The Effect of Interest Group Pressure on Favorable Regulatory Decisions

The Case of Certificate-of-Need Laws

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MERCATUS WORKING PAPER

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Abstract

Certificate-of-need (CON) laws currently prohibit entry or expansion of healthcare facilities in 35 states and the District of Columbia. In a lengthy process, medical providers must prove to regulators that their new services and equipment are needed. Medical providers who succeed are effectively guaranteed market power, and thus are able to acquire economic rents. These economic rents create an incentive for medical providers to engage in rent-seeking. Using recent data from Georgia, Michigan, and Virginia, we examine whether political campaign contributions made by medical providers affect the likelihood of their CON proposals being approved. Our results are among the first to consider the effect of campaign contributions on industry regulation.

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This paper can be accessed at https://www.mercatus.org/publications/interest-group-pressure -favorable-regulatory-decisions-certificate-of-need

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Do political campaign contributions influence regulatory decisions? This is an important question because a proper understanding of regulatory institutions depends upon the answer given to it. The consequences of policy proposals cannot be adequately appreciated unless it is understood how firms will operate within a proposed institutional framework. Complaints about the ability of firms to buy favorable regulatory terms are common. However, until recently, there had been little empirical research conducted that could begin to address this question.

There is a vast empirical literature that analyzes the relationship between campaign contributions and legislative voting behavior.[1] Despite the extensiveness of this research, no consensus has emerged as to whether campaign contributions effectively influence voting. There is even less research addressing the relationship between contributions and regulatory decisions. Holburn and Vanden Bergh (2014), for example, present evidence that electric utilities have strategically contributed to state legislators immediately before a public utility commission was slated to decide on the firms' proposed merger. However, they only looked to see whether firms purposefully timed contributions, not whether those contributions ultimately influenced regulatory decisions. Closer to our own approach, de Figueiredo and Edwards (2007) find that contributions to legislators have an effect on state regulatory commissions' determinations of telecommunications wholesale prices. Additionally, Correia (2014) finds that firms that make PAC contributions are less likely to be prosecuted by the Securities and

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[1] Ansolabehre, de Figueiredo, and Snyder (2003) and Stratmann (2005) provide overviews of this research.

Exchange Commission, and if prosecuted, are more likely to receive a lesser penalty. This line of research provides new evidence about the influence of campaign contributions in government and regulation.

We extend upon this literature by analyzing the effect of contributions on regulatory decisions in healthcare markets, an area which has not been previously studied. Specifically, we look at certificate-of-need (CON) laws. Currently, 35 states and the District of Columbia enforce CON laws. CON laws require that medical providers obtain permission from state regulatory agencies to construct new facilities and to acquire medical equipment. One consequence of these laws is that they restrict the supply of medical services and therefore generate economic rents (Tullock 1967, Krueger 1974). Specifically, they may provide a motivation for firms to contribute to candidates in order to improve the chances of application approval. We examine the hypothesis that the political contributions made to state candidates can improve an application's chance of approval.[2] Campaign contributions in this institutional environment can be viewed as a form of rent-seeking. However, this rent-seeking may extend beyond contributions to include illegal activities, such as corruption, as was determined by a United States district court.[3]

One problem with estimating the effect of contributions on application approvals is that firms might contribute to legislators for reasons other than influencing a regulatory decision. For instance, a firm may contribute to a legislator because that legislator shares similar policy positions with the firm (Bronars and Lott 1997). In such an instance, the legislator receives contributions even if he makes no active attempt to support the application. This provides a

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[2] State candidates refers specifically to governors and state senators, as these legislators have a potential role in influencing CON decisions.
[3] United States v. REZKO, No. 05 CR 691 (N.D. Ill, 2008).

reason to suspect that results returned from an OLS estimation will be biased. To address this problem, we implement an instrumental variable (IV) regression in which we use contributions to federal candidates as an instrumental variable. Contributions to federal candidates should be unrelated to contributions made to influence the application procedure because unlike state legislators, federal legislators have no direct influence over regulators making approval decisions. Therefore, it is not likely correlated with error term. However, firms that contribute to candidates for alternative reasons likely contribute to both federal and state level candidates, and we expect there to be a positive correlation between both contributions.

Our regression results suggest that there is a statistically significant and positive correlation between CON applicants' contributions to state candidates and the approvals of CON applications for these contributing applicants. Firms that made contributions to political candidates have a higher probability of having their applications approved than firms that did not make contributions. This suggests that regulatory approvals might be influenced by these rent-seeking activities. However, we cannot rule out all potential endogeneity issues.

