Elite Conflict and Industry Regulation: How Political Polarization Affects Local Restriction and State Preemption of the U.S. Hydraulic Fracturing Industry

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ABSTRACT

We leverage Lachmann's insight on elite conflict to explain the politics surrounding industry regulation in contemporary America and argue that conflicts between political elites create both constraints on industry players and opportunities for them to shape regulation. The widening urban-rural polarization of American society, in particular, has made urban political elites more liberal than those in state politics. The greater the political polarization of a state, the more local restrictions the nascent U.S. hydraulic fracturing (fracking) industry—generally regarded as conservative—face in that state. Players in the industry thus seek interventions by conservative elites at the state government level. The dominance of conservative state legislators and the presence of affiliates of the right-leaning American Legislative Exchange Council (ALEC) are bound to strengthen the industry's lobbying efforts in that state. These, in turn, increase the likelihood of the enactment of state preemption laws that nullify local restrictions. We discuss the implications of this on the study of elite conflict, the politics of industry regulation, and the industry's political strategy.

Keywords: elite conflict, industry regulation, geopolitical polarization, preemption, corporate lobbying, fracking

1. INTRODUCTION

Lachmann (2014) defined elites as a group of rulers who are capable of extracting resources from non-elites. While this definition bears some similarity to the ruling class as defined by Marxian theorists and the power elites as discussed by C. Wright Mills and his followers, it differs fundamentally in its emphasis on the *conflict* between elites and the consequences of this conflict. Marxist theory focuses on interclass struggle and perceives the ruling elite as a relatively homogenous group that is basically interested in reproducing its exploitation of the working class. Mills, by contrast, recognizes the difference between regional and national elites, but argues that because regional power cannot compete with national power, it will eventually join the structure and become interlocked in the latter's network. In his mind, therefore, the national power structure is one comprised of people occupying the command posts of a society's economic, political, and military arenas, who are thus unified and cohesive (Mills, 1956; also see Domhoff, 1967). Lachmann, by contrast, does not see the elite as homogenous or cohesive. Rather, in his view, elites are just as interested in "guarding its existing power from, and extending its power at the expense of, rival elites" as they are in the reproduction of the social structure that enables them to exploit non-elites (Lachmann, 2014: 12).

A unique contribution of Lachmann's theory is that it not only focuses on elite conflict, but also examines how a conflict of this kind can either enable or inhibit the expansion of economic power and thus have long-term consequences on society. For example, in his classic work on the origins of capitalism in England, Lachmann (1987) argues that the interactions caused by elite conflicts at the national and local level enabled the gentry to privatize common lands and abolish tenant rights, which, in turn, laid the foundation for industrialization. In another book that examines the same question in a broader geographical sense, Lachmann (2000) compares regions and cities within and across England, France, Italy, Spain, and the Netherlands and

shows how feudal elites were pushed toward capitalism as they sought to protect their privileges from rival elites. Over time, the dynamics of elite conflict perpetuated manorial economies in certain places while propelling the development of new social relations and political institutions in others. Despite Lachman's insight that conflict within the political elite can both constrain and enable economic players, empirical work that draws on this insight has been relatively rare.[1] We know particularly little about the modern-day implication of elite conflict, and whether it too can generate risks and opportunities for economic players in the contemporary era, and if so, how. This is an important gap in the literature as the division among elites, especially political ones, is a feature of modern pluralistic societies, in which elites have different political party affiliations or are in charge of different levels or branches of government. As they differ substantially in their beliefs on important policy domains, their conflicts can create challenges for economic players as well as opportunities for them to maneuver attempts at shaping their environments. Thus, given that political elites in many societies have been more polarized in the contemporary era (Desilver, 2022), we should expect Lachman's insight regarding elite conflicts to shed light on many modern issues pertaining to the political economy.

In this paper, we apply Lachmann's claim that the conflict between political elites can both constrain and enable economic players to study contemporary industry regulation in the United States. We contend that the urban-rural polarization of American society has widened the ideological divide among political elites and, in turn, created both risks in industries' regulatory environments and opportunities for industry players to reshape the environment. Political polarization refers to a societal condition in which the range of political opinions and attitudes

[1] Lachman's last book *First-Class Passengers on a Sinking Ship* does examine the consequence of elite conflict in the contemporary context, but focuses on how conflict threatens elite capacities and ultimately leads to the decline of a nation's hegemonic power rather than on the consequence of change in social structure that disadvantages or favors economic forces.

moves away from the center towards more extreme ideological positions, resulting in significant differences and animosity among political parties and/or various factions within the government (DiMaggio, Evans & Bryson, 1996). Ideological conflicts between elites can develop along both horizontal and vertical lines, with the former referring to systematic ideological divides and the latter to politics at different levels of government (Lachmann, 1987). Consequently, the two dimensions of division may converge to cause geopolitical polarization among political elites, wherein different levels of government will serve as holdouts of opposing ideological extremes, and, in turn, affect an industry's regulation policy (Emigh, Riley & Ahmed, 2020).

The ideological orientation of political elites is an important feature of an industry's regulatory environment. As industry operations often have social and environmental impacts, policymakers who embrace different political ideologies can have very different views on how to regulate them (Jenkins et al., 2006). The dominant political ideology in a region has thus been linked to the enactment of pro- or anti-industry policies (Rao, Yue & Ingram, 2011; Dokshin, 2016; Fremeth, Holburn & Piazza, 2022; Li & DiSalvo, 2023). However, political polarization at different levels of government indicates that political elites who dominate the politics of a city or state government may be ideological rivals. In a federalist system where state and local governments share regulatory power over a jurisdiction, industry regulation can turn into a battleground between ideologically divided political elites (Yue & Wang, 2023).

On the one hand, geopolitical polarization increases the possibility that industry players will be challenged by political elites at the level of government who hold an opposing ideology. In a politically polarized environment, industry players are prone to politicization; support and opposition to industries often fall into pre-defined partisan camps. Industries are thus more likely to face restrictive regulations when working under a political authority that is ideologically opposed to them. On the other hand, urban-rural polarization too creates

opportunities for industry players to leverage partisan conflicts among different levels of government to their advantage. They can lobby the level of government that aligns with their political ideologies to fight restrictive regulations enacted by another level with an opposing political ideology. While the ways in which industries influence government regulations have been well studied in the broader literature of political economy and within the specific field of corporate political strategy, the existent research tends to depict the influence exerted by industries on the government as a dyadic exchange between industry players and a single policy supplier or a group of homogenous policy suppliers (Hillman, Keim & Schuler, 2004; Bonardi, Hillman & Keim, 2005; Dorobantu, Kaul & Zelner, 2017). Despite the recent focus on the heterogeneity of the policy supply side (Choi, Jia & Lu, 2015; Yue, Wang & Yang, 2019; Grandy & Hiatt, 2020), heterogeneity has been treated as a fixed institutional feature that does not change over time or interact with others. Nonetheless, the geopolitical polarization of elites challenges these assumptions by showing that the power struggles within political elites at the state and local level can create opportunities for corporate political action, and that a city-state conflict can be activated by partisan antagonism.

