



# Oil and gas companies invest in legislators that vote against the environment

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**Do campaign contributions from oil and gas companies influence legislators to vote against the environment, or do these companies invest in legislators that have a proven antienvironmental voting record? Using 28 y of campaign contribution data, we find that evidence consistently supports the investment hypothesis: The more a given member of Congress votes against environmental policies, the more contributions they receive from oil and gas companies supporting their reelection.**

climate change | campaign contributions | Congress | antienvironment

The role of money in politics has long been a focus of research in political science (1, 2). One explanation for campaign contributions to Congress is to buy influence (i.e., the “influence hypothesis”). That is, companies contribute to the campaigns of those running for Congress with the expectation that those candidates, if elected, will vote in ways aligned with the interests of the companies.

For example, in an analysis of trade policy, Baldwin and Magee (3) concluded that campaign contributions influenced elected officials’ votes on the North American Free Trade Agreement and the Uruguay Round Agreement. Furthermore, recent experimental research shows that campaign contributions can be used to purchase access to congressional officials (4).

On the other hand, other research often finds that, rather than attempting to influence votes, interested parties contribute the most to legislators that have policy positions that are already aligned with the interested party (5, 6). Similarly, in their extensive review of theories of lobbying, Hall and Deardorff (7) argue that interested parties do not necessarily attempt to change the minds of undecided or opposing legislators but instead support aligned legislators in fulfilling their policy goals (i.e., the “investment hypothesis”; also see ref. 8).

The influence (or investment) of money in politics has taken on new importance in the United States with the *Citizens United versus Federal Election Commission* Supreme Court decision in 2010. With the *Citizens United* decision, the court ruled that the First Amendment to the US Constitution protects independent spending for political communications by for-profit corporations, nonprofit corporations, and labor unions.

Large corporations have taken full advantage of this “money as speech” court decision. In particular, we focus here on oil and gas companies, who contributed more than \$84 million to candidates running for the US Congress in 2018 (9). This is more than a twofold increase since the *Citizens United* decision in 2010, when oil and gas companies contributed approximately \$35 million to candidates. While the absolute value of these contributions may seem relatively small, the doubling is noteworthy because it occurred in conjunction with the allowance of unlimited election spending by corporations and labor unions through the establishment of “independent expenditure-only committees,” or Super PACs. Thus, it is important to investigate how this money may influence legislators’ voting behavior on environmental issues.

The difficulty in assessing causal claims about influence or investment is the inability to randomly assign campaign contributions or congressional votes, leading most studies to rely on

cross-sectional data. However, some methods increase confidence in causal explanations to the extent that they can establish correlation, temporal precedence, and distinguish between competing explanations. Such a technique is cross-lagged panel analysis (e.g., ref. 10). This enables analyses of changes in congressional votes as a function of contributions to campaigns from the preceding years, and vice versa. Here, we use cross-lagged panel analysis to evaluate whether the data support the influence hypothesis, investment hypothesis, or both. To do so, we analyzed 14 pairs of consecutive election cycles (1990 to 2018). To test these hypotheses, we gathered data on campaign contributions from the Center for Responsive Politics and matched it with congressional voting records coded as being either in favor of or against environmental policies, according to the League of Conservation Voters (LCV). We collected all possible records on both variables from 1990 to 2018.

Results consistently support the investment hypothesis. In 13 out of 14 analyses, lower LCV scores (i.e., more anti-environmental votes) in one election cycle predicted significantly increased contributions in the following election cycle (Fig. 1, *Left*). For example, the strongest result was observed for the 2016 election: For every additional 10% of congressional votes against the environment in 2014, a legislator would receive an additional \$5,400 in campaign contributions from oil and gas companies in 2016 ( $b = -0.54$ ,  $SE = 0.12$ ;  $P < 0.001$ ; 95% CI  $[-0.77, -0.31]$ ). This is an especially strong relationship considering that many elected officials vote against environmental policies nearly 100% of the time, thereby compounding the cycle of antienvironmentalism and increasing rewards in the form of contributions.

There were 2 of 14 analyses that were significant in support of the influence hypothesis, but the magnitude of the effects was small (Fig. 1, *Right*). For example, the strongest relationship in favor of the influence hypothesis shows that, for every \$10,000 received in contributions in 2004, a legislator would be expected to vote against environmental policies an additional 1% of the time in 2006 ( $b = -0.11$ ,  $SE = 0.04$ ;  $P = 0.009$ ; 95% CI  $[-0.21, -0.02]$ ).

To compute a more precise estimate of the support for the investment versus the influence hypothesis, we conducted two random-effects metaanalyses. Results show strong metaanalytic support for the investment hypothesis such that, on average, every 10% decrease in LCV score in one election cycle predicted an additional \$1,700 in campaign contributions from oil and gas companies in the following election cycle ( $b = -0.17$ ; 95% CI

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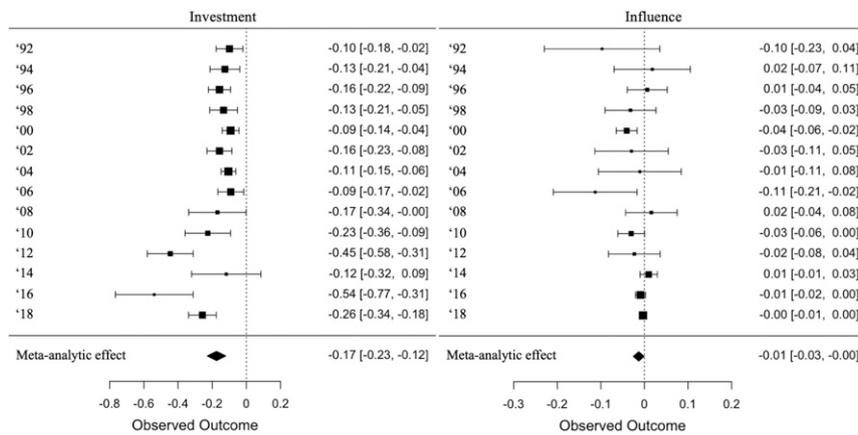
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Data deposition: The data reported in this paper have been deposited at the Open Science Framework, <https://osf.io/m6rcg/>.

