

Letter

Campaign Contributions and Roll-Call Voting in the U.S. House of Representatives: The Case of the Sugar Industry

KEVIN GRIER *Texas Tech University, United States*

ROBIN GRIER *Texas Tech University, United States*

GOR MKRTCHIAN *Texas Tech University, United States*

The question of whether campaign contributions buy roll-call votes is both important and contentious. Although researchers often find positive correlations between the two, it is difficult to conclude that these correlations are causal because interest groups may be simply giving to their supporters rather than attempting to change members' voting behavior. In this paper we use a pair of votes on antisugar subsidy amendments to investigate the causal effects of contributions on voting. With multiple votes we can control for the supportiveness of the district or member by using fixed effects. We find strong evidence that changing contribution patterns caused significant changes in the probability that a district or member would vote to support the sugar industry (i.e., against the amendments). Our results hold in both district and incumbent fixed effects models and also when we redefine the time window for measuring relevant contributions.

INTRODUCTION

The U.S. sugar program has been remarkably successful over a long period in providing sizeable benefits to a concentrated group at the expense of the American public. But in 2013, an outsider amendment to seriously reduce those benefits almost passed in the House. Five years later in 2018, during deliberations over the next farm bill, House members voted on a similar amendment. This time, though, it lost handily.

We document the contribution pattern of the sugar industry between the two votes. We show that sugar firms greatly increased their campaign contributions to House members. Between 2013 and 2018, sugar contributions to incumbents rose by more than 50% in real terms. We further show, using both district and incumbent fixed effects logit models, that increased contributions significantly increased the probability that the representative from that district would vote against the reform.

The question of whether money buys votes is both important and contentious. It is common to find positive correlations between interest group contributions and

favorable votes, but it is much harder to make the case that those correlations represent a causal relationship. The main difficulty is that interest groups may be giving to members that are already supportive of their cause and not giving to try to change voting behavior. However, studying repeat voting on the same issue allows us to take existing supportiveness into account. By using fixed effects, we control for unobservable factors that are constant over time. Thus, we only use the change in contributions within a district or for a given member to identify the effect of contributions on changes in voting. Our modeling strategy allows us to claim that any effect we uncover is causal and not confounded by a district's inherent supportiveness of the issue.

In logit fixed effects models, the variation used to identify our coefficients of interest come from districts where the vote switched between the two periods. There were 93 such districts in our data. As a robustness test, we also restrict the sample to the 53 cases where the same incumbent member switched their votes on the two amendments. We show that sugar money, time in office, and member ideology significantly affected the probability of voting for reform. More money, more seniority, and more liberal ideology all made it less likely that a member would vote in favor of reform. As further robustness tests, we measure relevant contributions in several alternative time windows, finding that sugar spending still significantly lowers the probability of voting for reform in these models.

Several papers are methodologically similar to ours. Anzia and Berry (2011) use district fixed effects to study what happens when a male congressperson is replaced by a woman, and Berry, Burden, and Howell (2010) use district fixed effects in their study of the distribution of

Kevin Grier , Professor, Department of Political Science, Texas Tech University, United States, kevin.grier@ttu.edu.

Robin Grier , Professor, Department of Agricultural & Applied Economics, Texas Tech University, United States, robin.grier@ttu.edu.

Gor Mkrtchian , Graduate Fellow, Department of Political Science, Texas Tech University, United States, gor.mkrtchian@ttu.edu.

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federal spending. Rubenzer (2011) uses district fixed effects to study how the Cuban diaspora influences U.S. foreign policy. Finally, Stratmann (2002) uses incumbent fixed effects to study the effect of interest group contributions on financial services legislation.

Substantively, there is a vast literature on the relationship between interest group contributions and roll-call votes.¹ In an influential paper, Ansolabehere, De Figueiredo, and Snyder (2003) survey 40 empirical papers and conclude that there is little evidence that interest group contributions affect roll-call votes. They argue that political contributions, even by interest groups, are consumption behavior rather than an investment to raise future profits.² However, both Stratmann (2005) and Roscoe and Jenkins (2005) find evidence against Ansolabehere, De Figueiredo, and Snyder's conclusion of no relationship between money and votes.³

We focus on a pair of votes on antisugar subsidy amendments affecting a concentrated industry (sugar) that receives large subsidies.⁴ We show (1) that the sugar industry reacted to almost losing the first vote by dramatically increasing contributions and (2) that those increased contributions helped to cause a more comfortable victory for sugar interests the second time around.⁵

In what follows, we give a brief history of the U.S. sugar program, describe the 2013 and 2018 amendments, and document how sugar interests responded to near defeat in 2013 by dramatically increasing contributions. We then describe our statistical model and the data we use and present our results.