Worthwhile noting here is that this geographically based division among elites has long been noted by elite theorists. Mills (1956: 39), for example, suggests that among elites, "there is the tradition of the town against the hayseed, of the big city against the small-town hick." Mills, however, was formulating his theory against the backdrop of a nation-wide economy that was coming into being, and therefore focusing on how "local society has become part of a national economy" and how "its status and power hierarchies have come to be subordinate parts of the larger hierarchies of the nation" (Mills, 1956: 39). He also portrayed the local elites as the backbone of the Republican Party (following the Jeffersonian ethos) and the national elite as being more liberal. We, in turn, argue that the contemporary era's geopolitical polarization

has made metropolitan cities more liberal, and state-level political elites, which represent rural communities, more conservative.

We test these arguments by conducting an analysis of ordinances enacted by local governments to prohibit the nascent hydraulic fracturing ("fracking") industry in U.S. states from 2011 to 2020 as well as by studying the oil and gas industry's efforts to lobby the state government in order to nullify them. Fracking refers to the process of drilling down into the earth and using a high-pressure water mixture to release oil and gas from shale. This is an appropriate context, as this industry that has become politicized due to its significant impact on both the economy and the environment. Counties that engage in fracking produce an average of $400 million in oil and natural gas per year; the industry can thus lead to a significant increase in local employment, salaries, and housing prices (Bartik et al., 2019). Yet despite these economic benefits, the practice has also provoked intense opposition due to environmental concerns (Vasi et al., 2015). Between 2011 and 2020, over five hundred bans on fracking were enacted by local governments in the U.S. (Food & Water Watch, 2020). Over the course of this period, the fracking industry became politicized, with liberals being likelier to oppose the technology and conservatives more likely to support it (Boudet et al., 2014; Davis & Fisk, 2014; Jeolmack & Walker, 2018; Li & Disalvo, 2023). We find that local bans are imposed more frequently on fracking in more polarized states, but also that the industry hires more lobbyists at the state government level to confront the bans, especially in states where political elites are ideologically aligned. This, in turn, increases the likelihood of state preemption over local regulations.

This paper makes three contributions to the literature on elite conflicts, the regulation of nascent industries, and corporate political strategy. First, it contributes to the elite conflict theory by showing the consequences of geopolitical polarization of political elites on industry regulation in the contemporary era. We show that Lachmann's insight that elite conflicts affect

economic players can be widely applied to explain the modern political economy. We also extend the literature by showing how elite conflicts shape the political strategies adopted by industries and the consequent regulatory outcomes relevant to those industries. In doing so, we contribute to a growing body of work that documents the consequences of political polarization (e.g., Scala & Johnson, 2017; Chen & Rohla, 2017; Iyengar et al., 2019; Graham & Svolik, 2020). Second, we contribute to the literature on industry regulation (e.g., Fligstein, 1996; Schneiberg & Bartley, 2001; Ingram & Rao, 2004; Jenkins et al., 2006; Gao & McDonald, 2022) by extending the theorization of political opportunity. We contend that political opportunity is provided not only by partisan control over a level of government, but also by conflicts among its multiple levels. This perspective of political opportunity is especially useful for *nascent industries* that wish to shape regulatory environments when facing jurisdictional uncertainties (Yue & Wang, 2023) Third, we extend the research on the political strategy of industries (e.g., Hillman & Hitt, 1999; Bonardi, Hillman & Keim, 2005; Funk & Hischman, 2017) by showing that heterogeneity on the policy supply side can affect the political strategies of an industry. We demonstrate that such heterogeneity is not a fixed, exogenous feature, but rather a dynamic process that is amplified by elites' conflicts. Our paper also sheds light on state preemption as a new political strategy exercised by industry. While recent research has noted the rise in state governments' preemption of local regulations (e.g., Riversone-Newell, 2017; Fowler & Witt, 2019; Barber & Dynes, 2023), its focus has fallen on political and institutional factors. This paper, along with Yue & Wang (2023), examines the role played by various industry players in the process and reveals that lobbying for state preemption is an important political strategy among nascent industries fighting local restrictions.

2. THEORY

2.1 Political Elite Conflicts in Urban-Rural Polarization

Political polarization occurs when the subsets of a society's population assume opposing attitudes toward political parties, ideologies, and policies, thereby giving rise to a bimodal distribution of opinions around conflicting points. According to the Pew Research Center (2021), political polarization is a defining feature of current U.S. politics due to the vast and growing gap between Democrats and Republicans (Pierson & Hacker, 2002). Urban-rural polarization is a type of geopolitical polarization whereby urban areas have grown increasingly liberal and rural areas more conservative (Scala & Johnson, 2017). Journalists and scholars have attributed this urban-rural divide to the "great sorting" of American society in the past three decades (Bishop & Cushing, 2009; Mason, 2018). Since the 1990s, urban areas have come to serve as the hubs of economic and political decision-making, attracted a more diverse and educated population, and grown more liberal and inclined to vote for Democratic political elites. Meanwhile, the lifeblood of rural areas has been diminishing. Left behind by the globalized economy and alienated by the multiculturalism of urban areas, their residents have turned further right to support the Republican political elites. As people flocked to regions where they could find like-minded others, social dynamics carved deep canyons between urban and rural areas of the country.

Urban-rural polarization has significant consequences on conflicts among political elites at the state and local levels. In the United States, most political representatives enter office by winning the most votes in a district rather than through a system of proportional representation (Badger, 2019). As the voting base of Democrats is concentrated in cities, local urban governments have become the party's strongholds. The relatively small number of such districts, however, makes it difficult for Democrats to control a state legislature. By contrast, the Republican voting base is spread across suburban and rural areas, meaning that its representatives get elected in a greater number of districts. As a result, urban-rural polarization manifests itself as "blue cities and red states," with Democratic elites controlling city halls and

Republican elites controlling state houses. As the largest cities in any given state are nearly always more liberal than the rest, geopolitical polarization is a pervasive phenomenon that can occur even in Democratic-leaning states, albeit to a lesser degree (Barber & Dynes, 2020).

The sharp divide between the political elites that control city halls and those that control state houses has occurred in the context of the federal structure of the U.S. government. As Morton Grodzins (1966) notes, American federalism is more like a "marble cake," in which the responsibilities of different levels of government are intertwined, than a "layer cake," in which specific functions are clearly assigned to particular levels of government. The geopolitical polarization of urban and rural areas has intensified the conflict between the state and local tiers of political elites. On the one hand, local political elites have increasingly turned to activism to promote policies that the higher tier of government has proven reluctant or unable to generate (Dolan, 2008). In a systematic study of local government activism, for example, Riversone-Newell (2017) found that localities across the nation have enacted thousands of ordinances, resolutions, and executive orders reserved for state and federal purview. On the other, state political elites have become more active in adopting preemption laws to restrict the assertiveness of local political elites (Briffault, 2018; Phillips, 2018; Fowler & Witt, 2019; Yue & Wang, 2023). Moreover, states have not been punching down local regulation in a politically neutral way; recent preemptions have generally been promoted by conservative state legislatures that wish to thwart progressive local policies (e.g., Riversone-Newell, 2017; Phillips, 2018; Fowler & Witt, 2019). Consequently, the tension between local and state political elites has been exacerbated by partisan conflicts, which, in turn, are likely to affect both the regulation of industry and its political strategy.

