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Lobbying in Disguise

CESifo Working Paper, No. 12000

Provided in Cooperation with:
Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Carattini, Stefano; Matter, Ulrich; Roesti, Matthias (2025) : Lobbying in Disguise, CESifo Working Paper, No. 12000, CESifo GmbH, Munich

This Version is available at:
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CES ifo Working Papers

12000
2025

July 2025

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CES ifo

Imprint:

CESifo Working Papers

ISSN 2364-1428 (digital)

Publisher and distributor: Munich Society for the Promotion
of Economic Research - CESifo GmbH

Poschingerstr. 5, 81679 Munich, Germany
Telephone +49 (0)89 2180-2740

Email office@cesifo.de
https://www.cesifo.org

Editor: Clemens Fuest

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Lobbying in Disguise*

Stefano Carattini[†‡§] Ulrich Matter[¶‖] Matthias Roesti[‖]

July 15, 2025

Abstract

The ability of private interests to influence the political process is an important topic in economics and political science. While some of these efforts appear as campaign finance and lobbying expenditures in the official record, private interests may also engage in "covert" influence through media capture. In this paper, we systematically examine whether and to what extent corporations in the United States with an interest in slowing climate action might have used corporate advertisement in media outlets as a strategic tool to align such outlets' coverage with their views. Based on several complementary empirical strategies, we find that advertisement spending by such actors (i) increases during election periods and (ii) is associated with both lower and more skeptical-leaning coverage of climate change and climate policy.

Keywords Lobbying; advertising; media capture; climate policy
JEL codes D72, D83, L82, Q54, Q58

*We are grateful to Elliott Ash, Graham Beattie, Guido Cozzi, Marcel Garz, Roland Hodler, Brian Knight, Simon Lüchinger, James Snyder, Allison Stashko, Nik Stoop, Alejandro del Valle, and Rachel Wetts, as well as participants in numerous seminars and conferences for helpful comments. The usual disclaimer applies. We further thank Noel Ackermann, Aderonke Adengunju, Benard Akalbeo, Pierre Chatelanaz, Frank Dietz, Lukas Gebhardt, Oskar Graf von Reichenbach, Jérémy Huber, Valentin Johner, Alan Douglas Jordan, David Klug, Sven Schnydrig, Silvan Stöckli, Elena Trevisani, Shravani Vakkantula, Blake Walker, Thomas Weiss, Jidapa Winkler, Riker Winstead, and Clemens Zech for their outstanding research assistance, and SafeGraph for providing access to their data. Carattini acknowledges support from the Swiss National Science Foundation, grant number PZ00P1_180006/1. Matter acknowledges support from the University of St.Gallen's Basic Research Fund (GFF), grant number 2030781. No funder had any involvement in the study design; the collection, analysis and interpretation of data; the writing of the paper; or in the decision to submit the paper for publication. Declarations of interest: none. Corresponding author: scarattini@gsu.edu (Carattini).

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1 Introduction

An important concern in current society is the state of our democratic institutions, which crucially hinges on the ability of voters to make informed decisions. The role of misinformation in sowing divisions and creating polarization directly threatens such institutions and may equally hamper the implementation of science-based solutions to urgent problems. In turn, a growing literature in economics and beyond aims to address the implications of misinformation and biased beliefs, especially around contentious issues (e.g. Allcott and Gentzkow 2017; Allcott et al. 2019; Pennycook et al. 2020a,b; Hangartner et al. 2021; Levy 2021). However, little is still known about where such misinformation and biased beliefs may originate.

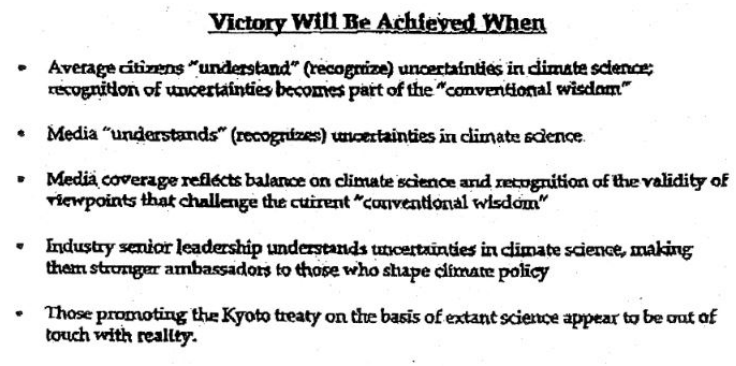
Climate change is, especially in the United States, a contentious issue. A large body of research has examined the consequences of such contention, including its implications for the implementation of climate policy (Egan and Mullin 2017). While the scientific evidence for anthropogenic climate change is overwhelming, there is little systematic empirical evidence on the roots of the controversy attached to it in public and policy debates. Existing evidence suggests that fossil fuel companies and other organizations with similar interests might have invested resources to sponsor research and dissemination activities aimed at downplaying the importance of climate change or its anthropogenic sources. According to such evidence, major oil companies have not only spent considerable amounts on lobbying activities aimed at preventing climate change legislation from being passed (Brulle 2018) but have also actively promoted communication marginalizing the risks, or even the existence, of climate change (Oreskes and Conway 2011; Supran and Oreskes 2017; Brulle et al. 2020; Brulle 2021), sometimes directly contradicting internal research on the issue (Supran et al. 2023). A second source of influence pointed out in this literature is related to Koch Industries, a privately held industry conglomerate with a substantial foothold in the fossil fuel sector and strong financial ties to organizations promoting climate skepticism and anti-regulatory libertarian causes (Farrell 2016a; Mayer 2016; Leonard 2019). To the wider public, it is more commonly known because of its

consumer paper product brands.

In this paper, we examine whether and to what extent such companies with strong interests in slowing climate action might have used corporate advertisement in media outlets as a tool to align media coverage with their own interests, as hypothesized in a literature largely based on anecdotal and qualitative rather than quantitative evidence (e.g., Boykoff and Roberts 2007; Cook et al. 2019; Supran and Oreskes 2021). That is, purchasing slots for TV commercials and placements of newspaper advertising may also have a strategic political aim through media capture. More favorable media coverage may, in turn, affect public opinion and electoral and policy outcomes. We refer to this phenomenon as "lobbying in disguise."

The literature has explicitly hinted at the use of corporate advertising as a tool for media capture by industries with interests in slowing climate action. Although the evidence presented in the existing literature is primarily anecdotal in nature, it offers several important leads. In addition to a long history of major oil corporations placing skeptical advertorials in leading newspapers (see Supran and Oreskes 2017 and also Kollman 1998 and Carlson 2015 for a broader perspective), Figure 1 provides internal evidence of organized fossil fuel interests' strategies in the form of a leaked draft of the American Petroleum Institute's Climate Science Communications Action Plan, which aims to influence media's "understanding" of climate science. While those efforts were targeted at the Kyoto Protocol (which ultimately was not ratified by the United States), it appears plausible that the industry's goals have not fundamentally changed in the following years.