BACKGROUND

The U.S. government has a long history of protecting the domestic sugar industry, dating back to import tariffs imposed in 1789. In the modern era, Farm Bills have consistently offered substantial protection to the sugar industry since 1981. The specifics include production and processing quotas, loan programs, and tariff rate quotas with an extremely high tariff for any imports over the allotted quota. Beghin and Elobeid (2015) estimate that sugar subsidies result in an annual loss to U.S. consumers of 3–3.5 billion dollars.

The 2013 and 2018 amendments on sugar subsidization tried to roll back important elements of the sugar program. In 2013, Representative Joseph Pitts sponsored an amendment scaling back the sugar program. It

sought to amend the existing sugar program by changing price supports, marketing allotments, and import quotas. It would also have ended the sugar-for-ethanol part of the program. The amendment failed narrowly by a vote of 206–221 on June 20, 2013.⁶

Five years later, Representative Virginia Foxx proposed a similar amendment rolling back the sugar program.⁷ It also called for changes to price supports and import quota provisions as well as a repeal for the sugar-for-ethanol payments. The 2018 vote failed by the wide margin of 137–278 on May 17, 2018, faring much worse than the 2013 attempt in the House.

DATA AND MODEL

We want to isolate a possible causal effect of money on voting for sugar reform. Because the 2013 and 2018 amendments were quite similar, we treat them as repeated votes on the same issue and then use district fixed effects to eliminate any unobserved district level confounders.

This empirical approach eliminates the influence of any district that voted the same way in both cases, meaning that our identifying variation comes from how changing contribution levels affect changes in the vote by the district's representative. There are 93 vote-switching districts in our data. We used GovTrack.us, a website that records votes for all bills and amendments in the U.S. Congress, to determine how House members voted on the amendments.⁸

We obtained raw contributions data from the Center for Responsive Politics (2021) and then aggregated contributions by all sugar industry political action committees (PACs) and contributions over \$200 by individuals (or their family members) who work in the sugar industry.⁹ We thus obtain a total sugar industry contribution number for all House incumbents in the 113th and 115th Congresses.

We also investigate two additional channels that interest groups can use to give money to House members. First, many members have Leadership PACs and donors can contribute to these PACs. Members can use this money for travel and to hire staff, among other things. There are also the so-called Super-PACs, and we looked at the ones that focused on a single candidate (where the connection between donor and beneficiary is clear). We found no sugar money in the donations to any of our 53 vote-switching members' Leadership PACs, and we found only one sugar contribution to

¹ See, for example, Hall and Wayman (1990), Powell and Grimmer (2016), Regens and Gaddie (1995), Wawro (2001), and Wright (1985).

² Gordon, Hafer, and Landa (2007) present some evidence for the investment point of view.

³ Matter, Roberti, and Slotwinski (2019) and Fowler, Garro, and Spenkuch (2020) are interesting recent papers that use discontinuities to help identify the effects of contributions on policy.

⁴ "Clean" in the sense that the votes were comparable and were only on sugar subsidies.

⁵ The sugar industry may have paid more than the minimal amount necessary to win the second vote, which is consistent with Groseclose and Snyder (1996), who find that if an interest group does not buy a large enough supermajority, the other side will attack and cause them to lose the vote.

⁶ H. Amdt. 227 (Pitts) to H.R. 1947: Amendment sought to reform the federal sugar program.

⁷ H. Amdt. 605 (Foxx) to H.R. 2: Amendment sought to modernize and reform the sugar program by removing barriers to domestic production and implementing market reforms.

⁸ <https://www.govtrack.us/congress/votes/113-2013/h281> and <https://www.govtrack.us/congress/votes/115-2018/h193>.

⁹ Contributors giving less than \$200 do not have to provide the information needed to tie them to an interest group. We thank the Center for Responsive Politics for their assistance in providing us disaggregated data on contributions and for the work they have done for over 20 years in creating industry codes and categorizing individual contributions.

any single-candidate Super PAC that supported one of these vote-switching incumbents. So, although it is true that PAC money is not in general the majority source of funds for House members, we are confident that we are capturing most sugar contributions for the periods and members we study.