In section 1, we provide background on CON laws and how these laws are implemented in Georgia, Michigan, and Virginia. Section 2 presents our hypotheses and describes the data used to test our hypotheses. Section 3 presents and discusses the results of our analysis. We conclude in section 4.

I. History and Institutional Context

New York introduced the first CON law in 1964.[4] Within a decade, 23 other states had adopted their own programs. Furthermore, beginning in 1972, many states adopted what are referred to as

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[4] Simpson (1985) provides a brief history of CON legislation.

section 1122 programs.[5] Under section 1122, a firm is permitted to undertake a reviewable capital expenditure without the CON agency's approval; however, the firm cannot receive Medicare/Medicaid payments for the project's capital costs. By 1975, the District of Columbia and 46 states had either a CON law or a section 1122 program or both.

In 1975, Congress passed the National Health Planning and Resources Development Act,[6] which required states to enact their own CON laws to receive federal payments. Failure to comply meant a state would forfeit these payments. By 1980, the District of Columbia and every state except Louisiana had complied with the law. The federal law, however, was ultimately repealed in 1987. Many states have repealed their own laws since, but as of 2016, 35 states and the District of Columbia still have CON laws.

Two primary justifications have been offered for these programs. First, they control costs by allowing regulators to veto expenditures that they determine to be unnecessary. This is intended to prevent overinvestment that might otherwise occur. The second justification comes from the recognition that CON laws may generate rents by restricting the supply of medical care. At least some of these extra earnings can be used to cross-subsidize the provision of medical services for the poor.[7] However, recent research has shown that CON laws may actually increase costs by up to 5 percent (Fottler, Frimpong, and Rivers 2010). Furthermore, Stratmann and Russ (2014) do not find support for the hypothesis that CON laws promote cross-subsidization of indigent care.

Alternatively, there are theoretical reasons to believe that rents generated from supply restrictions will cause firms to invest resources into acquiring these rents. One potential way that

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[5] 42 U.S.C 1320a-1 Sec. 1122.
[6] Pub. L. No. 93-641.
[7] The cross subsidization hypothesis was first introduced by Campbell and Fournier (1993). Using data from Florida, they find evidence for the cross subsidization.

a firm may attempt to rent-seek is by making campaign contributions to a legislator that has influence over the regulatory decision. In many states with CON laws, the governor and state senators play a role in appointing the regulators that make the application decisions. The governor generally makes regulatory appointments, and contributions may influence whom he appoints or reappoints. Confirmation of an appointment is made by the state senate, and contributions to these candidates may influence how they vote on appointments. Given this structure, we expect that firms that make contributions to state candidates will have an influence over regulatory decisions on applications.

An example of this rent-seeking occurred in Illinois in 2003. Jacob Kiferbaum of Kiferbaum Design and Build had received a contract with Mercy Health System to build a facility on condition that their CON application was approved. Kiferbaum made a deal with Stuart Levine, a member of the Illinois Planning Board, that if Levine was able to get the application approved then Kiferbaum would share the earnings with Levine. Levine then got Antoin Rezko, a major contributor to Governor Rod Blagojevich, to convince the other planning board members to vote in favor of the application in return for a cut of the kickback. The application was originally issued an intent-to-deny letter, but it was later approved in May of 2004. Part of the reason Rezko was able to convince the planning board to change its vote on an application was because he had bought influence with Blagojevich by making substantial contributions to Blagojevich's campaign.

The exact way that CON laws operate varies from state to state. However, in the three states studied in this paper, the individuals who make the final decision on an application are appointed by the governor with state senate confirmation.

A. Georgia

Georgia implemented its own CON law in 1979.[8] Applicants for a CON must submit a letter of intent (LOI) 30 days prior to submitting the application to the Office of Health Planning (OHP), a department within the Georgia Department of Community Health. After this 30-day period, the firm is eligible to submit the official CON application to the OHP.

The Georgia OHP creates plans estimating the need for specific types of medical services by region.[9] The OHP then evaluates if that region has a sufficient supply of the service. According to these criteria, the OHP determines if the firm's proposed expenditures are warranted or not. Additionally, the OHP evaluates the ability of the firm to finance the project and decides whether it believes the project to be cost-effective. At the end of this 90-day review period, the OHP either approves or denies the application.

If the application was denied, the applicant has the ability to appeal the decision. Additionally, competing firms have the ability to submit an appeal against applications that were approved. These appeals are evaluated by the Certificate of Need Review Panel, a panel consisting of five different members appointed by the governor and approved by the senate for a term of four years.[10] This panel's decision is the last stage in the application approval process and establishes a link between contributions to state candidates and application decisions. We hypothesize that firms that make contributions to state candidates are more likely to see approvals granted. Furthermore, firms that don't contribute may decide against completing the application process if they think it is likely their application will go to the review panel.