In order to test our main research question empirically, we organize our analysis into two distinct stages. In the *first stage*, we examine the responsiveness of advertisement spending by corporations whose political interests are aligned with reduced climate action to political events (notably elections) in a large set of U.S. newspapers and TV outlets. If commercial advertisements did not have any disguised purpose, we would not expect spending to be higher around political events, when political advertisement tends to crowd out commercial advertisements (e.g. Sinkinson and Starc 2019; Moshary et al.



Victory Will Be Achieved When

- Average citizens "understand" (recognize) uncertainties in climate science; recognition of uncertainties becomes part of the "conventional wisdom"
- Media "understands" (recognizes) uncertainties in climate science
- Media coverage reflects balance on climate science and recognition of the validity of viewpoints that challenge the current "conventional wisdom"
- Industry senior leadership understands uncertainties in climate science, making them stronger ambassadors to those who shape climate policy
- Those promoting the Kyoto treaty on the basis of extant science appear to be out of touch with reality.

Figure 1: *Excerpt of leaked 1998 draft of the "Climate Science Communications Action Plan" by fossil fuel corporations and related organizations, coordinated via the American Petroleum Institute. See Cushman Jr. (1998) for the initial report on the draft.*

2021). We document significantly higher spending from large oil corporations during election quarters relative to two reference groups consisting of smaller industry peers and a broader set of corporate advertisers. Complementing our main analysis of oil majors, we find a surge in local TV ads for Koch Industries' household paper products—their primary retail commodity—in the run-up to elections, relative to the counterfactual provided by competing non-Koch paper products. In addition, we find evidence pointing to increased local advertising by large oil corporations and Koch Industries ahead of relevant environmental state-level ballot initiatives. We further find no indications that advertising spending by these actors is related to consumer demand.

In the *second stage*, we examine whether advertising spending is associated with changes in media content, examining within-outlet patterns over time. Our results indicate that higher big oil advertising spending is associated with a lower share of newspaper articles and TV news segment passages (snippets) on climate change, with a more skeptical tone in newspaper coverage, and with lower newspaper reporting on climate policy. This finding is robust to a host of additional tests, including an event study framework exploiting the exogenous timing and local incidence of wildfire and hurricane events in determining newspaper coverage of such natural disasters and their connection with climate change. Also in the second stage, the results for Koch Industries' advertising tend

to generally point in the same direction as the estimates for big oil.

Taken together, our evidence supports the notion that corporations with a strong interest in keeping climate policy at bay have successfully engaged in "lobbying in disguise." The prospect of a public debate that is influenced by deliberate efforts at media capture represents a challenge to the principles of a well-functioning democracy, possibly leading to bad societal choices compared to a counterfactual without disinformation. Media capture may also contribute to a polarized environment, which is detrimental per se and likely to decrease the ability of governments to implement science-based solutions to urgent problems (Sunstein 2001; Lee 2015; Hart et al. 2020; Kerr et al. 2021). Moreover, the efforts to influence media coverage that we document may fuel voices questioning the impartiality and integrity of established media outlets, which could further undermine any mediating influence of the traditional media sphere in a politically polarized environment.

Our work contributes to several strands of literature within economics and beyond. First, we add to a stream of research focusing on the strategic use of mass media by corporations and political actors, including through media capture. Governments as well as corporate interests have been shown to engage in efforts of media capture in a few other settings (Reuter and Zitzewitz 2006; Durante and Knight 2012; Enikolopov and Petrova 2015; DellaVigna et al. 2016; Durante et al. 2020; Prat 2018; Szeidl and Szucs 2021). Beyond simple product promotion, advertising from carbon-intensive industries has been shown to reduce newspaper coverage of information detrimental to the advertiser (e.g., car safety recalls, as examined in Beattie et al. 2021), to shift the tone of coverage towards more climate skepticism (Beattie 2020), and to mitigate demand losses following a corporate scandal in the form of a major oil spill (Barrage et al. 2020). In this paper, we take a broader view and provide evidence of systematic patterns whereby advertisement spending shifts around political events such as elections and ballots in ways consistent with lobbying in disguise, and less so with the narrow economics of the business being advertised. In turn, media coverage of both climate change, the problem, and climate policy, the solution, are affected by advertisement spending. Hence, we provide evidence

of how corporations with an interest in slowing climate action might have used corporate advertisement in media outlets as a strategic tool to align such outlets' coverage with their views.

Second, and relatedly, our project speaks to a strand of literature, mostly in political science and often of a qualitative nature, about what is labeled as "grassroots lobbying" or "outside lobbying," which is defined as lobbying efforts that focus on the public sphere, rather than interacting with policymakers directly. Such efforts can consist of targeted advertising and advertorializing or the mobilization of grassroots movements and other organizations with the aim of exerting political influence through public opinion (Kollman 1998; Hall and Reynolds 2012; Wolton 2019; Chiroleu-Assouline and Lyon 2020).

Third, our study contributes to an emerging strand of interdisciplinary literature examining the climate change counter-movement, a "complex network of organizations that functions to obstruct climate action" (Brulle et al. 2021:1). The body of research consists in large part of a combination of anecdotal, qualitative, and correlational evidence on the structure, extent, funding, and messaging strategies of its constituents (Farrell 2016a,b; Supran and Oreskes 2017; Brulle et al. 2020; Brulle 2021). According to this evidence, the climate change counter-movement has contributed to climate denialism, which remains a prominent feature of the public sphere in the United States (Farmer and Cook 2013; Egan and Mullin 2017; Almiron and Xifra 2019; Cook 2020).

Fourth, and related to climate denialism, we contribute to a broader literature about disinformation, misinformation, and the ideal of an informed citizenry in present-day democracies. Several studies suggest that the extent of voter information has the potential to affect the views and voting behavior of the electorate significantly (Bartels 1996; Kull et al. 2003; Healy et al. 2010) and that slanted media can further help to tilt electoral outcomes relative to a more balanced information provision (Dellavigna and Kaplan 2007). More recently, the rise of social media and the associated ease of disseminating false or misleading information have been pointed out as further threats to the ideal of a political process resting on a well-informed voting population (Allcott and Gentzkow

2017; Zhuravskaya et al. 2020). More generally, any developments that can enable or help to sustain a highly polarized political environment risk a weakening of the democratic process (e.g. Thurber and Yoshinaka 2015) and an inhibited ability of the government to respond to public problems (Lee 2015). The fact that media outlets may respond more to the interests of owners and advertisers, rather than their readers, is a concern for democratic institutions (Cagé 2016).

Fifth, we contribute to a growing literature on people's understanding of and support for Pigouvian policies and economic policies more generally. In this space, we contribute in particular to the stream of work that analyzes the role of information asymmetries and biased beliefs, about the source (or existence) of an externality as well as potential solutions. Increasing evidence suggests indeed that information asymmetries, to which misinformation may contribute, play an important role in people's opposition to climate policies such as carbon taxes, including what the literature has defined as demand for "bad" (or inferior) policies (Carattini et al. 2017; Dal Bó et al. 2018; Dechezleprêtre et al. 2022; Douenne and Fabre 2022; Carattini et al. 2024; see Carattini et al. 2018 for a review). That is, information asymmetries may affect not only people's understanding of climate change, the problem, but also of climate policy, the solution (see also Millner and Ollivier 2016 for an early discussion). While climate denialism is much more severe in the American context, public support for carbon pricing trails support for climate action in other countries as well (Carattini et al. 2018). In this respect, we consider important for the literature not only to document information asymmetries, and try to correct them, but also to examine their potential sources.