We control for the ideology and seniority of the district's representative. Both these measures come from the American Conservative Union (2021), which ranks legislators by ideology on a scale of 1–100, with higher scores representing more conservative legislators. We use this ranking as our primary measure of ideology, though we also use Lewis et al.'s (2021) DW-Nominate ranking as a robustness test. Appendix Table A.1 online contains summary statistics.

We also include an array of district-level demographic and economic variables including the percentage of the population over the age of 65, percentage of the population with a bachelor's degree, median income, and the poverty rate.¹⁰ These data come from the U.S. Census Bureau (2021). Changes in these variables are meant to represent changes in the interests of voters in the districts that may affect legislator voting. We also include a dummy variable for membership on the House agriculture committee, as these people wrote the bill that the amendments pertain to, and the composition of the committee changes between the two votes (Grier, Grier, and Mkrtchian 2022).

We do not include antisugar contributions because there is very little such activity. The obvious source of opposition would come from sugar users. However, many of these industries have long adjusted to the effects of sugar subsidies by moving production overseas or substituting corn syrup for sugar. The three largest U.S. candy companies (Hershey, Mars, and Mondelez International) combined gave \$152,900 in 2018 to House incumbents, whereas the sugar industry contributed \$5,239,896 to House incumbents that year.¹¹ The largest losers are U.S. consumers, but the diffuse nature of these costs (roughly \$10 per person per year) make organized consumer opposition unlikely.

RESULTS

We aggregate sugar contributions to House incumbents from one year before the vote occurred through the end of the calendar year of the vote. There are good reasons to include money that comes in after the vote. If we think of these contributions as transactions, there is nothing to say that the buyer must move first, as Ansolabehere, De Figueiredo, and Snyder (2003) point

out. Depending on relative bargaining power, the interest group may be able to demand the member deliver the vote before delivering the money. However, in our robustness section below, we consider alternative time windows, including one that does not use contributions after the vote occurred. We employ a district fixed effects logit model, which controls for confounders and limits our analysis to the 93 districts where the vote outcome changed between the two amendments. We find that increased sugar contributions significantly reduce the probability of voting for the reform amendment, whereas a more liberal (i.e., lower) ideology score, greater seniority, and being on the agriculture committee are associated with a significantly lower probability of voting for reform. Column 1 in Table 1 shows these results, and Figures 1, 2, and 3 plot the marginal effects of our main variables.¹²

Figure 1 plots the marginal effects of sugar money on the probability of voting in favor of reforming the sugar program. The solid line represents the estimated effects, the dotted lines describe the 95% confidence intervals, and the gray shading shows the histogram of sugar contributions. At zero contributions, the probability of voting for the reforms is around 0.75; \$15,500 in sugar contributions brings that probability down to around 0.20. In this model, which controls for unobserved district confounders and estimates the coefficients based only on districts that changed votes, sugar money is highly effective in moving votes in favor of killing the proposed reforms.

Figure 2 plots the marginal effects of conservative ideology on reform voting. The effect is monotonically positive across the range of observed voting scores. The results are the same if we use the DW-Nominate score (except the slope is reversed because conservatives get lower numbers than liberals in this index). A dummy variable for being a Republican has a positive and significant coefficient, but when we include it with either ideology score, the party dummy is insignificant. A legislator with a score of 20 (i.e., a moderate Democrat) has a probability of voting for reforming the sugar program of around 0.25. A moderate Republican (score of 70) has around a 0.65 probability of voting in favor of reforming the sugar program.

Figure 3 shows the marginal effects of tenure in office on voting for sugar reform. Junior legislators are likely to vote in favor of reform, but seniority steadily erodes that probability. For example, a nine-term legislator's probability of voting for the reform is only around 0.35. We cannot distinguish between whether seniority erodes idealism and whether it creates a more sophisticated understanding of the general equilibrium effects of gutting sugar subsidies.¹³

¹⁰ We experimented with other controls (unemployment, percentage rural) and their inclusion or exclusion does not affect our main results. Our main results on spending are insensitive to the controls included or excluded.

¹¹ Candy companies undertook significant reported lobbying expenditures, but despite being close to the level of sugar lobbying in 2013, by 2018 sugar interests outspent them by almost 2 to 1 (source: authors calculations based on Center for Responsive Politics lobbying reports).