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[8] Projects in Georgia that require a CON include the following: new hospitals, new or expanding nursing homes and home health agencies, ambulatory surgery centers, radiation therapy, open heart surgery, neonatal services, MRIs, CT scans, PET scans, and major hospital renovations.
[9] A full list of criteria can be found at GA Code § 31-6-42 (2016).
[10] GA Code § 31-6-44 (2016).

B. Michigan

Michigan introduced its own CON laws in 1972. The procedure to apply for a certificate of need begins with the submission of an LOI to the Michigan Department of Health and Human Services.[11] After the CON agency receives the LOI and 15 days have elapsed, the applicant may submit an official application. This includes copies of the application, the required application fee, and additional required documents.

At the next stage of the process, the department makes a decision on the application. If they approve the application, it is sent to the department director who must issue a final decision within five days. If instead the department decides to deny the application, the applicant is given up to 15 days to request a hearing contesting the decision. Regardless of whether or not the applicant decides to contest the decision, the application ultimately makes its way to the department director for a final decision.

This establishes a link between contributions and regulatory decisions because the department director is appointed by the governor and confirmed by the state senate. Therefore, contributions to state candidates may exert influence on the decisions of the department director. We hypothesize that firms that make contributions to state candidates have a greater chance of having their applications approved than firms who do not contribute.

C. Virginia

Virginia introduced its Certificate of Public Need Program (COPN) in 1973 with the passage of the Virginia Medical Care Facilities Certificate of Public Need Law, a year prior to the

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[11] Michigan Office of Regulatory Reinvention, *Policy, Planning and Legislative Administration: Certificate of Need* (Lansing, MI: Michigan Department of Health and Human Services, 2014); Michigan CON Commission, *Michigan's Certificate of Need Program 2017* (Lansing, MI: Michigan Department of Health and Human Services, 2017).

federal mandate. The COPN breaks projects requiring a CON into seven different "batches," according to the type of medical equipment or service that a firm is requesting to provide. A firm initiating a project that belongs to any of those seven categories is required to submit a CON application.

During the first phase of the application procedure, the firm submits a LOI 70 days prior to their application submission. This letter helps the agency identify which batch the project belongs to. Next, the application sent to the Division of Certificate of Public Need Program (DCOPN), or, if the applicant is from planning district eight, the Health Systems Agency of North Virginia (HSANV).[12] The DCOPN (or HSANV) then reviews the application, ensuring all information needed for the review process is included. The DOCPN and HSANV have 75 days to review the application and submit a recommendation to the state health commissioner.

In the final phase of the process, the state health commissioner approve or deny the application. If the application is submitted to the commissioner with no challenges from the DOCPN or HSANV, then he or she must come to a final decision on the application within 45 days. However, if either board challenges the application, then an informal fact-finding conference is held before an adjudication officer. The applicants must then defend their proposal to the adjudication officer who will make a recommendation to the commissioner. Ultimately, the application reverts to the state health commissioner who issues an application decision.

The commissioner will then approve or deny the request on the basis of how well it conforms to the law's criteria. These criteria include the extent to which the proposal increases access to health services, the extent to which it fulfills the needs of the community it will

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[12] This includes Arlington, Loudoun, Fairfax, and Prince William Counties and the cities located within or adjacent to those counties.

service, and the financial feasibility of the project.[13] Of importance to our analysis, the

commissioner is appointed by the governor and confirmed by the state senate. For this reason,

we would expect that contributions to the governor or state senators would increase the

likelihood of application approval.

II. Data and Model

We use data from four different sources for our analysis. Table 1 (page 24) presents the summary

statistics of the data. Georgia CON application data were collected from the Georgia Department

of Community Health's CON Tracking Report.[14] The data collected from this source run from

2010 until 2015 and include 463 applications. Virginia CON application data come from the

Virginia Certificate of Public Need Program's monthly activities report.[15] There are a total of

2,081 applications included in this data set, and they are recorded for the years 1996 to 2014.

Data from Michigan were obtained with a Freedom of Information Act request and contain

information on applications from 2010 until 2015, with a total of 2,056 observations.