Sixth, we contribute to an established literature in economics on the role of private interests in influencing the political process through official channels (Grossman and Helpman 1994; Stratmann 2005; Blanes i Vidal et al. 2012; Bertrand et al. 2014; Bombardini and Trebbi 2020), including concerning environmental policy (Kirchgässner and Schneider 2003; Oates and Portney 2003; Catola and D'Alessandro 2020; Shapiro 2021; Besley and Persson 2023).

The remainder of the paper is structured as follows. In Section 2, we present the approach and the results for the first stage of our analysis, which examines corporate advertisement and political events. Section 3 proceeds analogously with the second stage, where we focus on corporate advertisement and media coverage. Section 4 concludes.

2 Stage I: Corporate advertisement and political events

2.1 Aim

In the *first stage*, we test the conjecture that advertising spending by carbon-intensive companies and other companies with aligned interests may be determined not only by the company's interest in promoting its products through advertising, but also by a desire to influence the media outlets' reporting on specific issues. In this respect, an interesting test consists of evaluating whether such companies may increase advertising efforts around political events, such as elections, when stakes are the highest. The premise for this analysis is that media outlets may respond to advertising efforts with media coverage more favorable to the advertisers' policy positions, as observed by the literature in other contexts, and that such a response by media outlets tends to depend on the timing of the advertisement.

Importantly, we are considering types of advertising (or types of products advertised) for which, from a marketing perspective, there is no reasonable economic explanation for increased advertising during election periods. We also examine directly whether consumer demand may respond to such advertising efforts. We focus on two main groups of advertising firms.

The first and main group consists of big oil (i.e., ExxonMobil, Shell, Chevron, British Petroleum), in light of their involvement in many efforts to thwart climate action, as outlined above. We extend this approach to an industry-specific control group. In the presence of a collective action problem (Olson 1965), we expect large oil companies to be more inclined to engage in "lobbying in disguise" than smaller industry players. In turn,

the economic motivations of smaller fossil fuel companies for advertising, particularly during election periods, can reasonably be hypothesized as being more directly tied to product promotion rather than media influence, due to their more limited resources and narrower spheres of operation. This feature renders them a relevant reference group to test our hypothesis about the strategic use of advertising by larger firms. Therefore, we compare big oil to their smaller industry peers, as listed in Appendix A.1.2. In an additional test, we extend our analysis to a broader set of large corporate advertisers in order to examine the robustness of effects in presence of a different, broader reference group (see Appendix A.2.2). For the big oil firms, our main focus is on newspaper advertising in light of the fact that our data suggest a higher level of spending per newspaper than for a typical TV outlet (particularly up to 2014, as reported in Tables A.2 and A.3 in Appendix A.1.2), as well as some existing evidence of strategic purchasing of advertisements and advertorials in leading outlets by oil majors (see, e.g., Supran and Oreskes 2017). Consistent with the latter evidence, we also provide separate estimates for large/leading outlets and smaller newspapers.

The second group of advertisers consists of paper product producers, in particular the brands owned by Koch Industries, another important actor in the climate change denial sphere (Farrell 2016b). Koch advertising volumes are considerably smaller than big oil, but with a total of around $880 million in our sample, they are still material enough to warrant attention as an addition to our main analysis. Similar to big oil, we also include a suitable control group. According to our data, the large majority of Koch Industries' advertising (more than 60% in our sample period) relates to paper products. And because the paper product sector has a comparatively low carbon footprint,[1] rival paper product producers represent an ideal reference group to account for general advertising trends in this field. Unlike Koch Industries, these rivals, such as Kimberly-Clark and Procter & Gamble (see Appendix A.2.5 for a full list), lack a material foothold in the fossil fuel industry and, in turn, do not share the same interest in opposing climate action. In contrast to big oil, our main focus here is on TV advertising since our data record hardly

[1] See, e.g., https://www.epa.gov/ghgreporting/ghgrp-pulp-and-paper (last accessed, 8 July 2025).

any paper product advertising by Koch in newspapers (only $2.4 million over the 14 years of our sample, as reported in Table A.4 in Appendix A.1.2).

We proceed as follows. First, we describe our data sources and approach for this first stage in more detail. Then, we present motivational evidence on general advertising spending trends in our sample period.

Thereafter, we provide more systematic empirical evidence on shifts in advertising during election periods across media outlets.

2.2 Data and empirical strategy

In terms of advertising, we consider three types of media covering a large part of the traditional advertising market in the United States: (i) newspapers, (ii) local spot TV, and (iii) national network/cable TV. Given their narrower reach, newspapers and local spot TV tend to allow for better targeting of a specific audience, while national network/cable TV has a broader viewership. Within the newspaper category, we further report results by size, separating the effects for the 10 largest newspapers from the smaller outlets.[2]

Our main data consist of advertiser-level information from Kantar Media, measuring monthly advertisement expenditure by the company at the news outlet level, covering around 200 newspapers and more than 1,300 local spot TV, cable TV, and network TV outlets from 2006-2019. Unless otherwise constrained by data sources, this timeframe marks the main period of study, covering the late Bush administration years, during which the release of Al Gore's documentary "Inconvenient Truth" took place (in 2006), the Obama years with some legislative proposals on carbon pricing (most prominently the American Clean Energy and Security Act of 2009, also known as the "Waxman-Markey Bill"), the 2015 Paris Agreement, and the first Trump term up until the COVID-19 pandemic.

[2]We define the largest newspapers in terms of recorded advertising spending. This group includes the following newspapers: *Chicago Tribune*, *Dallas Morning News*, *Houston Chronicle*, *Los Angeles Times*, *New York Daily News*, *New York Times*, *Philadelphia Inquirer*, *USA Today*, *Wall Street Journal*, and the *Washington Post*. This list is further almost identical to the ten largest U.S. newspapers by circulation in our sample period, according to publicly available data (for 2010, see https://refdesk.com/top100pap.html, last accessed 8 July 2025).

For reference, in this period, big oil companies and Koch Industries spent well over $4 billion advertising in the news outlets represented in our data. More information on the data can be found in Appendix A.1.

Our baseline estimation equation is as follows:

$$Ad\_spending_{i,j,t} = \beta_0 + \beta_1 \mathbb{1}(election)_t + \gamma \mathbb{1}(election)_t \times \mathbb{1}(big\ oil/Koch) + X'_{i,j,t}\delta + \rho_{i,j} + calendar\_month_t + \epsilon_{i,j,t}, \quad (1)$$

where $Ad\_spending_{i,j,t}$ is the total advertising spending (inverse hyperbolic sine of dollar spending in our baseline) by advertiser i in media outlet j during month t, and $\mathbb{1}(election)_t$ is an indicator for an election period, taking a value of 1 during this period, and 0 otherwise. $\mathbb{1}(big\ oil/Koch)$ is an indicator taking the value 1 for big oil or Koch Industries spending (depending on the model), and 0 for the corresponding industry-specific control groups. $X_{i,j,t}$ denotes a vector of controls, which includes an advertising price measure and a dummy for British Petroleum (BP) for the period of the Deepwater Horizon oil spill (April-September 2010) to separate spikes in advertisement owed to this event from general advertising around elections. This dummy is not present in robustness specifications that exclude BP and regressions focused on Koch Industries. $\rho_{i,j}$ and $calendar\_month_t$ denote advertiser-media outlet and month-of-year fixed effects, respectively.