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**Fig. 1.** Coefficients and 95% CIs for tests of investment (Left) and influence (Right) hypotheses and their corresponding metaanalytic effects for the years 1992 to 2018.

[-0.23, -0.12]). On the other hand, there was weak but significant metaanalytic support for the influence hypothesis ( $b = -0.01$ ; 95% CI [-0.03, -0.00]).

These findings provide strong and consistent support for the investment hypothesis and weak and inconsistent support for the influence hypothesis. That is, instead of attempting to sway undecided or opposing legislators' votes, oil and gas companies seem to provide financial rewards to members of Congress after they have voted against legislation to protect the environment. The current findings provide stronger evidence for the existence of this reward system compared to past cross-sectional research, which has heavily relied on single time points (3). In contrast, our models use time series to demonstrate temporal precedence and allow for robustness tests across 14 pairs of election years.

Although results from this analysis indicate that money is used by oil and gas companies to systemically support antienvironmental politicians, these insights likely generalize to other areas of monied interests, such as those in the technological, financial, and pharmaceutical industries. The current findings provide an important step toward better understanding the role of campaign contributions in voting on environmental issues.

## Method

**Data Collection.** Data on campaign contributions were collected from the Center for Responsive Politics (CRP) via [OpenSecrets.org](https://www.opensecrets.org) (9). We downloaded all contributions data for each year and selected contributions from oil and gas companies based on the CRP industry codes. We then downloaded scores from the LCV, which provide scores (0 to 100%) on how members of Congress vote on environmental issues (11). We then matched campaign contributions to LCV scores for each member of Congress. The data are available on our Open Science Framework project page at <https://osf.io/m6rcg/> (12).

**Data Cleaning and Analysis.** After gathering contributions data from CRP, we assigned the value of zero to any member of Congress that had no record of receiving a contribution from an oil or gas company that year. For ease of interpretation, contribution values were rescaled to increments of \$10,000 by dividing values by 10,000. Likewise, LCV scores were rescaled to increments of 10 by dividing values by 10.

Cross-lagged panel analyses were run in STATA 15's SEM module for each consecutive pair of election years from 1990 to 2018 (i.e., 1990 to 1992 ... 2016 to 2018). That is, contributions and LCV scores from one election year were modeled to predict the same variables, as well as each other, in the following election year. Hence, analyses were restricted to members of Congress that remained in office for more than one term so that changes in contributions and voting behavior were possible to observe. All models were estimated using maximum likelihood with bootstrap SEs and 1,000 bootstrap samples.

1. T. Stratmann, Campaign contributions and congressional voting: Does the timing of contributions matter? *Rev. Econ. Stat.* **77**, 127–136 (1995).
2. G. Tullock, The purchase of politicians. *West Econ. J.* **10**, 354–355 (1972).
3. R. E. Baldwin, C. S. Magee, Is trade policy for sale? Congressional voting on recent trade bills. *Publ. Choice* **105**, 79–101 (2000).
4. J. L. Kalla, D. E. Broockman, Campaign contributions facilitate access to Congressional officials: A randomized field experiment. *Am. J. Pol. Sci.* **60**, 545–558 (2016).
5. F. R. Baumgartner, C. Mahoney, "Gaining government allies groups, officials, and alliance behavior" in *Proceedings of the Annual Meeting of the Midwest Political Science Association* (Midwest Political Science Association, 2002).
6. F. R. Baumgartner, B. L. Leech, *Basic Interests: The Importance of Groups in Politics and in Political Science* (Princeton University Press, 1998).
7. R. L. Hall, A. V. Deardorff, Lobbying as legislative subsidy. *Am. Polit. Sci. Rev.* **100**, 69–84 (2006).
8. S. Ansolabehere, J. M. De Figueiredo, J. M. Snyder, Jr, Why is there so little money in US politics? *J. Econ. Pers.* **17**, 105–130 (2003).
9. Center for Responsive Politics, Oil and gas. <https://www.opensecrets.org/industries/indus.php?ind=E01>. Accessed 10 May 2019.
10. M. H. Goldberg, S. van der Linden, E. Maibach, A. Leiserowitz, Discussing global warming leads to greater acceptance of climate science. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 14804–14805 (2019).
11. League of Conservation Voters, All member of Congress scores. <http://scorecard.lcv.org/members-of-congress>. Accessed 10 May 2019.
12. M. H. Goldberg, J. R. Marlon, X. Wang, S. van der Linden, A. Leiserowitz, Oil and gas campaign contributions and congressional voting record on the environment. Open Science Framework. <https://osf.io/m6rcg/>. Deposited 10 May 2019.