To determine if an applicant made a political contribution during this time period, we use

data from the National Institute on Money in State Politics.[16] The data show the title of each

contributor and when and to whom contributions were made. Contributions are reported in

nominal US dollars. We convert these to real 2014 US dollars using the CPI-U from the Bureau

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[13] A full listing of the criteria is found at Virginia Department of Health, "Certification of Public Need (COPN) Compliance with COPN Conditions," *Virginia.gov*, last modified December 30, 2011, https://www.vdh.virginia.gov /OLC/COPN/copnconditioncompliance.htm.
[14] Georgia Department of Community Health, "CON Tracking Report," *Georgia.gov*, accessed March 2016, https://dch.georgia.gov/con-tracking-report.
[15] Virginia Department of Health, "Licensure and Certification: Quick Links," *Virginia.gov*, accessed February 2015, http://www.vdh.virginia.gov/olc/copn.
[16] National Institute on Money in State Politics, *Follow the Money*, last modified 2017, http://www.followthe money.org/.

of Labor Statistics.[17] The contributions of an applicant's parent or subsidiary organizations may also influence an application decision; therefore, we group affiliated organizations and assign the group any contribution made by constituent members. We only analyze contributions made to the governor and state senators. Contributions to any other candidate are not included because these candidates possess no clear influence over regulatory decisions.

To study the effect of campaign contributions on approvals, we analyze whether a firm and its affiliated organizations made a campaign contribution and how much was contributed. We use an indicator variable to show whether a contribution was made, and contribution amounts are measured as the natural log of the total real dollar amount of contributions recorded. If the application is associated with political contributions, the variable is assigned the value of 1. If no contribution was made, the variable is assigned a value of 0. Contributions are reported if the applicant made a contribution within two years before or after of the submission of an LOI. This is to narrow the data down to contributions that are plausibly related to the approval of an application, sifting out contributions that are made for other reasons. Since the results might be sensitive to how this timing window is specified, we include a robustness check for contributions made at any time during the full period, within one year before and after the submission of an LOI, and within six months of the submission of an LOI.

To control for regional variation in application approval, we include fixed effects for planning districts in Virginia. Planning districts are subregions of the state that CON regulators consider separately. In Georgia, the planning districts do not remain fixed across application types, so we instead use county-level fixed effects. Additionally, we include controls for the variation in application type in Georgia and Virginia. In Virginia, the DCOPN assigns each

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[17] United States Department of Labor: Bureau of Labor Statistics, *BLS.gov,* accessed March 2017, http://www.bls .gov/cpi.

application to a different batch based on the type of service that the application is associated with. For this reason, we control for each of the batches in Virginia. In Georgia, not all applications are assigned to batches, and for applications that were, there is no information on which batch they belong to. So instead, we include several indicator variable controls for application types that reoccur frequently in the data set. These include controls for whether or not an application is associated with MRIs, CT scans, PET scans, ambulatory surgery centers, nursing centers, psychiatric services, and home health services. We can control for regional variation in Michigan with county fixed effects; however, we do not possess information on application types and therefore cannot control for that. For all states, we include fixed effects for the year the applicant submitted an LOI.

The relationship we are interested in can be modeled by the following system of structural equations:

$$Approved_i = \alpha_1 Influence_i + \boldsymbol{X_i}\boldsymbol{\alpha}, \tag{1}$$

$$Influence_i = \beta_1 Contribution_i + \boldsymbol{Y_i}\boldsymbol{\beta}. \tag{2}$$

The first equation states that the likelihood of a regulator approving an application is a function of the amount of political influence exerted on the regulator and a vector of other relevant variables. The second equation states that the amount of political influence that politicians exert for an application is a function of political contributions made by the applicant and some vector of other relevant variables.

Since we do not observe political influence directly, we only have data on application approvals and contributions. This, however, gives us enough information to estimate the following reduced-form equation:

$$Approved_i = \gamma_1 Contribution_i + \boldsymbol{Y_i}\boldsymbol{\gamma} + \boldsymbol{X_i}\boldsymbol{\alpha} + \varepsilon_i. \tag{3}$$

Our model predicts that campaign contributions increase the likelihood of an application's approval. We hypothesize that the coefficient γ_1 is positive and statistically different from zero.

While an OLS model may show a positive correlation between campaign contributions to state legislators and the likelihood of CON application approval, such a correlation does not allow for an inference that there is a causal relationship between these two variables. The estimated coefficient on campaign contributions is likely going to be biased. Firms in our sample may make contributions to state candidates for reasons that have nothing to do with influencing these legislators. For instance, state legislators might share similar health policy positions with the applicant firm, and therefore these state legislators will try to influence the regulatory decisions made in their state, regardless of contributions from the applicant. This way of thinking suggests that the omitted variable, shared health policy positions, causes contributions to be correlated with the error term in the OLS regression. An alternative way of describing this situation is that contributions are endogenous in the CON approval regression. To the extent that this holds true, we would expect the coefficient on the contributions variable to be over-estimated.