In other words, our empirical approach compares election periods with non-election periods across corporations with interests in slowing climate action and their industry-specific control groups in an analysis of within-outlet election spending (big oil vs. "small oil" or other large corporate advertisers and Koch vs. non-Koch paper products). Two types of effects could point to potential lobbying in disguise aimed at crucial election periods. In addition to a general increase in advertising spending during these months, the relevant corporations may also shift their advertising efforts to more local outlets that allow for more specific targeting of certain regions/districts akin to political campaign advertising, which to a large extent focuses on local TV (see, e.g., Spenkuch and Toniatti

2018).

A key underlying assumption for these effects to be in line with lobbying in disguise is that changes in advertising intensities or shifts to more targeted local outlets during crucial election periods are not driven by other factors, for example, higher consumer media attention leading to a strong response in consumer demand following such advertising campaigns. We test this potential alternative explanation for the case of big oil advertising by analyzing consumer demand at the gas station level based on a highly granular dataset from SafeGraph, which measures visits to gas stations from a large sample of mobile devices providing location data. For this exercise, we consider the period from January 2018 until the beginning of the COVID-19 pandemic in early 2020. We regress local gasoline demand on a variety of different specifications of local TV and newspaper advertising with varied timing and inclusion/exclusion of "small oil" competitors. This approach is described in more detail in Appendix A.2.7.

Similarly, we examine whether paper product advertising by Koch Industries and its market competitors is related to the local demand for these products based on county-level annual household spending estimates on this product category for the years 2011-2019. These spending estimates are sourced from Simply Analytics. Appendix A.2.8 provides more details.

Lastly, we collect a list of state-level ballots that are highly relevant to corporations interested in slowing climate action to examine whether local advertising spending of big oil and Koch Industries relative to their reference group in the affected constituencies increases in the runup to such votes over and above any election effects. More details are provided in Appendix A.2.9.

2.3 Results

2.3.1 Big oil

Moving to our results for this stage, big oil spending peaked in 2010 for both newspapers (as described in panel (a) of Figure 2) and TV (as described in Figure A.3 in Appendix

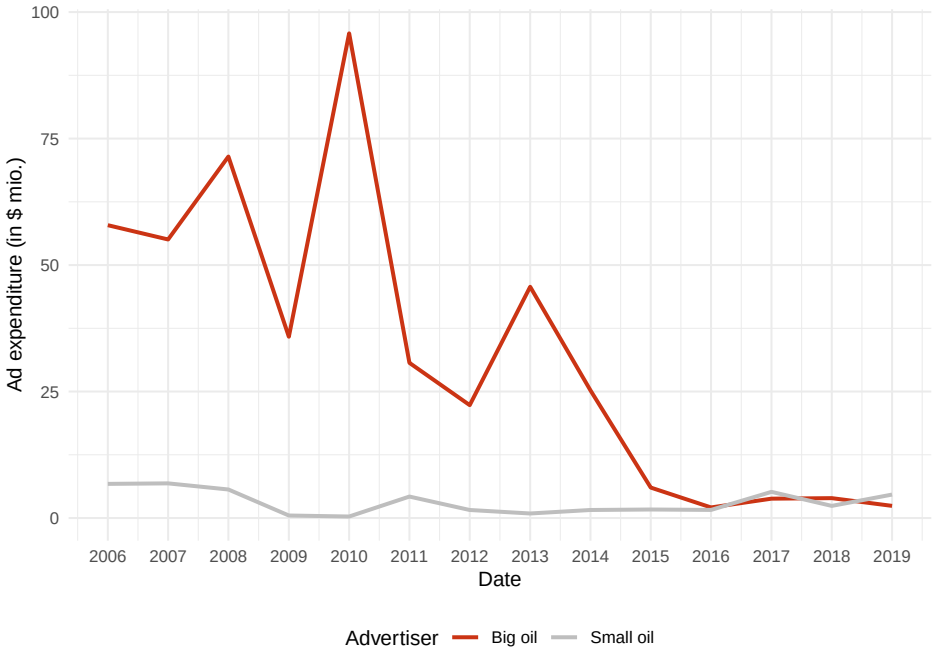
A), and displayed a more generous advertising budget during the first term of the Obama administration relative to later years, while no such patterns are visible for their smaller industry competitors.

In panel (b) of Figure 2, we show average monthly spending per newspaper (left) and the average monthly number of ads (right) for big oil and small oil corporations around U.S. federal elections. We observe a considerable concentration of ad dollars and the number of ads placed close to election months for big oil. In contrast, there were no similarly pronounced advertising increases from small oil.

Next, we turn to more systematic evidence with respect to elections. We find increases in big oil advertising during election periods relative to the control group consisting of smaller oil companies, as mentioned above. In Table 1, we provide evidence leveraging the large difference in size between big oil and "small oil" as a way to isolate the behavior of big oil companies, which, as mentioned, might have uniquely engaged in attempting to influence the media landscape in the United States.

The estimates highlight a significant uptick in big oil newspaper advertising. This holds for both the ten largest newspapers in our sample as well as their smaller rivals. In principle, higher advertising competition around elections could displace both big oil and small oil advertising, such that a positive coefficient for the interaction term would merely suggest a smaller decrease relative to their competition. We do not find evidence for such displacement in newspaper spending. A comparison of the level and interaction coefficients in Table 1 shows that small oil spending remains relatively stable while big oil spending increases markedly, with the estimated coefficients of interest exhibiting a magnitude very similar to the sample mean of the dependent variable. The effects further hold irrespective of whether we include the month of November in our definition of the election period (recall that our data have monthly resolution and U.S. federal elections are held in early November).