¹² We use the Marhis package for Stata to produce these figures. We calculate the marginal effect at 50 different, equally spaced values of the variable under study using the other covariates as they are observed there. The right-hand vertical axis shows the percentage of the distribution of contributions that occur in each bin of the background histogram.

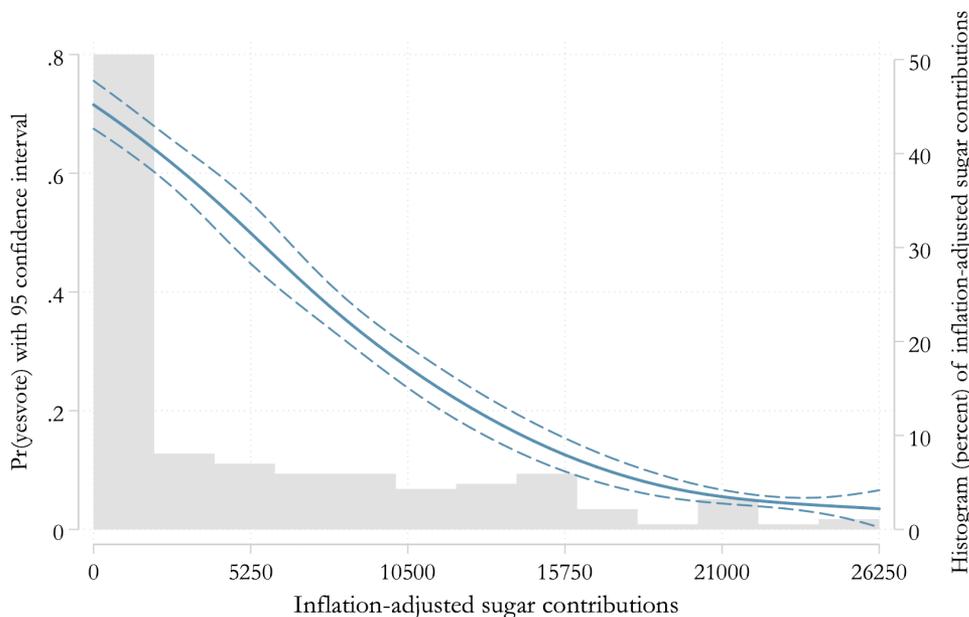
¹³ Longer tenure may also mean that legislators are looking more closely at postcongressional employment, and the "revolving door"

TABLE 1. The Determinants of Voting in Favor of Sugar Reform

Variable	District fixed effects coefficient (ρ)	Incumbent fixed effects coefficient (ρ)
Inflation-adjusted sugar contributions	-0.0006*** (0.001)	-0.0004*** (0.001)
ACU	0.20*** (0.001)	0.06 (0.53)
Tenure	-0.30*** (0.001)	-1.43*** (0.001)
Poverty rate	2.19*** (0.001)	2.24** (0.02)
% w/ bachelor's degree	1.20* (0.10)	0.59 (0.20)
Median income	0.0001 (0.67)	0.0006 (0.19)
% population > 65 years old	-1.88** (0.04)	-.38 (0.83)
Agriculture committee	-36.3*** (0.001)	-39.3*** (0.001)
Constant	-20.9 (.23)	-63.1*** (0.01)
Pseudo R^2	0.745	0.721
Observations	186	106

Note: Estimation method is Logit. The dependent variable equals 1 for "aye" votes on the reform amendments (votes against sugar interests) and 0 otherwise. The probability values were calculated using robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