However, it is possible that the bias may affect the contribution coefficient in the other direction. For instance, if applicants make contributions to legislators who share their policy positions but who might also oppose a particular CON application submitted by an applicant, then the OLS estimate will understate the true effect of contributions on approvals. Contributions may go to these legislators despite the fact that the legislator is exerting a negative influence on the CON regulators for this firm's application. Therefore, it is possible that the directional effect of the bias on the contributions coefficient may be ambiguous.

To address this endogeneity issue, and to estimate a causal effect of contributions on the likelihood of approval, we use instrumental variables. Our instrument for contributions to state candidates is contributions to federal legislators who are not from the same state as the firm being considered. For instance, for a firm making contributions from Virginia, the federal candidates instrument will only include members of the US House and US Senate that are not representatives of the state of Virginia. Campaign contributions to federal candidates are not going to influence CON application approvals because these legislators play no role in the appointment of the regulators, and therefore should exert no influence over them. However, many firms active in non-market activities such as the political process contribute to both federal and state candidates. Thus, the underlying degree to which firms are motivated to participate in the political process generates the correlation between state and federal contributions donated by firms. Our identification strategy assumes that contributions to federal candidates, excluding contributions to US representatives from the same state as the firm, do not influence regulatory decisions through the same channels as governors and state senators, who can successfully pressure state regulators to rule in an applicant's favor. Thus, we assume that a US senator from Oklahoma, for example, could not influence a Virginia regulatory decision, even if the senator wanted to exert influence.

III. Results

In table 1 we present the summary statistics. The application approval rate is the highest in Michigan at 77 percent, and lower in Georgia and Virginia, where the application approval rates are 57 percent and 51 percent, respectively. Focusing on contributions that were made within two years of a submission of an LOI, 56 percent of the applicant firms in Virginia had made contributions to either the governor or state senators. This statistic is lower in Michigan and

Georgia, where the percentage of applicant firms making contributions is 36 percent and 43 percent, respectively.

Table 2 (page 25) presents the OLS estimates from analyzing the effect of contributions on CON application approvals. For this table, we define contributions as those that are made within two years before or after a submission of an LOI. In table 2, the specifications in columns 1 and 3 measure contributions as an indicator of whether or not a firm contributed, and the specifications in columns 2 and 4 measure contributions as log of real contributions. In columns 1 and 2 of table 2, we estimate the bivariate linear probability model, and in columns 3 and 4, we include indicator variables for the CON application type and for the region and year of CON application submission. For Michigan, however, due to data availability, we do not control for application type, but only for region and year. All specifications report robust standard errors.

Across all specifications, the campaign contribution coefficients are statistically significant at the 1 percent level. The estimates presented with the bivariate regression have a slightly larger magnitude in Georgia and Virginia. However, the estimated coefficients do not change by much once we add control variables. The coefficient on campaign contributions has the greatest magnitude in Georgia, where having made a campaign contribution is associated with a 28.6 percent increase in application approvals (table 2, column 3). This magnitude of the correlation is slightly smaller in Virginia, where having made a campaign contribution is associated with a 24 percent increase in application approvals, and the smallest in Michigan, where the measured association between contributions and CON approvals is 9.2 percent. In column 4, where we analyze log contributions in regressions that include control variables, a 1 percent increase in the amount of firm campaign contributions is associated with a 3.7 percent increase in application approvals in Georgia, a 1 percent increase in Michigan, and a 3 percent

increase in Virginia. This means that controlling for variation in the application type, the region where additional proposed medical services were to be provided, and the year in which an LOI was submitted, we continue to find that there is a positive and statistically significant relationship between campaign contributions and CON application approvals.

The point estimates on the campaign contributions variables in table 2 are biased if the contributions variables are correlated with the error term. To control for this potential endogeneity issue, we use campaign contributions made by our sample firms to federal candidates as an instrumental variable.

We report the first stage of the instrumental variable regressions in table 3 (page 26). The dependent variable in columns 1 and 3 is coded 1 if a contribution was made to a state candidate, and 0 if no contribution was made. The independent variable in these columns is an indicator coded 1 if a contribution was made to an out-of-state federal candidate and 0 if no such contribution was made. In columns 2 and 4, the dependent variable is the natural log of real contributions to state candidates, and the independent variable is the natural log of real contributions made to out-of-state federal candidates. Like in the previous table, columns 1 and 2 report estimates for the bivariate model, and columns 3 and 4 include the control variables.

