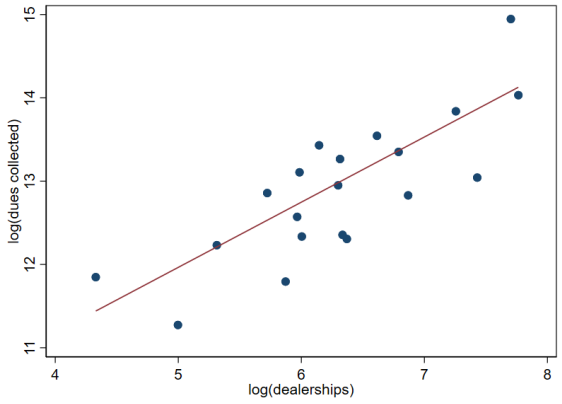
Notes: The Pennsylvania Automotive Association dues schedule in 2021. A dealer group owes dues based on the total number of cars sold at their primary dealership, and then $450 per additional dealership location in the state.

Figure F.2: Trade Association Dues Schedules



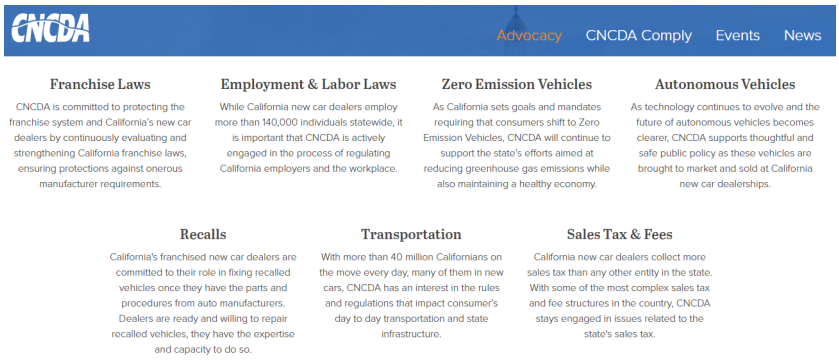
Notes: This figure shows the amount of dues owed to join each state's main trade association. Additional dues are incurred for each dealership in a dealer group, but the additional dealership fee is usually not based on cars sold. Also, additional contributions are encouraged. Data on the dues schedules are directly from the ADA webpages.

Figure F.3: State Dealerships and ADA Member Dues (2019)

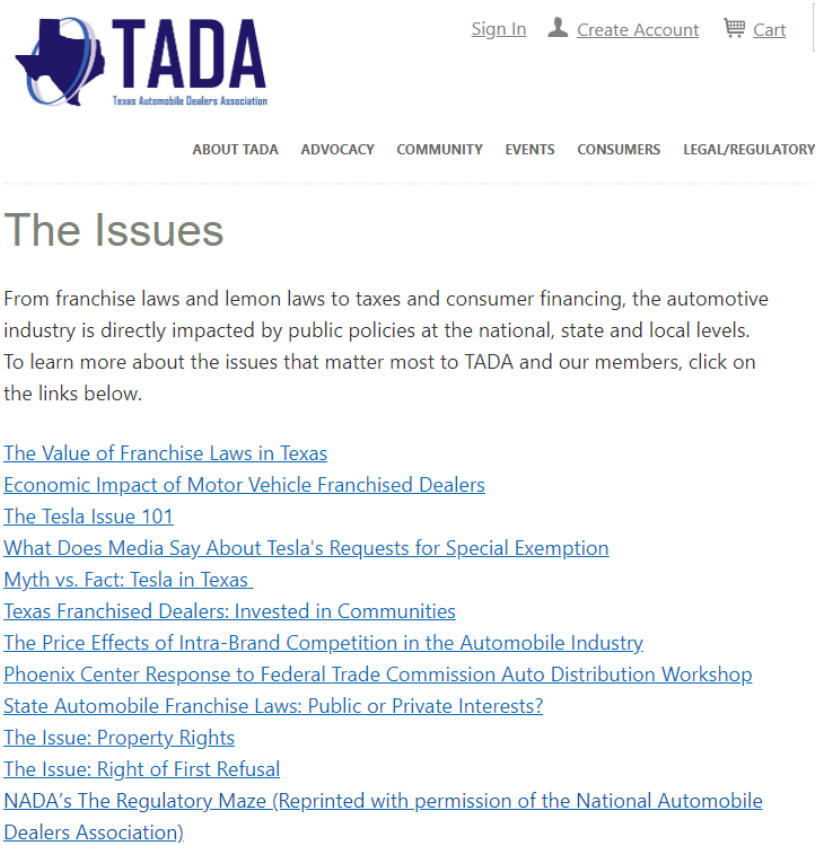


Notes: This is a binned scatter plot of log(ADA member dues collection $) and log(number of dealerships), at the state level, in 2019. The number of dealerships in the state comes from Infogroup (2021). The member dues are collected by the authors from Form 990s. If the state has multiple ADAs we take the sum.

Figure F.4: ADA Issues



(a) California



(b) Texas

Notes: This figure shows the issues of interest to two auto dealer associations, according to their webpages. The pages are found at `https://www.cncda.org/advocacy/` and `https://www.tada.org/Online/Online/Advocacy/Issues.aspx`, respectively.