(a) *Aggregate yearly spending*



(b) *Average monthly advertising around elections*

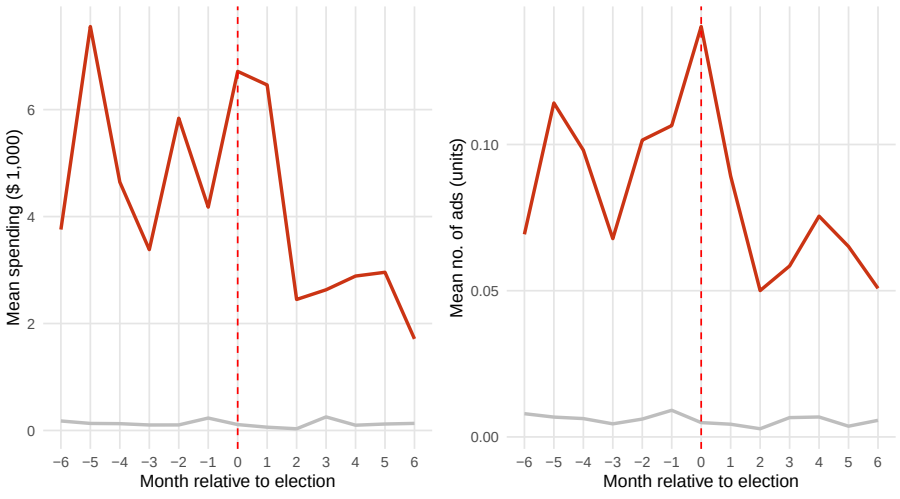


Figure 2: *Big oil vs. small oil newspaper advertising*

Table 1: *Big oil vs. small oil advertising around elections (Sep, Oct, Nov)*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.009		0.034		−0.012**	
	(0.007)		(0.070)		(0.006)	
Election period (excl. Nov) × big oil	0.078***		0.364*		0.060***	
	(0.017)		(0.186)		(0.014)	
Election period (incl. Nov)		−0.007		0.006		−0.008
		(0.006)		(0.060)		(0.005)
Election period (incl. Nov) × big oil		0.084***		0.528***		0.057***
		(0.017)		(0.195)		(0.013)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.088	0.088	0.616	0.616	0.056	0.056
R^2 (overall)	0.193	0.193	0.251	0.252	0.133	0.133
R^2 (projected/within)	0.005	0.005	0.028	0.029	0.001	0.001
Observations	457,815	457,815	26,310	26,310	431,505	431,505

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in September, October, and November (if included) in an election year, and 0 otherwise. All specifications control for a measure of average advertising price in a given media outlet and month, as well as a dummy for advertising by BP during the period of the Deepwater Horizon oil spill (April to September 2010). The corresponding coefficients are displayed in Table A.6 in Appendix A.2.

Table 2: *Big oil vs. other corporate newspaper advertising around elections - expanded reference group*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	0.024***		−0.022		0.027***	
	(0.004)		(0.018)		(0.004)	
Election period (excl. Nov) × big oil	0.058***		0.440**		0.036***	
	(0.017)		(0.185)		(0.014)	
Election period (incl. Nov)		0.011***		−0.020		0.013***
		(0.004)		(0.017)		(0.004)
Election period (incl. Nov) × big oil		−0.004		0.491**		−0.030**
		(0.017)		(0.195)		(0.013)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.33	2.33	3.276	3.276	2.244	2.244
R^2 (overall)	0.6	0.6	0.548	0.548	0.606	0.606
R^2 (projected/within)	0.003	0.002	0.023	0.023	0	0
Observations	9,113,638	9,113,638	757,910	757,910	8,355,728	8,355,728

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media outlet in a given month. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise. All specifications control for a measure of average advertising price in a given media outlet and month, as well as a dummy for advertising by BP during the period of the Deepwater Horizon oil spill (April to September 2010). The corresponding coefficients are displayed in Table A.7 in Appendix A.2.

In Table 2, we explore the sensitivity of our estimates to the particular choice of reference group. We extend the reference group for big oil advertising spending beyond small oil to the largest 500 corporate advertisers in our data. Even with this much larger and more heterogeneous reference group, we find evidence that big oil spending leading up to elections stands out. As before, the estimates point to increases in big oil advertising spending relative to these other corporate advertisers shortly before elections. For better comparability with our baseline specification contrasting big and small oil, the additional advertiser data has been imputed based on available media market (DMA) level spending information in proportion to an outlet's monthly share of total recorded media market newspaper spending.

The findings remain robust when analyzed directly at the DMA level without imputation, as shown in Table A.8 of Appendix A.2.2. Appendix A.2.2 also contains a more detailed description of this extended reference group specification.

In Tables A.9 and A.10 in Appendix A.2.3, we further present corresponding estimates for big oil vs. small oil and big oil vs. other corporate advertisers and TV, where we also tend to find positive and significant spending effects right up to October, although including November in the definition of the election period tends to add more noise in this case.

We subject our findings to a series of additional tests to provide more context to the estimates presented above. We start by testing whether the observed patterns for big oil are potentially distorted by the Deepwater Horizon oil catastrophe by excluding BP (the responsible party for the platform) from the estimation altogether, rather than including an event-specific dummy for the corporation as in the baseline. As shown in Tables A.11 and A.12 in Appendix A.2.4, the results remain very similar both qualitatively and quantitatively.

Next, given that the likelihood of more stringent federal policy on climate change was not constant across time, we examine whether there is potential heterogeneity of effects across time. Specifically, we separate our sample period into years when the Democratic

Party was in control of both chambers of Congress and years where this was not the case. The former was the case during the 110^{th} and 111^{th} Congress (2007-2011), containing several prominent efforts to implement more ambitious climate action as outlined above. In the subsequent period from 2011 to 2019, Republicans had enough political power to severely limit the prospects of similar policy momentum. As shown in Tables A.14, A.15, A.16, and A.17 in Appendix A.2.6, big oil election effects on newspaper advertising are indeed considerably and statistically larger in the first period compared to the second.

As shown above, we see increased advertising spending around elections, a period where one would suspect higher competition for advertising spaces and hence also higher prices. But even at a higher cost, it may still make sense for corporations to advertise if, for example, there is a strong response in consumer demand. In turn, we test whether the increases in big oil advertising are related to subsequent (or contemporaneous) increases in demand at the gas stations affiliated with the advertised corporation. A lack of an empirical link between increased advertising spending and demand for gas would provide further support to the notion that advertisement spending may serve other purposes than the simple promotion of a specific product. In these specifications, we estimate precise zero effects, both for demand shares at the gas station level (Table A.23 in Appendix A.2.7 reports the corresponding estimates) and aggregate visit shares at the local designated media market area (DMA) level (as shown in Table A.24 in Appendix A.2.7). In sum, we find no indication that big oil advertising spending is associated with changes in demand for their main consumer product.

Lastly, we examine the extent to which relevant advertising is increasing shortly before local state-level ballots on issues such as carbon taxes or renewable targets that would directly impact the business model of the examined corporations. Relative to their reference group (and their spending in non-ballot media markets), big oil firms significantly increased their local TV spending in the months prior to relevant ballots. These results are shown in Tables A.28 and A.29 in Appendix A.2.9, which also contains a description of all the ballots considered.

2.3.2 Koch Industries

Next, we continue our analysis of TV advertising and turn to Koch Industries, where TV station-level regression estimates show an overall increase in advertising around elections relative to paper product industry peers, as shown in Table A.13 in Appendix A.2. For the aggregate sample period, this increase is due to a rise in local spot TV expenditures around elections. These coefficients suggest a redirection of advertising from national cable/network TV channels to local stations. Recall that shifting advertising efforts to more local outlets may allow for more specific targeting of certain political jurisdictions.

At the same time, and in line with our findings for big oil, we find that the first period is the driving force behind the positive coefficients for Koch Industries, as shown in Tables A.18 and A.19, respectively. In fact, during the 2007-2011 period when climate policy featured more prominently on the agenda of Congress, we find strong and positive coefficients for Koch across all types of TV outlets.