In table 3, in all specifications, the estimated campaign contribution coefficient is statistically significant at the 1 percent level. The estimated magnitudes on the contributions indicators are similar in Michigan across the bivariate and multiple regression models. In comparison, the magnitude of the contribution coefficient increases in Georgia and in Virginia when estimating the fixed effects model instead of the bivariate model. Column 3 of table 3 presents the estimated coefficient on the contribution indicator that includes control variables; it shows that having made a contribution to a federal candidate is associated with an approximately

56 percent increase in the likelihood that a firm contributed to either the governor or state senators in Michigan and Virginia. There is a 42 percent increase in the likelihood in Georgia.

Next we present the second stage of the instrumental variables regressions in table 4 (page 27). As in the previous tables, columns 1 and 3 measure state contributions as an indicator, and columns 2 and 4 measure contributions as the log of real contributions to state candidates. Columns 1 and 2 present the bivariate specification, and columns 3 and 4 present the multiple regression specification.

Across all states, the estimated coefficients on the contributions variable are positive and statistically significant at the 1 percent level in both the bivariate specification and when we include control variables. With respect to the estimated magnitude of the coefficients, when including controls, having made any contribution to the governor or state senators has an effect of increasing application approvals by 64 percent, 15 percent, and 32 percent in Georgia, Michigan, and Virginia, respectively. Likewise, for log contributions in the fixed effects model, a 1 percent increase in contributions by an applicant firm increases the chances of approval by 6.7 percent in Georgia, by 1.8 percent in Michigan, and by 3.6 percent in Virginia. The estimated coefficients are larger than what we found in the OLS regression for all three states studied.

The previous results are based on measuring contributions that were made within two years before or after the submission of an LOI. However, these results might be sensitive to how the timing of the contributions is specified. Thus in an alternative specification, we test whether the previously reported results are sensitive to changes in the timing window. To implement this robustness test, we measure contributions made within a one-year period and a six-month period before and after the submission of an LOI. Additionally, we measure contributions made over the entire period of the data analyzed in this paper.

Table 5 (page 28) presents the results of these robustness tests. In each specification, the bivariate estimates for the contribution indicator are presented for each time interval that is analyzed. Likewise, table 6 (page 29) presents the bivariate results for the log contributions variable in each time interval that is analyzed. Each column in each of the tables presents a different time window in which contributions were made to the in-state candidates. Column 1 presents contributions made over the entire period studied, column 2 presents contributions made within two years before and after the submission of an LOI, column 3 presents contributions made within one year before and after the submission of an LOI, and column 4 presents contributions made within a six months before and after the submission of an LOI.

In all specifications in table 5 and table 6, the point estimates on the contribution variables are statistically significant at the 1 percent level. These results show that the statistical significance of our findings is robust to a number of alternative specifications of the contributions' timing window. Even though these estimates are based on varying time windows, the point estimates only vary slightly across the different specifications. For instance, in Virginia, the point estimate indicating the effect of having made a contribution within two years of an LOI submission on the likelihood that an application is approved is about 28 percent. With a timing window of one year, the point estimate falls to 25 percent, and reducing the timing window to six months, the estimate decreases further, to 23 percent. Generally, the rest of the results in all states we analyzed are not sensitive to the specification of the timing window.

IV. Conclusion

As of 2017, 35 states and the District of Columbia have CON regulations. These regulations grant market power to firms who can successfully get their CON applications approved. This

generates incentives for firms to make campaign contributions to politicians who can exert political influence over the regulatory bodies that make decisions on CON applications.

Our research shows that there is a general positive relationship between campaign contributions and CON application approvals. In each state, the estimated coefficient on contributions is statistically significant for all specifications. Additionally, this remains true as we vary the timing of the contribution window, showing that the statistical significance is not sensitive to how we specify the timing window. However, there is reason to doubt that this OLS estimation can be interpreted causally. Since contributing may be correlated with the error term, the estimates on the contribution variable may be biased and therefore only provide correlational evidence for the relationship between campaign contributions and application approvals.

To address this endogeneity issue, we use contributions to federal candidates as an instrument for contributions to state candidates, since federal candidates should not influence application decisions through the same channels as governors and state senators. We still find that the relationship between contributions and approvals is highly statistically significant. However, these results should be treated cautiously. There may be other firm level characteristics correlated with federal contributions that lead to increased approvals that we cannot account for in our data. Additionally, there may be other sources of endogeneity that we could not account for in this study. For instance, firms that are likely to see an application approval independent of their contribution behavior are going to have less of an incentive to contribute. It is only for more contentious applications that firms will make contributions to candidates in order to influence the outcome, and therefore it is likely that we are underestimating the true effect of contributions on approvals in this case.