2.2 Risks for Industry Regulation

Conflicts between political elites rooted in urban-rural polarization lead to regulatory risks for industry players. In a politically polarized environment, controversial industrial practices tend to be politicized. Party elites may exploit these issues to develop differentiated positions and demonstrate opposition to or support of an industry as an expression of political identity (Baldassarri & Bearman, 2007). Activists, in turn, may frame grievances along partisan lines in order to mobilize broader support (McAdam & Boudet, 2012; Jerolmack & Walker, 2018). As a result, even firms that have not been politically active gradually become politicized (Elinson, 2021; Cutter, Vranica & Sider 2021). As a senior executive at American Airlines remarked, "It really is hard to take a middle ground. One, the world won't let you, and two, it doesn't really serve anyone trying to cater to both sides" (Cutter et al., 2021).

Once industry players are politicized, they are likely to face opposition from political elites with dissimilar ideologies. When urban-rural polarization in a state is high, activists opposed to the development of a conservative-leaning industry may appeal to local political elites in order to promote restrictive policies. Under such conditions, they are likelier to find supportive political allies among local government leaders in liberal areas. Local elites in liberal areas are also readier to support activists as greater geopolitical polarization offers fewer opportunities to promote liberal policies at the state level. Working together, these liberal policy entrepreneurs can turn cities into hubs of progressive policies and enact regulatory constraints on a conservative-leaning industry. Therefore:

Hypothesis 1: The stronger the urban-rural polarization within a state, the greater the number of local restrictive regulations on a conservative-leaning industry in that state.

2.3 State Capture and Industrial Lobbying

Lobbying for preferential regulations has been an important political strategy for industries responding to threats in regulatory environments (for overviews, see de Figueiredo and Richter,

2014 and Drutman, 2015). Businesses hire lobbyists to do research on the relevant issues and find opportunities to meet with lawmakers and communicate industries' desires. If lobbyists can convince lawmakers that a proposed bill suits their ideological pursuits and/or contributes to their re-election or promotion, lawmakers are likely to promote it.

The polarization of political elites at the city and state level offers industry an opportunity to leverage the state to nullify local restrictions. The effectiveness of an industry's lobbying depends on the preference of policy makers (Hillman & Keim, 1995; Choi, Jia & Lu, 2015). The Republican Party is generally regarded as more pro-business as it favors limited government regulation of the economy. Moreover, businesses are known to choose their regulators strategically and engage in horizontal regulatory arbitrage by settling in jurisdictions with more favorable laws in order to circumvent less favorable regulation elsewhere (Tiebout, 1956; Rao, Yue & Ingram, 2011; Sytch & Kim, 2021). Following the same logic, industry players, especially those facing jurisdictional uncertainties in nascent industries, can likewise engage in vertical venue shifting by choosing a favorable level of regulators (Yue & Wang, 2023). Partisan polarization of local and state political elites creates an opportunity for them to do so.

A conservative-leaning industry can thus lobby the state government to preempt local restrictive regulations. Such preemptions are more likely to succeed in Republican-controlled states, as shown by Fowler and Witt (2019) in their cross-state investigation of preemption legislation in seventeen policy areas. Their study reveals that the percentage of Republican state legislators is a stronger predictor of a state's adoption of preemption laws than are certain long-standing institutional features. Goodman (2019) similarly finds that conservative state legislatures are more active in preempting ordinances on local workers' rights. Specific to industry players' lobbying efforts is Yue and Wang (2023)'s recent study of the nascent commercial drone industry's venue-shifting efforts. Although the authors did not take a direct

measure of the conservativeness of state legislatures, they did find that the ideological distance between state and local policy makers increased the efforts made by industry players to lobby state government to preempt local restrictions. Attempts to promote state preemption laws are not always successful, however, and, in some cases, policy makers may side with local officials claiming state overreach. In 2016, for example, a preemption bill to rein in local fracking bans was defeated in Colorado after Democrats took over the state legislature (Riccardi, 2019). If local bans are enacted by local liberal holdouts and a state has more political elites affiliated with the Republican Party, then the industry will perceive the state government as more sympathetic to its agenda. When the perceived chance of success is greater, the industry will put more effort into lobbying political elites at the state level to rein in local policies.

Hypothesis 2: The greater the number of local restrictive regulations on a conservative-leaning industry in that state, the more lobbyists the industry will hire to target the state government.

Hypothesis 3: The relationship between the prevalence of local opposition and the intensity of industry lobbying at the state level (i.e., H2) is strengthened if the state legislature is dominated by the Republican Party.

The perceived chance of success is also likely to increase if elite groups advocating for economic liberalization have greater influence on the state legislature. Among powerful think tanks and membership organizations, the American Legislative Exchange Council (ALEC) has been particularly active in supporting state-level preemption campaigns by supplying "model bills" to affiliated state legislators (Hertel-Fernandez, 2017, 2019). According to its own website, the organization is "comprised of nearly one-quarter of the country's state legislators," its legislative members represent more than 60 million Americans, and its private sector members provide jobs for over 30 million people in the United States (About ALEC, 2020). ALEC targets state legislators who have neither the experience nor resources to formulate

concrete policy positions and provides them with its own model bills that are often drafted to favor industrial interests.

At ALEC member meetings, legislators and industries convene to determine what they would like to do at the next state assembly session. As Cara Sullivan, former head of ALEC's Commerce, Insurance, and Economic Development Task Force, noted during an internal meeting in 2014, "One solution (to local opposition) that ALEC has passed is state legislation that preempts the polities from within the state" (quoted by Bottari, 2015). ALEC is known for sponsoring numerous preemption bills, including ones aimed at blocking local policies that raise minimum wage (ALEC, 2013) and banning fracking or other oil and gas operations (Bottari, 2015). If a focal state has a higher percentage of legislators affiliated with ALEC, the industry may perceive a greater chance of preempting local opposition with the help of ALEC legislators and thus put more effort into lobbying.

H4: The relationship between the prevalence of local opposition and the intensity of industry lobbying at the state level (i.e., H2) is strengthened if a higher percentage of legislators in a state are affiliated with ALEC.

2.4 Impact of Industry Lobbying on State Preemption

The more lobbyists the industry hires, the more likely it will succeed in promoting the enactment of state preemption that nullifies local restrictions. We therefore expect that the intensity of the industry's lobbying of a state government increases the chances of the enactment of state preemption of local restrictions.

H5: A conservative-leaning industry's lobbying efforts at the state government level will lead to the enactment of state preemption of local restrictive regulations.

3. METHOD

3.1 Data

We collected the data from all 29 U.S. states in which fracking activities were registered between 2001 and 2020. Fracking activity is recorded in the National Hydraulic Fracturing Chemical Registry provided by FracFocus, a publicly accessible database that collects information on hydraulic fracturing operations managed by the U.S. Ground Water Protection Council and the Interstate Oil and Gas Compact Commission. We began with 2001, the year in which fracking became widely adopted, and ended in 2020, the most recent year for which data is available. Our unit of analysis is a state-year.