Similar to our gas station demand analysis, we further test whether local advertising for paper products is related to the local household demand for these consumer goods. As shown in Table A.26 in Appendix A.2.8, we find that paper product producers other than Koch Industries advertise more in markets where household spending on paper products is higher in the same year. However, we do not find any indications of such a positive relationship for Koch Industries' paper product advertising, consistent with the hypothesis that local consumer demand considerations may not primarily drive their advertising.

Lastly, we examine Koch Industries' local spot TV spending around key ballot initiatives and, again similar to big oil, find evidence of an increase in advertising relative to their paper product competitors ahead of the ballot dates, as shown in Table A.30 in Appendix A.2.9.

2.3.3 Summary

In sum, our empirical analyses leveraging the exogenous timing of political events provide evidence in support of the hypothesis that companies with interests in slowing climate

action might have used corporate advertising as a tool to channel resources to media outlets in crucial periods, consistent with lobbying in disguise. Our results indicate that big oil firms markedly increase newspaper and TV advertising in the months leading up to elections and, similarly, local TV advertising in the period leading up to state-level ballot initiatives with implications for their business prospects. These spikes are larger than those of both smaller industry peers and a broad set of other major advertisers, and they are most pronounced in 2007–2011, when congressional momentum for climate policy was highest. Results for Koch Industries TV paper product advertising broadly align with these patterns as well. In addition, the observed advertising bursts are unaccompanied by any detectable rise in consumer demand for the advertised products, indicating that such advertising efforts may not have a primary aim of boosting product sales.

3 Stage II: Corporate advertisement and media coverage

3.1 Aim

We now examine whether and how media outlets may respond to advertising spending, with the aim of providing evidence about the potential extent of media capture.

We note already at this stage that we cannot disentangle two alternative mechanisms, which, however, are observationally equivalent in terms of media consumption. The first mechanism implies that newsrooms autonomously adapt their coverage to please the advertiser. The second mechanism implies that advertisers explicitly make more specific demands concerning their expectations when purchasing ad space. Once more, we stress that disentangling the two mechanisms is not necessary to examine the impact of corporate advertising on media coverage.

We also note that changes in coverage can happen both in terms of whether and how much a topic is covered, and in terms of slant and tone. To provide insights into different margins of media content adjustments, our analysis examines both general coverage of

the issue, as well as coverage related to natural disasters, where the timing is exogenously imposed by the incidence of the disaster. In both of these cases, key environmental topics such as climate change may receive more or less coverage overall, or indeed be characterized differently when covered.

3.2 Data and empirical strategy

Our main data for this stage consist of newspaper-level content information on 70 local and national daily newspapers for the years 2006 to 2019 from the Factiva, LexisNexis, and ProQuest databases, amounting to about 180,000 full-text articles on climate change based on the keyword set employed by Wetts (2020): "climate change," "global warming," "greenhouse effect," and "greenhouse gas/gases/gasses." The aim is to capture all articles relevant to the issue. Table B.4 in Appendix B.1.3 provides the full list of covered newspapers. In addition, we gather monthly article counts for a set of keyword selections, as described further below.

With these data, we assess coverage based on two types of measures.

The first type of measure consists of (i) an indicator of coverage frequency in the form of the share of articles mentioning climate change overall, and (ii) the share of natural disaster articles that also mention "climate change" or "global warming" as a simple indicator of slant. For the latter outcome and our baseline disaster focus on wildfires, we expect news outlets more aligned with the scientific consensus to draw more attention to the direct links between wildfire events and the warmer conditions produced by climate change as described by the Intergovernmental Panel on Climate Change (see, e.g., IPCC 2015:53). Similar reasoning applies when we examine hurricane events in a complementary analysis.

Our empirical approach for this first type of keyword count-based measure is based

on the following model equation:

$$CC\_keyword\_freq_{j,t} = \beta_0 + \beta_1 corporate\_ad\_spending_{j,current/past} + \rho_{j,y} + calendar\_month_t + \epsilon_{j,t}, \quad (2)$$

where $CC\_keyword\_freq_{j,t}$ is the relative share of articles mentioning a given climate change-related keyword/keyword combination in media outlet j during month t, and $corporate\_ad\_spending_{j,current/past}$ is the total advertising spending by the relevant companies with interests in slowing climate action in media outlet j during current/past months, where the particular choice of timing varies across specifications. We measure spending both in absolute terms as well as in relative shares, i.e., the amount of relevant advertising relative to the total amount of recorded advertising by all corporate advertisers for a given media outlet/month combination. The latter measure accounts for potential differences in the importance of a marginal advertising dollar from the perspective of larger and smaller outlets. $\rho_{i,y}$ and $calendar\_month_t$ denote year-media outlet and month-of-year fixed effects, respectively. Building on these results, we leverage the exogenous local occurrence of natural disasters in the form of wildfires and hurricanes in an event study framework. Therein, we examine whether the event-related coverage in affected media markets, notably any potential attribution to climate change through the increased frequency or intensity of such events, varies depending on fossil fuel advertisement ties.

While such measures based on keyword counts allow us to have greater coverage both in terms of the number of articles/segments on which the keyword counts are based (consisting of millions of indexed articles in the respective databases), we are not able to examine the whole context in which the keywords are used. In principle, we could rely on very indicative phrases like "climate hoax," which may be easy to assign to the skeptical side, but such phrases tend to be extremely rare in the type of media that we focus on.

Hence, our second measure, climate change tone/leaning, is designed to address these gaps and is based on a deeper analysis of media content using different forms of natural language processing techniques. Because the amount of text is too large to be processed

manually, we rely on a procedure similar to the one proposed by Beattie (2020), in itself a variant of Gentzkow and Shapiro (2010). In essence, this method converts a document into a set of two-word phrases (bigrams), the frequency distribution of which is then compared to two sources of text representing the two opposite poles along the studied dimension, which in our case are the assessment reports by the Intergovernmental Panel on Climate Change (IPCC) for the scientific consensus on climate change and the reports by the Nongovernmental International Panel on Climate Change (NIPCC) for its skeptical analog. If a phrase, for example, "tree ring," turns out to be highly indicative of stemming from one polar source, then any text containing this phrase is considered to be more aligned with that source (*ceteris paribus*). Based on the relative frequency of indicative phrases in the text, we can then infer the leaning of a given article.

We quantify this tone/leaning based on the following procedure. First, we convert the IPCC reports (the third to fifth assessment reports published between 2001 and 2014) and the NIPCC reports (published between 2009 and 2016) into bigrams analogous to the procedure employed by Gentzkow and Shapiro (2010). Second, the bigrams indicative for each side of the debate are sorted according to their chi-squared value, which is again computed following Gentzkow and Shapiro (2010). Higher values imply a more indicative phrase for a given side. In a third step, we limit the list of relevant bigrams for each side to those that account for a cumulative share of 5% of the underlying text in order to avoid additional noise introduced by the inclusion of phrases that are neither very common nor particularly suggestive of any side. Fourth, we compute the tone/leaning of a text as the difference in the share of bigrams indicative of IPCC (IPCC bigram) and the share of bigrams that match the list of NIPCC tone/leaning phrases (NIPCC bigrams) for any article. For example, a text of 100 words containing one IPCC bigram and three NIPCC bigrams would result in a tone index score of $1/100 - 3/100 = -0.02$.