FIGURE 1. Effect of Sugar Money on Voting for Sugar Reform



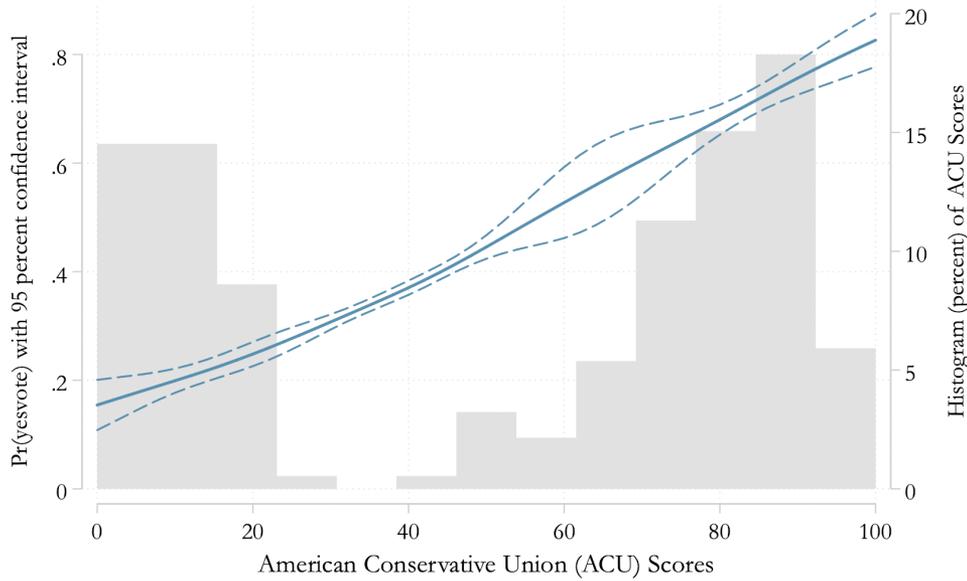
Note: The solid line shows the marginal effects of sugar contributions on the probability of voting for sugar reform. The dotted lines represent the 95% confidence interval.

When we restrict our sample to be only incumbents who voted both times but changed their vote, we

to working for agricultural interests may at the margin move them to vote in favor of industry interests.

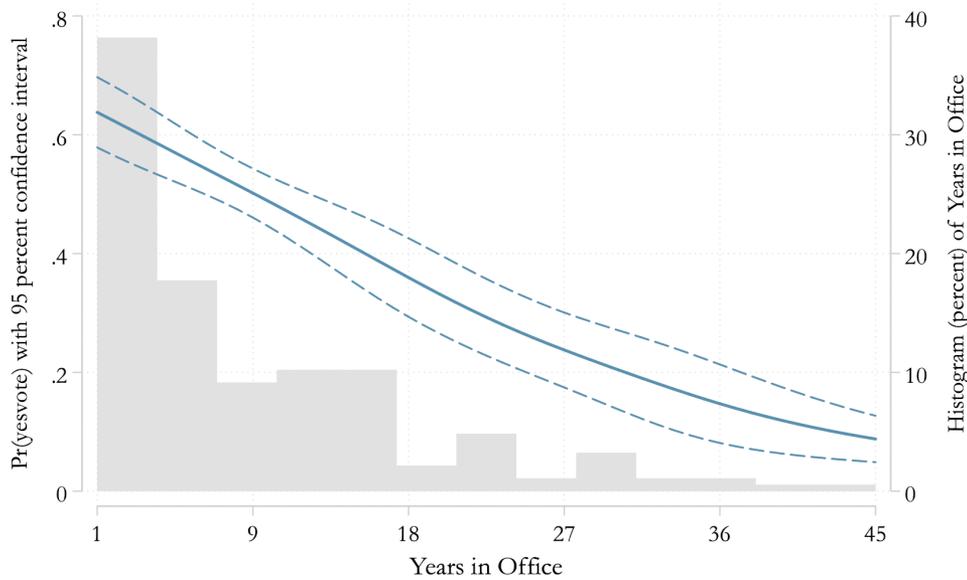
continue to find that sugar contributions significantly reduce the probability of voting for reform, as does longer tenure and being on the agriculture committee. However, the effects of ideology become insignificant. Column 2 in Table 1 presents these results.

FIGURE 2. Effect of Ideology on Voting for Sugar Reform



Note: The solid line shows the marginal effects of ideology on the probability of voting for sugar reform. The dotted lines represent the 95% confidence interval.

FIGURE 3. Effect of Tenure on Voting for Sugar Reform



Note: The solid line shows the marginal effects of seniority on the probability of voting for sugar reform. The dotted lines represent the 95% confidence interval.

Overall, we find that both legislator characteristics (ideology, tenure) and interest group money significantly influenced voting on reforming the U.S. sugar program. Given that these results come from a district fixed effects logit that uses only districts where the vote changed between 2013 and 2018, we argue that these results are more than just interesting partial

correlations. We have found a causal effect of money on voting in this case.

Although a district-by-district discussion of contributions and outcomes is beyond the scope of this paper, we did look at the sugar industry's strategy. We find that they concentrated their increased giving on districts where the incumbent who voted for reform

TABLE 2. Vote Changers Summary

Direction	# of Cases	Change in contributions
A. Districts with same incumbent for both votes (53)		
Aye to No	47	+ 67%
No to Aye	6	-80%
B. Districts with different incumbent for the two votes (40)		
Aye to No	32	+348%
No to Aye	8	-38%

Note: Aye is a vote in favor of sugar reform (against sugar interests), and 29 of the 32 districts in Row 1 of Panel B had members from the same party for both votes.