3.2 Dependent Variables and Estimation

Table 1 reports the descriptive statistics of all the variables. Our first dependent variable for testing H1 is *the cumulative number of bans or moratoriums* issued by local governments on fracking in a state in a year. We collected this data from the Food&Water Watch, a non-profit, environmental, non-governmental organization. By 2020, a total of 538 local bans had been imposed on fracking. Figure 1 shows the occurrence of local bans on fracking in the U.S. Our second dependent variable for testing H2-4 is *the number of lobbyists* hired by fracking companies to work on a state government in a year. We began by using FracFocus to identify 1520 oil companies engaged in fracking activities. We then collected the data on these fracking companies' lobbyists from the National Institute of Money in State Politics (2020), which collects such information from state governments. Although expenditure on lobbying could have served as an alternative measurement, it is incomplete because thirty-three states do not require lobbyists to report such data (NSCL, 2018). Our third dependent variable for testing H5 is *state preemption*, which is measured as a dummy variable coded as one if a state government has created legislature or passed orders to preempt local bans on fracking in a year.

We identified state preemptions by checking the National Conference of State Legislatures (NCSL) and the Hydraulic Fracking Blog. Altogether, there were eight state preemptions.

Insert Table 1 and Figure 1 Here

We adopted poisson models for the dependent variable, the local ban number. We conducted a dispersion test and found no evidence of overdispersion. In such a situation, the poisson model, which has fewer restrictions than does the negative binomial model, is preferable. One issue in our estimate is the potential endogeneity of urban-rural polarization, which need not be random and can instead be correlated with unobserved variables that also affect the incidence of local bans. To deal with this problem, we adopted a two-stage least-square (2SLS) regression. In the first-stage regression, we used the percentage of agricultural jobs in a state as the instrumental variable for geopolitical polarization. Farming has been a highly Republican occupation; survey results show that 72% of people who work in farming or forestry lean towards the Republican Party (Verdant Lab, 2016). In addition, agricultural work must be conducted in rural areas. As a result, states with a higher percentage of agricultural jobs are more likely to be Republican-leaning and thus have a higher urban-rural polarization score. Meanwhile, policies made by local governments with regard to the fracking industry are independent of the agriculture industry because of the distinct issues, concerns, and stakeholders involved in each sector. We present the first-stage regression with the instrumental variable in Appendix A1. The relatively high F-statistics (beyond the rule of thumb of 10) leads us to reject the possibility of a weak instrument. We collected the agricultural job data from the U.S. Bureau of Labor Statistics. In the second-stage analysis, we used the predicted value from the first-stage regression, which provided us with the exogenous component of urban-rural polarization.

We deployed poisson models for the dependent variable of the number of lobbyists hired by fracking companies and event history models for state preemption of local bans. These too are subject to endogeneity problems as unobserved variables may simultaneously influence local bans, lobbyist numbers, and state preemptions. We therefore adopted the control-function method (Woodridge, 2015) to calculate the residual of both the model that predicts local ban numbers and the model that predicts the number of lobbyists. We then inserted the two residuals into the model for lobbyist number and the model for state preemptions. We adopted state and yearly fixed effects for all the models in order to control for the impact of omitted variables that may have exerted a common effect on the industry in a state at the same point in time.

3.3 Independent and Moderating Variables

Our first independent variable, *urban-rural polarization*, captures the partisan difference between urban and rural residents in a state. Overall, we relied on presidential election results to indicate population partisanship and the "metropolitan statistical areas" identified by the U.S. Census to differentiate urban and rural areas. According to the 2010 U.S. Census, "metropolitan statistical areas" are those containing at least one urbanized area with a population of 50,000 or more. We referred to urban counties as those located at the center of "metropolitan statistical areas," and rural counties as those located at the margins of or outside "metropolitan statistical areas." As presidential election results for towns and cities were not available for all the years and states in our samples (Ansolabehere & Rodden 2012), we used county-level data to ensure longitudinal comparison. In the period of our study, there were 727 urban counties out of a total of 3,143 counties in the entire country. We measured urban-rural polarization as the difference between the average Democratic voting percentage in the most recent presidential election in a state's urban counties and rural counties. The variable had a higher value if a state's urban countries were more Democratic and rural counties were more

Republican. The urban-rural polarization for all states in our observation period ranged from 0.23 to 0.14, and the mean score was 0.09. This confirmed that urban areas are generally more liberal than rural ones.

There are several advantages to using county-level presidential voting results to measure a state's urban-rural polarization. First, county-level voting data are a reliable indicator of an area's dominant political ideology. They also measure the ideological orientation of urban and rural areas with the same indicator and are thus better than other measurements that mix elite and mass partisanship (Kim, Elliott & Wang, 2003). Second, county-level presidential election results are more readily available than are data on partisanship within city governments. As Gerber and Hopkins (2011, p. 331) point out, "City elections (and mayoral elections, in particular) occur at different times under different rules, and no comprehensive record of their results currently exists." Third, county-level presidential election data are longitudinal and can thus reflect changes in urban-rural polarization in the 2010s. Tausanovitch and Warshaw (2014) used survey data to measure dominant political ideology in municipalities prior to the 2010s. However, these surveys were discontinued in the 2010s and thus cannot capture the intensification of urban-rural polarization in the period covered by our study. Nonetheless, Tausanovitch and Warshaw (2014) showed that their survey-based measurement closely correlated with the presidential vote share in 2008 (r=0.77), thereby indicating that presidential election results are a reliable measure of the prevalent political ideology in a region.

The cumulative number of bans or moratoriums issued by local governments on fracking in a state in a prior year is the independent variable for Hypotheses 2-4. It is measured in the same way as when it serves as the dependent variable for Hypothesis 1, except that it is lagged by one year. Similarly, *the number of lobbyists* hired by fracking companies to work on a state government in the prior year is the independent variable for Hypotheses 5, and is

measured in the same way as when it serves as the dependent variable for Hypotheses 2-4, except for being lagged by one year.

We measured the *conservative elites' dominance* within a state legislature by creating a dummy variable (coded 1) to indicate that the Republican Party possesses governorship and constitutes both a majority in the state senate and house in the prior year (Chen, 2007). We obtained the data on the party affiliations of state governors and legislators from the Book of States published by the Council of State Governments.

We measured *the percentage of state legislators affiliated with ALEC* in a prior year. We obtained the list of state legislators involved in ALEC activities from the Center for Media and Democracy (CMD), a nationally recognized watchdog group for corruption and democracy. The CMD has been collecting data on politicians involved in ALEC activities from documents leaked by the ALEC membership directory, rosters of participants at ALEC meetings, published information on ALEC leaders, and politicians' personal announcements of their membership in or departure from the organization. The CMD list also includes politicians who have been featured speakers or have accepted awards at ALEC meetings. In the CMD list, we identified 2,722 unique state legislators involved in ALEC activities in forty-nine states from 2001 to 2019. We found the time at which each ALEC legislator served by searching state legislatures' webpages and the Ballotpedia database of state legislators. In so doing, we obtained the number of ALEC legislators in a state in a given year and calculated the percentage of ALEC legislators by weighting their number against the total number of legislators in a state.

3.4 Control Variables

We included six sets of control variables related to industry regulation and industry lobbying directed at the state. First, we expected local and state governments' decision on fracking to be

influenced by the oil industry's contribution to the state's economy. We thus controlled for *the number of people employed by the oil and gas industry* per 1,000 people in the prior year. We collected this data is from the U.S. Bureau of Labor Statistics, from which we identified their occupations by code: 47-5011 (Oil and Gas Derrick Operators), 47-5012 (Oil and Gas Rotary Drill Operators), 47-5013 (Oil and Gas Service Unit Operators) and 47-5071 (Oil and Gas Roustabouts).