The resulting tone measure ends up being skewed toward positive, more climate science-friendly scores (see Figure B.1 in Appendix B.1.3). In other words, the typical article on climate change tends to be more aligned with the typical language used by

the IPCC, but there is equally a non-negligible share of articles leaning in the other, less scientific, direction.

This measure provides us with a further indicator of climate change coverage based on a much richer set of information compared to the measures outlined above. Formally, the resulting estimation is very similar to the previous model, with the main difference being that the unit of observation is an individual newspaper article:

$$CC\_tone\_index_{i,j,t} = \beta_0 + \beta_1 corporate\_ad\_spending_{j,current/past} + \rho_{j,y} + calendar\_month_t + \epsilon_{i,j,t}, \quad (3)$$

where $CC\_tone\_index_{i,j,t}$ is a measure of average climate change tone/leaning of the relevant article i in media outlet j during month t. The main independent variable $corporate\_ad\_spending_{j,current/past}$ again denotes the total advertising spending by the relevant companies in media outlet j during current/past months. $\rho_{i,y}$ and $calendar\_month_t$ denote year-media outlet and month-of-year fixed effects, respectively.

We further expand our analysis with TV news segment content information from the Internet Archive's TV Archive. These data consist of TV news segment snippet counts based on the same keyword selections we employed in the newspaper context. A snippet is defined as a roughly 15 second long part of a segment.

To ensure a more consistent number of covered networks/stations across time, we restrict our sample to 2010-2019, leaving us with 31 TV stations/networks. Note that (i) the restricted sample size and timeframe due to data availability, and (ii) the limited airtime per segment, reduce the amount of information that can be extracted from these data relative to newspaper articles. Therefore, we should also expect a lower statistical power for results based on keyword combinations. In addition, the overlap between Koch Industries TV advertising and the available stations/networks allows us to capture less than 1% of observed Koch advertising spending (as reported in Table B.8 in Appendix B.1.4), while the overlap with big oil tends to be significantly larger, including about 12% of observed big oil TV spending in the covered years. Most of this difference is due to

the fact that we do not record any Koch Industries paper product advertising on the Fox News network (as opposed to $116 million by big oil).

3.3 Results

3.3.1 Big oil

We now turn to our results, starting with our first count-based measure on the frequency of climate change articles. We display estimates based on two measures of advertising: the absolute amount of advertising as well as the advertising share.

In Table 3, we provide our estimates from the specification described in Equation 2. The displayed effects indicate that higher spending by big oil is associated with a reduction in the share of articles on climate change within a given newspaper-year, consistent with a reduction in the frequency of coverage. For example, according to column (2), a 1 percentage point increase in the advertising share originating from big oil in the three most recent months in a given newspaper is estimated to reduce the share of its articles referencing "climate change" or "global warming" by 0.068 percentage points in the current month, an effect of about 9% of the sample mean.

Table 3: *Big oil advertising and share of articles mentioning climate change/global warming*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	-0.038^{***}		-0.062^{**}		-0.035	
	(0.006)		(0.014)		(0.033)	
Big oil ad share (last 3 months)		-6.811^{***}		-12.009^{***}		-2.317
		(1.986)		(2.407)		(1.774)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.792	0.792	1.68	1.68	0.69	0.69
R^2 (overall)	0.778	0.778	0.814	0.815	0.709	0.709
R^2 (projected/within)	0.003	0.004	0.022	0.023	0	0
Observations	8,204	8,204	851	851	7,353	7,353

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses. All specifications control for a measure of average advertising price in a given media outlet and month. The corresponding coefficients are displayed in Table B.9 in Appendix B.2.

Similarly, when we focus on the share of wildfire articles that also mention "climate change" and/or "global warming," we find negative coefficients for big oil advertising spending, as shown in Table 4.

A very similar pattern emerges when we focus on articles covering various forms of climate policy. In Table 5, we observe negative effects on the number of articles containing keywords related to (i) climate policy defined as the occurrence of "climate change"/"global warming" in conjunction with policy-related terms inspired by Baker et al. (2016), (ii) emissions trading, and (iii) carbon taxation. These additional findings suggest that advertisement spending not only affects coverage of climate change, the problem, but also of climate policy, the solution.

Table 4: *Big oil advertising and share of wildfire articles mentioning climate change/global warming*

	Results for query:					
	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.003*		−0.002*		−0.025	
	(0.002)		(0.001)		(0.016)	
Big oil ad share (last 3 months)		−0.716**		−0.324**		−1.625*
		(0.354)		(0.086)		(0.910)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.101	0.101	0.151	0.151	0.094	0.094
R^2 (overall)	0.254	0.254	0.322	0.322	0.24	0.24
R^2 (projected/within)	0	0	0	0	0	0.001
Observations	6,525	6,525	811	811	5,714	5,714

(∗∗∗, ∗∗, ∗) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses. All specifications control for a measure of average advertising price in a given media outlet and month. The corresponding coefficients are displayed in Table B.10 in Appendix B.2.

Table 5: *Big oil advertising and climate policy coverage*

	Results for query:					
	CC + Policy	CC + Policy	CC + Cap and Trade	CC + Cap and Trade	CC + Carbon Tax	CC + Carbon Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.812***		−0.155***		−0.010	
	(0.197)		(0.037)		(0.040)	
Big oil ad share (last 3 months)		−110.465**		−20.660*		−12.051*
		(52.381)		(11.723)		(6.609)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	All	All	All	All
Mean dependent variable	7.999	7.999	0.848	0.848	2.372	2.372
R^2 (overall)	0.831	0.83	0.636	0.636	0.676	0.676
R^2 (projected/within)	0.007	0.006	0.003	0.002	0	0
Observations	8,204	8,204	8,204	8,204	8,204	8,204

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses. For the climate policy outcome, the dependent variable measures the number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming". For the emissions trading outcome, the dependent variable measures the number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). For the carbon tax outcome, the dependent variable measures the number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). All specifications control for a measure of average advertising price in a given media outlet and month. The full set of results are provided in Tables B.12, B.13, and B.14 in Appendix B.2.4.

Turning to the second measure, namely tone/leaning of coverage based on full-text data, Table 6 suggests a tone shift within newspaper-years toward a more skeptical stance following big oil advertising dollars. For example, according to column (2), an increase in the big oil advertising share by 1 percentage point in the three previous months is estimated to shift newspaper coverage leaning of a climate change related article by about 0.011 ($= 1.134 \times 1/100$) index points, or about 0.058 ($= 0.011/0.189$) standard deviations toward the skeptical side, all else equal. As shown in columns (3) to (6), this effect seems to be driven by the largest newspapers.