TABLE 3. Coefficients of Inflation-Adjusted Sugar Contributions for Different Time Windows around the Votes

Time window	District fixed effects coefficient (<i>p</i>)	Incumbent fixed effects coefficient (<i>p</i>)
1/1/13–12/31/13 and 1/1/18–12/31/18	-0.0006*** (0.001)	-0.0005*** (0.001)
6/20/12–6/20/13 and 5/17/17–5/17/18	-0.0006*** (0.001)	-0.0003*** (0.003)
Observations	186	106

Note: Estimation method is Logit. The dependent variable equals 1 for “aye” votes on the reform amendments (votes against sugar interests) and 0 otherwise. The probability values were calculated using robust standard errors. **p* < 0.10, ***p* < 0.05, ****p* < 0.01.

in 2013 was no longer in office in 2018. There are 32 cases where the new incumbent voted in the opposite way (against reform). Of these cases, the incumbent was of the same party 29 times. Contributions to these 32 increased by around 300%. This makes sense: the sugar industry is focusing on more junior legislators, who generally need the money more, and does not have to convince incumbents to change their previously recorded votes. In comparison, of the 53 incumbents who changed their vote, 47 first voted for reform in 2013 then against reform in 2018. Their sugar contributions increased by around two-thirds. Table 2 presents these findings, along with information about votes that switched from No to Aye.¹⁴

ROBUSTNESS

Here we consider alternative time windows for measuring the sugar contributions relevant for the vote.

¹⁴ This fight over sugar was a kind of rank-and-file rebellion against the leadership. The authors of the amendments were outsiders (not in the leadership or on the agriculture committee) and the agriculture committee leadership was against the reforms. No members of the House leadership or agriculture committee leadership changed their votes. It also appears that being on the agriculture committee made a member much less likely to support reform. The sugar industry focused their increased contributions on rank-and-file members, who then dropped their support of the reforms between the two votes.

The first window is comprised of contributions from the calendar years the votes occurred (2013 and 2018). The second window includes the 12 months before each vote occurred up to the date of the vote (6/20/12 to 6/20/13 and 5/17/17 to 5/17/18). Table 3 shows the coefficients on sugar contributions for these alternative windows. Column 1 gives the results from district fixed effects models; column 2 reports results from our incumbent fixed effects models. The coefficients are always negative and significant at the 0.01 level, using either model, reinforcing the main results. Appendix Table A.2 online presents the full regressions.¹⁵

CONCLUSION

The literature on the effects of money on roll-call voting is mixed at best. Here we exploit the opportunity afforded from repeat votes on the same issue to control for unobserved factors, like the districts overall supportiveness of the policy, to isolate a causal effect of money on voting.

We show that in the case of sugar, a concentrated industry that receives substantial subsidies, increased

¹⁵ When we started this project, we were using the sugar contributions to House members as aggregated by the Center for Responsive politics over House election cycles. Going to individual contributions allowed us to create these flexible windows. See Appendix Table A.3 online for our original results and a brief discussion.

contributions caused a significant change in the probability of voting against reform. This result holds whether we use vote changes at the district level or at the member (incumbent) level and is robust to changes in the time window used for measuring relevant contributions.

Our results can help to make some sense of the mixed evidence on whether political contributions matter for legislative voting. Our view of the empirical literature is that papers looking at broad measures, like business PAC contributions and business interest group ratings, do not find much when they include district or incumbent fixed effects. On the other hand, papers like ours that examine focused issues where the economic interest is apparent do tend to find a positive relationship, even controlling for district fixed effects. The above is a broad generalization and does not accurately describe every paper in the literature, but we believe it is a good first pass for making sense of the disparate results.

SUPPLEMENTARY MATERIALS

To view supplementary material for this article, please visit <http://doi.org/10.1017/S0003055422000466>.

DATA AVAILABILITY STATEMENT

Research documentation and data that support the findings of this study are openly available at the American Political Science Review Dataverse: <https://doi.org/10.7910/DVN/21FZR9>.

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CONFLICT OF INTEREST

The authors declare no ethical issues or conflicts of interest in this research.

ETHICAL STANDARDS

The authors affirm this research did not involve human subjects.

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