Second, we controlled for *professionalism of state legislature* for the dependent variable of state preemption. States with more professionalized legislatures have more legislative resources and expertise and are thus less likely to delegate regulative authority over fracking activities to local governments (Flavin & Shufeld, 2018; Folwer & Witt, 2019). We measured legislative professionalism by using the five categories established by the NCSL for the fifty state legislatures—from full-time professional legislatures to part-time citizen legislatures—based on the amount of time legislators spent on the job, their compensation, and the size of the legislative staff.

Third, we also expected that local and state governments' actions toward fracking were enabled or limited by legal structures defined by state constitutions such as *Home Rule* or Dillon's Rule. In states with Home Rule, local governments have the authority to pass laws on their own; in states with Dillon's Rule, local governments must obtain permission from the state legislature to pass laws or ordinances (Folwer & Witt, 2019). Based on Krane, Rigos, and Hill (2001), ten states operate under Home Rule, and forty states operate under Dillon's Rule (or modified versions of it). We coded a dummy variable to indicate states operating under Home Rule (indicated as 1).

Fourth, we controlled for the level of *legislative competition*. In an electorally competitive environment, partisan legislators make broader appeals than they would otherwise,

thereby improving their chance of innovating policy (Jenkins, Leicht & Wendt, 2006). We thus measured legislative competition according to the margin of the percentage of seats held by the two parties in state legislatures (Chen, 2007). We obtained the data from the Council of State Governments.

Fifth, we considered the socio-economic characteristics of a state. We controlled for *population* and *per capita income*, *the percentage of urban population*, and *the percentage of white population* in the prior year. We collected the data from the U.S. Census Bureau and the Bureau of Economic Analysis.

Finally, we also included the state *fiscal capacity* by measuring the state governments' annual revenue per capita (Jenkin et al., 2006) and collected the data from the Council of State Governments. We also controlled for the *diffusion effect* between states as a state government can pass preemptive laws to follow peer states. We measured the number of states with preemptions in the prior year.

4. RESULTS

To address the first hypothesis, we first generated a boxplot to compare counties with and without local bans and found those with them were more likely to support Democratic candidates in presidential elections (Figure 2). Table 2 reports our analysis of the number of local bans on fracking. Model 1 is the baseline model that includes only control variables. It shows that the control variables of legislative competition, high per capita income, and the prevalence of oil industry employment discourage local governments from coming up with restrictive policies on fracking activities, whereas a higher state population and urban population are likely to lead to more local bans. Model 2 indicates that the independent variable—urban-rural polarization—increases the number of fracking bans issued by local

governments in a state, thereby supporting Hypothesis 1. When the polarization score rises by one standard deviation, the number of local bans increases two-fold (β=1.314, $p<0.05$).

Insert Figure 2 and Table 2 Here

4.1 Number of Industry Lobbyists

Table 3 reports the analysis of the number of lobbyists hired by the fracking industry to work on state governments in order to test H2, H3, and H4. Model 1 is the baseline model and shows that the more competitive the two parties in state legislatures are, the more effort the industry will put into lobbying. This is consistent with our expectation that businesses see a greater chance of success from a competitive state legislature that is more open to policy innovation. The addition of oil and gas industry jobs in a state is negatively associated with the intensification of lobbying. The reason may be that when politicians are more reliant on the industry to provide employment, companies see less need to engage in extra lobbying. In addition, the oil and gas industry hires more lobbyists in states with larger urban and white populations, and after a significant number of other states have issued state pre-emptions.

Model 2 tests the main effect of local bans, showing that this variable has a positive, significant effect on the intensity of lobbying at a state government level. The result confirms that the rise in bans issued by local governments is directly related to more industry lobbying activities on the state government level. When the number of local bans in a state goes from one standard deviation below to one standard deviation above the mean, oil companies hire on average six more lobbyists (β=0.036, $p<0.01$). Hence Hypothesis 2 is supported.

Models 3-4 test the moderation effect of conservative dominance on state legislatures, showing the effect of interaction between local ban numbers and conservative state legislatures to be positively significant (β = 0.053, $p <0.01$). The result indicates that when the state legislature is dominated by conservatives, fracking companies hire more lobbyists to respond

to the growth of local bans, thus supporting H3. To demonstrate the magnitude of the coefficient, we graph the interaction effect in Figure 3.

Models 5-6 test the moderation effect of the percentage of ALEC state legislators, showing that the interaction term is positive and significant ($\beta = 0.156$, $p < 0.01$). The result reveals that, despite a negative main effect, a higher percentage of ALEC state legislators amplifies the positive impact of local bans on the intensity of lobbying by fracking companies on the state government level, thus supporting Hypothesis 4. To demonstrate the magnitude of the coefficient, we graph the interaction effect in Figure 4.

Insert Table 3, Figure 3, 4 Here

4.2 State Preemption

Table 4 reports the event history models of state pre-emption to test H5. Model 1 tests the impact of control variables. It reveals that the control variables of ALEC legislator ratio, legislative professionalism, and oil industry employment are associated with a higher chance of state pre-emption over local bans. There is also evidence for the diffusion effect, namely, that a state is more likely to issue preemption when other states have done so. Model 2 includes the number of lobbyists hired by the fracking industry in a prior year. The coefficient is positive and significant ($\beta = 0.128$, $p < 0.01$), confirming Hypothesis 5 that more lobbying efforts by the industry lead to a higher likelihood of preemption of local bans on fracking. Specifically, one standard deviation increase in the number of lobbyists leads to a 13 percent higher chance of state pre-emption. In unreported analyses, we also adopted the proportional hazard Cox model and the probit model, and got results similar to those reported here. In addition to Hypothesis 3, which focuses on the direct impact of lobbying on state pre-emption, we conducted an extra test on the moderating impact of Republican dominance and ALEC legislators and found them

to be insignificant. Thus, Republican dominance and ALEC legislators enhance the enactment of state preemption primarily through increasing the number of lobbyists that the industry hires.

Insert Table 4 Here

In sum, our results provide evidence for a causal relationship between urban-rural polarization and state pre-emption with regard to fracking activities. First, we find that the increased polarization of urban and rural areas is associated with a higher number of local bans on fracking activities within a state (i.e., H1). Second, the presence of more local bans within a state motivates fracking companies to increase their lobbying efforts on the state government level (i.e., H2), particularly in states where Republican dominate (i.e., H3) and where there is a higher percentage of ALEC-affiliated legislators (i.e., H4). Third, our results suggest that the increased lobbying efforts of fracking companies on the state government level can be associated with a higher likelihood of state pre-emption aimed at nullifying local bans on fracking activities (i.e., H5).

5. CONCLUSION

The regulation and politics in the US fracking industry provide an ideal opportunity for testing Lachmann's elite conflict theory (Lachmann, 1987, 2000) in the contemporary era. As the American social sorting process has led to a form of geopolitical polarization in which state governments are controlled by more conservative elites while city governments are controlled by more liberal elites (Mason, 2018), such ideological differences affect both the threat posed to the industry and the opportunity for it to shape regulation. The polarization of elites activates competition between local and state governments, not only by encouraging the local government to impose bans on fracking (Riverstone-Newell, 2017), but also by enabling the industry to lobby the state government to preempt local bans (Yue & Wang, 2023). In particular, the dominance of supportive elites within the upper level of government creates an

opportunity for leveraging preemption and thus enhances the industry's lobbying efforts. In this way, our study contributes to the research on the politics of industry regulation, industry political strategy, and elite conflict theory. Below, we elaborate on these contributions and point out the direction for future research.