Further work could be done by devising alternative identification strategies. We have established that there is a difference between contributions to governors and state senators, and contributions to other in-state candidates in the three states that we have studied, by identifying a way in which the governor and state senate can wield direct influence over regulators. However, CON institutions vary across states, and therefore, we might expect different contribution behaviors in the many different states with CON laws because the mechanisms by which contributions influence decisions are not the same.

Lastly, there are only a limited number of studies analyzing the effects of contributions on regulatory outcomes as compared to outcomes in legislatures. Further work can be done identifying potential mechanisms through which political contributions may impact regulatory outcomes in other industries besides the healthcare industry, and analyzing whether or not contributions influence outcomes in these alternative industries.

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Table 1. Summary Statistics

State	Variable	Observations	Mean	Standard deviation	Min.	Max.
GA	Approved	477	0.57	0.50	0	1
	Contribution Indicator Full	477	0.63	0.48	0	1
	Contribution Indicator Two Year	477	0.43	0.50	0	1
	Contribution Indicator One Year	477	0.38	0.49	0	1
	Contribution Indicator Half Year	477	0.31	0.46	0	1
	Contribution Full	477	17,049.70	24,013.05	21.07	93,395.79
	Contribution Two Year	477	6,591.66	10,306.01	11.45	58,442.78
	Contribution One Year	477	3,860.08	6,738.66	10.52	56,530.27
	Contribution Half Year	477	2,343.15	5,466.48	11.45	45,922.46
	Federal Contribution Indicator	477	0.55	0.50	0	1
	Federal Contribution	477	11,936.84	28,164.37	1.22	163,136.97
MI	Approved	1,630	0.77	0.42	0	1
	Contribution Indicator Full	1,630	0.44	0.50	0	1
	Contribution Indicator Two Year	1,630	0.36	0.48	0	1
	Contribution Indicator One Year	1,630	0.28	0.45	0	1
	Contribution Indicator Half Year	1,630	0.23	0.42	0	1
	Contribution Full	1,630	4,132.80	5,209.89	14.60	19,812.62
	Contribution Two Year	1,630	1,450.03	1,672.98	2.06	7,483.22
	Contribution One Year	1,630	1,065.93	1,097.34	2.06	5,814.37
	Contribution Half Year	1,630	707.76	693.58	22.98	4,419.79
	Federal Contribution Indicator	1,630	0.51	0.50	0	1
	Federal Contribution	1,630	21,570.41	50,615.85	0.84	406,539.82
VA	Approved	2,026	0.51	0.50	0	1
	Contribution Indicator Full	2,026	0.66	0.47	0	1
	Contribution Indicator Two Year	2,026	0.56	0.50	0	1
	Contribution Indicator One Year	2,026	0.48	0.50	0	1
	Contribution Indicator Half Year	2,026	0.38	0.49	0	1
	Contribution Full	2,026	19,898.91	21,419.28	32.19	149,863.18
	Contribution Two Year	2,026	4,578.03	5,538.42	19.71	31,514.00
	Contribution One Year	2,026	2,722.80	3,542.04	11.26	23,547.25
	Contribution Half Year	2,026	1,687.33	2,347.92	10.69	19,587.16
	Federal Contribution Indicator	2,026	0.59	0.49	0	1
	Federal Contribution	2,026	124,545.75	429,278.43	2.16	2,391,381.93

Note: Data from Georgia are from 2010–2015; data from Michigan, from 2011–2015; and data from Virginia, from 1996–2015.

Table 2. Effect of Contributions to In-State Candidate on Approvals

	OLS bivariate model		OLS including control variables	
	(1)	(2)	(3)	(4)
GA	0.345***	0.043***	0.286***	0.037***
	(0.042)	(0.005)	(0.058)	(0.007)
	477	477	466	466
MI	0.086***	0.010***	0.092***	0.010***
	(0.021)	(0.003)	(0.023)	(0.004)
	1630	1630	1630	1630
VA	0.283***	0.035***	0.239***	0.030***
	(0.021)	(0.003)	(0.026)	(0.003)
	2026	2026	1841	1841
FE	No	No	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Table reports coefficient estimate, robust standard error, and number of observations. Dependent variable is an indicator for application approval, coded 1 if the application is approved and coded 0 otherwise. Columns 1 and 3 report contribution indicators, coded 1 if a contribution was made to a governor or state senator, and 0 otherwise. Columns 2 and 4 report log contributions made to a governor or state senator. In columns 1 and 2, bivariate models are reported on. In columns 3 and 4 for GA and VA, we introduce fixed effects for application region, application type, and year the application was submitted. For MI, we only introduce year and county fixed effects. Robust standard errors are given in parentheses.