First, our paper contributes to the sociological research on the politics of industry regulation. Sociologists have emphasized how industry players, social movement activists, and other stakeholders compete to define the rules of the game, and view political opportunity as a critical factor in the way in which these various groups transform their advocacy into policy outcomes (Fligstein, 1996; Schneiberg & Bartley, 2001, 2010; Ingram & Rao, 2004; Yue, Luo & Ingram, 2013). Partisan control of the government is an important component of political opportunity as it relates to the power of political allies, access to institutional channels, and the cost of political action (Jenkins et al., 2006; Chen, 2007). The existing literature on industry regulation, however, has focused on partisan control over a particular level of government (e.g., Chen, 2007; Dokshin, 2016; Fremeth, Holburn, & Piazza, 2022). We have introduced geopolitical conflicts between political elites to the issue and argue that partisan elites' control of a particular level of government is not alone in affecting industry regulation, but instead interacts with rival elites' control of another level of government. Our study shows that regulations on the fracking industry are the result of interaction between political elites at the local and state governments, and that elites' geopolitical polarization amplifies the policy divide among different levels of government. Therefore, an examination of the impact of elite conflicts that are rooted in urban-rural polarization extends the literature on industry regulation to the theorization of political opportunity.

Second, our paper contributes to the research on the political strategy of industry by highlighting how heterogeneity on the policy supply side enables industry players to adopt

corporate political strategy to shape regulatory environments. While the literature on the political strategy of industry has traditionally focused on the single policy supplier or assumed the homogeneity of policy suppliers (e.g., Bonardi, Hillman & Keim, 2005; Gao & McDonald, 2022), a small body of studies has explored the heterogeneity of policy suppliers and power relations among government entities (e.g., Ozcan & Gurses, 2018; Yue et al., 2019; Yue & Wang, 2023). Our paper joins but also departs from this group of studies. Although they assume that pre-existing structures, such as decentralization or the constitutional separation of powers (e.g., between different levels or branches of government), indicate cleavages within political authority, our paper suggests that this need not be the case. Rather, structural differentiation alone may not indicate the existence of a political opportunity. Political polarization is an important condition for creating and escalating conflicts between heterogeneous policy suppliers. In other words, heterogeneity on the policy supply side is not a fixed or exogenous feature, but a dynamic process that can be activated, amplified, and exploited by industry players. This point is also supported by recent research on fracking firms' campaign contributions to support Republican candidates in historically Democratic districts (Li & DiSalvo, 2023).

In addition, we shed light on how nascent industries can leverage uncertainties in regulatory jurisdictions to shape their regulatory environments. Nascent industries that develop from new technologies often face jurisdictional uncertainty in regulatory authority (Yue & Wang, 2023). Unlike an established industry in which the government entity with regulatory power is often already set, the government entity with the jurisdictional authority to regulate a nascent industry may be contested. For example, when the federal government recently attempted to regulate the nascent cryptocurrency industry, numerous federal agencies, including the SEC, IRS, CFTC, and Congress, all claimed regulatory authority over it (Geron, 2021). Uncertainties regarding regulatory authority exist not only horizontally between different government

branches, but also vertically between different levels of government. Our paper shows that when faced with vertical uncertainties regarding the regulatory authority of state and local governments, state preemption is a political strategy that industry players can adopt to fight unfavorable regulation. This paper together with Yue & Wang's (2023) study of the US commercial drone industry are among the first studies of the influence of industry lobbying on state preemption of local regulation. In marble-cake Federalism, the powers, goals, and duties of the national, state, and local U.S. elites are interrelated (Grodzins, 1966), and the partisan divisions among them grant industry players new opportunities to exert political influence. As such, our paper joins an emerging body of work of the political strategies that nascent industries adopt to shape their regulatory environment; while the prior literature has investigated strategies such as framing contest (Ozcan & Gurses, 2018), participation in regulation formation (Gao & McDonald, 2022), and making campaign contributions (Li & DiSalvo, 2023), our paper add to the list by highlighting the strategy of lobbying for state preemption.

Third, our paper contributes to studies on the conflict between elites by showing its contemporary application in explaining the formation of industry regulations and the political strategies of industry players to shape them. While Lachmann's early work (1987, 2000) insightfully points out how elite conflicts affect economic players, few empirical studies examine the theory's application in the contemporary era. Lachmann's own recent work focuses on the consequences of elite conflicts on the rise and decline of polities (2020). Studying American elites, he (2020) argues that their division has escalated as the Republican-led governments encourage economic deregulation, which has resulted in waves of corporate mergers that further increase social inequalities. While Lachmann's conclusion draws on how changes in government regulation impoverish *the state*'s capacity to collect revenue and hence lead to *state* decline, our paper extends his original insight into the domain of industry regulation and suggests that conflicts between American political elites can both challenge and

enable industry players. We focus on the ideological rivalries between political elites in contemporary America and show that in politically polarized states, industries find allies in the state house and face challenges in city halls. Our study does not directly assess the sizes of the constrictive versus enabling effects, but does suggest that conflict among elites may lead to a complex set of contentious relationships between political and economic actors and may thus not lead directly to decline in state capacity. Moreover, as modern societies are characterized by political pluralism, we believe that the angle from which we investigated conflicts between political elites can be used to explain a wide range of phenomena in the modern political economy. Our study of industry regulation is likely a mere herald of a vibrant area of research.

Our paper also has implications for elite theory in general. By studying conflict among political elites, it revisits the classic debate on whether elites are homogeneous and unified or heterogeneous and polarized (Mizruchi, 2013; Chu & Davis, 2016; Benton, 2017; Benton & Cobb, 2019). This debate is central to the conceptualization of a society (like that of the U.S.) as one governed by either the principle of elitism or that of pluralism. At one end, Marx's social class theory and Mills' power elite theory argue for the existence of relatively homogenous and interconnected elites that dominate the major economic, political, and military decisions of a society; at the other, pluralists argue that organized groups compete for influence when shaping these major decisions (Dahl, 1961). By building on Lachmann's insight and theorizing the conflict between elites and the associated consequences in contemporary America, our paper provides a middle-ground response to this debate; we show that political elites are unified through think tanks and policy networks such as ALEC, but are also divided along partisan and geographical lines. Because political elites adhering to different political ideologies find constituents in different geographies, control different levels of government, and take opposing policy positions towards the same group of industry players, our paper suggests that they are

clearly not as homogeneous or unified as prior elite theories have suggested, and thus calls for a more realistic assessment of modern elites in the U.S.

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Figure 1. Distribution of Municipal Bans and Moratoria by 2020

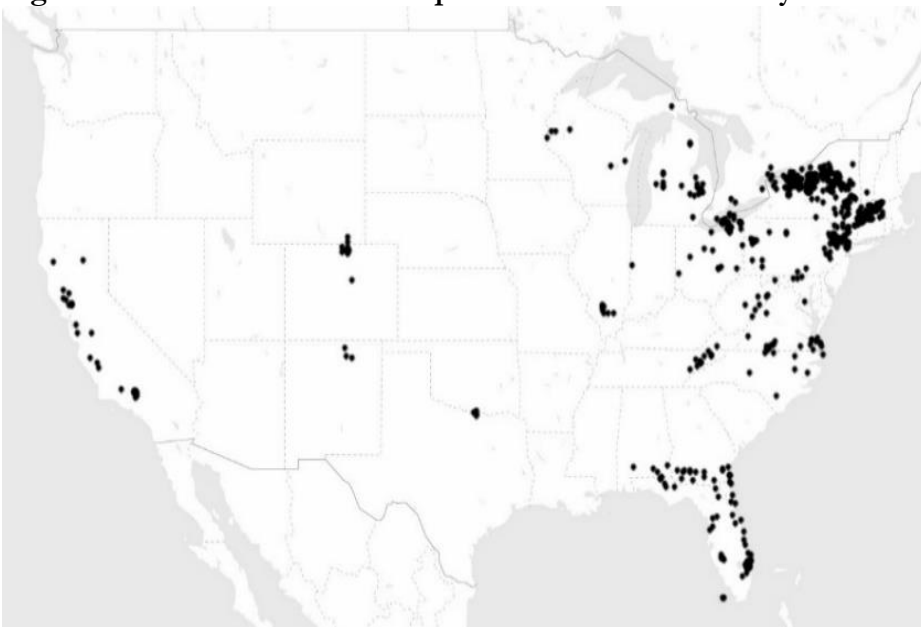

Figure 2. A boxplot that compares votes to the Democratic Party in counties with and without local bans over fracking