Table 3. First Stage of Instrumental Variable Regression

	OLS bivariate model		OLS including control variables	
	(1)	(2)	(3)	(4)
GA	0.485***	0.512***	0.423***	0.453***
	(0.039)	(0.037)	(0.054)	(0.054)
	477	477	466	466
MI	0.579***	0.472***	0.567***	0.454***
	(0.017)	(0.014)	(0.018)	(0.015)
	1630	1630	1630	1630
VA	0.577***	0.481***	0.559***	0.491***
	(0.019)	(0.013)	(0.022)	(0.016)
	2026	2026	1841	1841
FE	No	No	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Table reports coefficient estimate, robust standard error, and number of observations. The dependent variable in columns 1 and 3 is an indicator variable for contributions to state candidates, coded 1 if a contribution was made and coded 0 otherwise. The dependent variable in columns 2 and 4 is the log of real contributions to state candidates. Columns 1 and 3 report federal contribution indicators, coded 1 if a contribution was made to a federal candidate, and 0 otherwise. Columns 2 and 4 report log contributions made to federal candidates. In columns 1 and 2, bivariate models are reported on. In columns 3 and 4 for GA and VA, we introduce fixed effects for application region, application type, and year the application was submitted. For MI, we only introduce year and county fixed effects. Robust standard errors are given in parentheses.

Table 4. Second Stage of Instrumental Variable Regression

	OLS bivariate model		OLS including control variables	
	(1)	(2)	(3)	(4)
GA	0.581***	0.064***	0.643***	0.067***
	(0.091)	(0.010)	(0.150)	(0.016)
	477	477	466	466
MI	0.141***	0.016***	0.151***	0.018***
	(0.032)	(0.004)	(0.035)	(0.004)
	1630	1630	1630	1630
VA	0.340***	0.040***	0.321***	0.036***
	(0.038)	(0.004)	(0.046)	(0.005)
	2026	2026	1841	1841
FE	No	No	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Table reports coefficient estimate, robust standard error, and number of observations. The dependent variable is an indicator for application approval, coded 1 if the application is approved and coded 0 otherwise. Columns 1 and 3 report contribution indicators, coded 1 if a contribution was made to a governor or state senator, and 0 otherwise. Columns 2 and 4 report log contributions made to a governor or state senator. In columns 1 and 2, bivariate models are reported on. In columns 3 and 4 for GA and VA, we introduce fixed effects for application region, application type, and year the application was submitted. For MI, we only introduce year and county fixed effects. Robust standard errors are given in parentheses.

Table 5. Robustness Check—Contribution Indicator

	Full	Two year	One year	Half year
GA	0.433***	0.345***	0.346***	0.349***
	(0.043)	(0.042)	(0.042)	(0.043)
	477	477	477	477
MI	0.065***	0.086***	0.098***	0.085***
	(0.021)	(0.021)	(0.022)	(0.023)
	1630	1630	1630	1630
VA	0.286***	0.284***	0.250***	0.226***
	(0.022)	(0.021)	(0.022)	(0.022)
	2026	2026	2026	2026

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Table reports coefficient estimate, robust standard error, and number of observations. The dependent variable is an indicator for application approval, coded 1 if the application is approved and coded 0 otherwise. All columns report bivariate estimates for indicator variable that is coded 1 if a contribution is made to a governor or state senator, and 0 if otherwise. Robust standard errors are given in parentheses.

Table 6. Robustness Check—Log Contribution

	Full	Two year	One year	Half year
GA	0.048***	0.043***	0.045***	0.050***
	(0.005)	(0.005)	(0.005)	(0.006)
	477	477	477	477
MI	0.008***	0.010***	0.014***	0.013***
	(0.003)	(0.003)	(0.003)	(0.004)
	1630	1630	1630	1630
VA	0.030***	0.035***	0.033***	0.032***
	(0.002)	(0.003)	(0.003)	(0.003)
	2026	2026	2026	2026

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Table reports coefficient estimate, robust standard error, and number of observations. The dependent variable is an indicator for application approval, coded 1 if the application is approved and coded 0 otherwise. All columns report bivariate estimates for log contributions made to governor or state senator. Robust standard errors are given in parentheses.