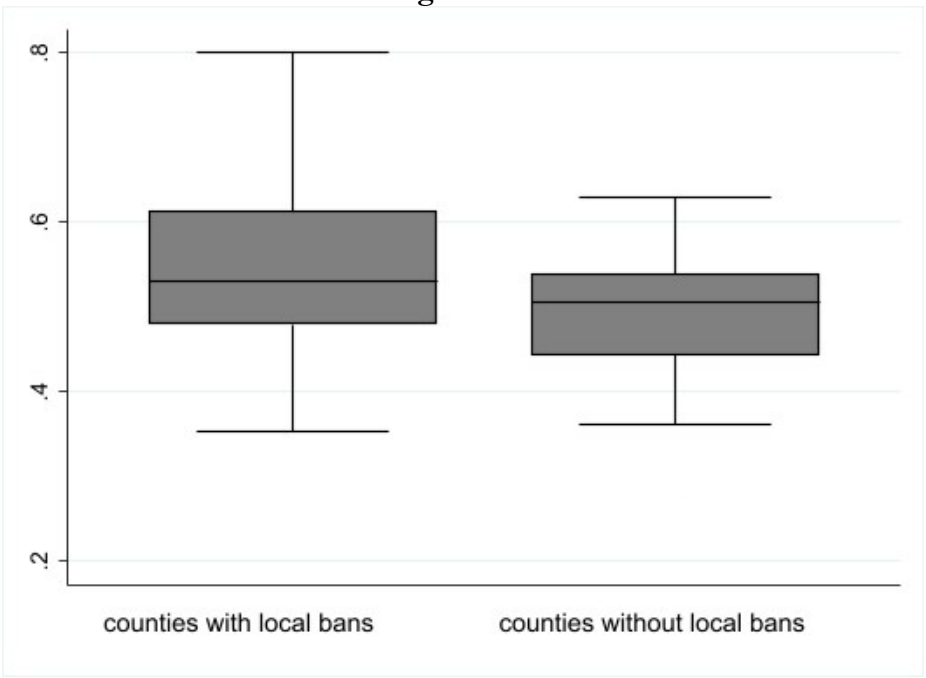

Figure 3 Moderation Effect between Local Bans and State Republican Control

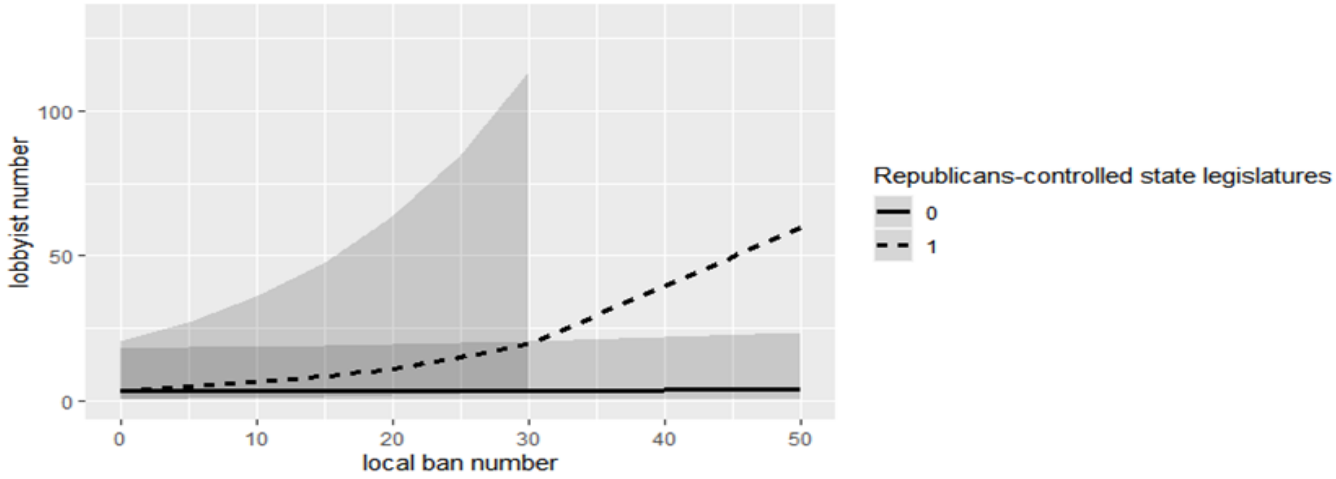

Figure 4 Moderation Effect between Local Bans and ALEC Legislators

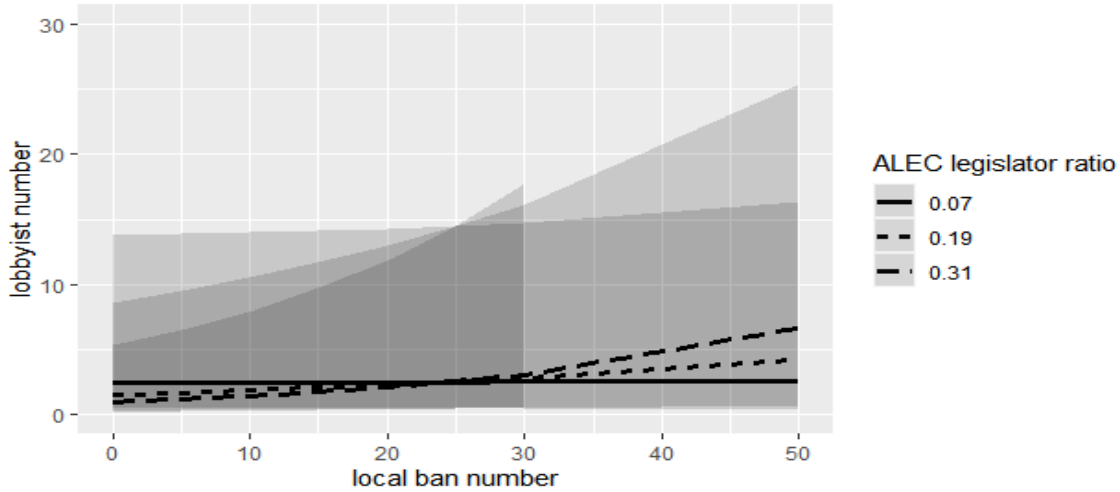

Table 1 Descriptive Statistics for Variables

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Lobbyist number	5.97	11.96														
2. Local ban number	5.89	24.66	.04													
3. Conservative dom. in state legis.	.40	.49	.05	-.05												
4. ALEC legislator ratio	.19	.12	.23	-.10	.46											
5. State legislative professionalism	2.00	1.27	.11	.33	-.18	-.17										
6. State legislative competition	.26	0.17	-.09	.01	.48	.12	-.37									
7. State fiscal capacity (k)	5.57	3.31	.12	.14	.06	.06	-.05	.16								
8. Home Rule	.78	.41	-.04	.03	-.07	.10	.15	.01	-.23							
9. Oil industry empl. (per 1000 ppl)	1.89	3.10	.20	-.11	.14	.23	-.42	.33	.35	-.12						
10. Per capita income (10k)	5.03	.97	.21	.39	.07	.17	.24	.15	.54	.07	.16					
11. Population (1 million)	7.21	8.58	.26	.29	-.08	-.03	.67	-.16	-.12	.20	-.23	.28				
12. Urban population	.74	.14	.16	.20	-.06	.01	.52	-.02	-.12	.00	-.16	.28	.53			
13. White population	.73	.52	.20	.02	.18	.02	.04	.03	.03	.05	-.07	-.11	-.11	-.13		
14. Diffusion	1.68	3.12	.09	.18	.20	.15	.00	.24	.26	.00	.08	.59	.02	.04	.14	
15. Urban-rural polarization	.09	.07	.09	.11	.03	.15	.02	.16	-.09	.02	.00	.26	.08	.38	.07	.25

N=560

Table 2 Fixed Effect 2SLS Models on the Impact of Urban-Rural Polarization on Local Bans

	(1)	(2)
Urban-rural polarization (IV)		1.314**
		(0.541)
State legislative competition	-3.391***	-3.413***
	(0.225)	(0.225)
State fiscal capacity	0.685	0.681
	(0.015)	(0.015)
Oil industry employment (per 1000 people)	-0.173***	-0.704***
	(0.023)	(0.023)
Per capita income (10k)	-2.292**	-2.212***
	(0.069)	(0.077)
Population (1 million)	0.058**	0.061**
	(0.002)	(0.003)
Urban population	0.628*	0.359*
	(0.302)	(0.320)
White population	-1.023	-0.996
	(0.034)	(0.036)
Diffusion	0.312	0.293
	(0.039)	(0.041)
Log likelihood	-2060.928	-2057.959

N=560 ;*p<0.1; **p<0.05; ***p<0.01; two-sided; State and year-fixed effects are included; Nebraska has a nonpartisan state legislature and was therefore removed from the sample when measuring partisan election pressure for state legislators

Table 3 Fixed Effect Poisson Model of the Number of Hired Lobbyists

	(1)	(2)	(3)	(4)	(5)	(6)
State legislative competition	1.032***	0.934***	0.763***	0.431*	0.901***	0.453**
	(0.221)	(0.221)	(0.237)	(0.244)	(0.219)	(0.227)
State fiscal capacity	0.036	0.025	0.025	0.021	0.011	0.002
	(0.022)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Oil industry employment (per 1000 people)	-0.080***	-0.049***	-0.048***	-0.052***	-0.054***	-0.065***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Per capita income (10k)	-0.185	-0.519***	-0.491***	-0.094	-0.420***	0.028
	(0.124)	(0.131)	(0.132)	(0.150)	(0.134)	(0.151)
Population (1 million)	0.026	0.007	0.021	0.038	-0.085**	0.013
	(0.031)	(0.031)	(0.032)	(0.032)	(0.033)	(0.037)
Urban population	12.254**	16.609***	18.056***	15.698***	19.989***	19.711***
	(4.896)	(4.868)	(4.937)	(4.949)	(4.963)	(5.001)
White population	0.300***	0.278***	0.268***	0.206***	0.226***	0.216***
	(0.028)	(0.028)	(0.028)	(0.031)	(0.030)	(0.030)
Diffusion	0.316***	0.333***	0.312***	0.222***	-1.274***	-1.512***
	(0.054)	(0.054)	(0.055)	(0.057)	(0.375)	(0.382)
Local ban number		0.036***	0.036***	-0.0001	0.039***	-0.010
		(0.005)	(0.005)	(.008)	(0.005)	(0.009)
Conservative dominance in state legislatures			0.160**	0.067		
			(0.078)	(0.081)		
ALEC legislator ratio					-1.632***	-3.899***
					(0.405)	(0.520)
Local ban number × Conservative dominance				0.053***		
				(0.009)		
Local ban number × ALEC legislator ratio						0.156***
						(0.022)
Log likelihood	-1,364.538	-1,334.205	-1,332.125	-1,314.696	-1,320.867	-1,295.427

N=560, *p<0.1; **p<0.05; ***p<0.01; two-sided; State-fixed effects, year-fixed effects, and the Inverse Mills Ratio are included. Nebraska has a nonpartisan state legislature and was therefore removed from the sample when measuring partisan election pressure for state legislators

Table 4. Event History Model of State Preemption

	(1)	(2)
Conservative dom. in state legislatures	-1.838 (1.272)	-1.932 (1.499)
ALEC state legislator ratio	10.863*** (4.216)	8.475* (4.396)
State legislative professionalism	1.215** (0.582)	2.519** (0.992)
State legislative competition	-1.275 (3.617)	4.632 (4.630)
State fiscal capacity	-0.214 (0.337)	-0.256 (0.374)
Home rule	-0.595 (1.277)	0.721 (1.407)
Oil industry employment	0.512*** (0.170)	0.382** (0.183)
Per capita income (10k)	-1.143 (1.016)	-1.346 (1.147)
Population (1 million)	0.077 (0.074)	-0.067 (0.083)
Urban population	-3.603 (7.292)	-11.518 (9.391)
White population	-0.601 (1.200)	-5.132** (2.191)
Diffusion	0.678*** (0.194)	0.680*** (0.186)
Local ban number	0.006 (0.018)	0.013 (0.019)
Lobbyist number		0.128** (0.052)
Log Likelihood	-26.395	-22.768

N=560; *p<0.1; **p<0.05; ***p<0.01; two-sided; Nebraska has a nonpartisan state legislature and was therefore removed from the sample when measuring partisan election pressure for state legislators

Appendix A1. First-stage regression with the instrumental variable

	OLS Urban-rural polarization
Agriculture job	0.234** (0.073)
Oil employment	0.002 (0.001)
Legislature professionalism	-0.004 (0.004)
State fiscal capacity	-0.007*** (0.001)
Unemployment rate	-0.005** (0.002)
Population	0.001* (0.001)
Per capita income	0.020*** (0.003)
White population	0.013* (0.006)
Constant	0.019 (0.021)
F	12.88
R^2	0.141

N=560; *p<0.1; **p<0.05; ***p<0.01; two-sided