Table 6: *Big oil advertising and newspaper article climate change leaning*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.007**		−0.008**		0.018	
	(0.003)		(0.004)		(0.027)	
Big oil ad share (last 3 months)		−1.134*		−1.546**		0.167
		(0.621)		(0.716)		(0.948)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.263	0.263	0.277	0.277	0.257	0.257
SD dependent variable	0.189	0.189	0.152	0.152	0.203	0.203
R^2 (overall)	0.074	0.074	0.055	0.055	0.082	0.082
R^2 (projected/within)	0	0	0	0	0	0
Observations	178,031	178,031	56,030	56,030	122,001	122,001

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses. All specifications control for a measure of average advertising price in a given media outlet and month. The corresponding coefficients are displayed in Table B.11 in Appendix B.2.

We perform a wide range of robustness checks for all these results. First, we include a much more restrictive set of *month* × *year* fixed effects (as shown in Tables B.15 to B.20 in Appendix B.2.5). Despite the lower statistical power, these results lead to similar conclusions. Second, we consider a longer period consisting of the last 6 months of advertising spending (as shown in Tables B.21 to B.26 in Appendix B.2.6). As shown in these tables, extending the timespan of the advertising expenditures considered tends to produce similar but somewhat weaker effects, consistent with a diminishing effect of advertising dollars over longer time horizons.

In an additional step, we examine the type of content driving the effects in terms of climate change leaning shown in Table 6. The main motivation for this test is that not all newspaper content is intended to be equally objective. In particular, editorial content is more explicitly geared toward presenting a newspaper's/editorial board's position on a given issue, while general reporting on events tends to leave relatively less room for subjective views and assessments. Indeed, as shown in Tables B.27, B.28, and B.29 in Appendix B.2.7, the largest negative coefficients result from editorial/opinion content, while focusing on letters (sent by readers, but selected for publication by newspaper staff) or general news articles does not yield any significant effects at conventional levels.

As before, we further test whether the effects differ across the 2007-2010 and 2011-2019 periods. For the frequency of climate change coverage, we find broadly similar results in both subsamples, with the largest newspapers driving the negative effects in both cases, as shown in Tables B.30 and B.31 in Appendix B.2.8.

For wildfire articles referring to climate change as well as for climate policy-related article counts, negative estimates tend to be more prominent in the 2011-2019 period, as reported in Tables B.32 - B.39 in Appendix B.2.8. Relatedly, we further expand our focus to joint mentions of climate change and hurricanes to test the robustness of our results to yet another natural disaster that is expected to intensify in strength and force with climate change. There, we observe a very similar picture in terms of temporal patterns. Tables B.40 and B.41 in Appendix B.2.8 show some evidence of a reduction in these climate change-hurricane connections in the most recent years whenever big oil spending was higher. Note that our subsample means suggest that reporting on wildfires and hurricanes was roughly twice as likely to reference climate change in the more recent period, which makes it easier to detect responses to advertising.

In terms of climate change leaning, the aggregate effects appear to be driven by the 2007-2010 period, particularly by shifts in climate change coverage in leading newspapers, as shown in Tables B.42 and B.43. In fact, this temporal pattern aligns with research documenting a general shift in more recent times in the messaging of fossil fuel interests away from outright denial or dispute of climate science to more subtle narratives aimed at delaying any solutions to the problem of climate change, including by reducing attention to it (Ekberg et al. 2022).

Related to some of the previous analyses of natural disasters' coverage, and in a further empirical test of our hypothesis, we exploit the timing of local media market wildfire and hurricane impacts in two separate event study frameworks where we compare newspaper coverage between outlets that receive advertising from big oil in the three months leading into the month of the disaster and control outlets in affected media markets without any such advertising revenues. As shown in Figures B.6, B.7, B.8, and B.9 in Appendix

B.2.9, we find point estimates consistent with (i) lower wildfire and hurricane coverage and (ii) fewer wildfire and hurricane articles mentioning climate change in treated outlets relative to newspapers without recent big oil advertising. Appendix B.2.9 provides a full description of this analysis.

Next, we look at TV coverage in terms of the share of TV news segment snippets mentioning climate change and/or global warming, analogously to the newspaper keyword count analysis presented above.

For big oil, Table B.50 in Appendix B.2.10 contains estimates matching those from the newspaper analysis in terms of the directions of the estimated effects, suggesting that TV news coverage of climate change also tends to be less frequent following an inflow of big oil advertising dollars. Introducing *month* × *year* instead of *month-of-year* fixed effects leads generally to similar estimates (as shown in Table B.51 of Appendix B.2.10). Extending the relevant ad spending to the last 6 months' spending equally shows that the effects do not depend on our exact timing choice, as shown in Table B.52 in Appendix B.2.10.

3.3.2 Koch Industries

The TV news segment snippet data further allow us to examine Koch Industries' coverage effects, given that they mainly advertise on TV outlets. As with big oil, we focus on the share of TV news segment snippets mentioning climate change. The aforementioned limited overlap between Koch advertising spending and our TV content data may be a considerable contributor to the fact that the majority of point estimates for Koch Industries are not significant at conventional levels, as reported in Table B.53 in Appendix B.2.11. However, they are mostly of the expected sign given the evidence provided thus far, particularly for local TV, which was also driving first stage increases in advertising during election periods. Adding month×year fixed effects produces estimates that further support this pattern (as shown in Table B.54 in Appendix B.2.11). Varying the time dimension of the advertising considered also shows a broadly similar picture when the

last 6 months of spending are considered (as shown in Table B.55 in Appendix B.2.11).

3.3.3 Summary

In sum, based on several different measures of coverage, we find evidence that the inflow of advertising dollars related to corporations with interests in slowing climate action is associated with a reduction in climate change coverage in newspapers and TV, and a shift in newspaper tone toward climate skepticism in the years with a higher momentum toward climate action.

4 Conclusion

Over the last decades, corporations with strong interests in slowing climate action have spent billions of dollars in the U.S. advertising market. In this paper, we provide evidence suggesting that these financial resources might have been spent with broader aims than merely safeguarding consumer demand for their products.

In particular, advertising dollars may have served to affect media content as a form of "lobbying in disguise" in order to influence individuals as voters and political opinion holders rather than as consumers deciding between competing suppliers. We provide empirical support for this conjecture along the two stages of the hypothesized chain.

First, we show that advertising spending by big oil companies and Koch Industries, a major actor in the climate change counter-movement, heavily engaged in advertising consumer paper products, is markedly higher during years of increased political focus on climate change legislation. We further document changes in advertising behavior around crucial elections and ballot initiatives during these years, including greater volumes of newspaper and TV advertising by big oil, and an increase in locally targeted spot TV paper product advertising by Koch Industries relative to competitors without fossil fuel ties. Moreover, we find no relation between local big oil advertising and gas station-level consumer visit frequency, and no evidence of a positive relationship between Koch Industries advertising and demand for paper products.

Second, we find that inflows of big oil advertising dollars are associated with less coverage of and more skeptical-leaning newspaper reporting on climate change. The results for Koch Industries' advertising tend to point in the same direction.

Cumulatively, our findings lend support to the notion that advertising spending may serve as a covert means of influencing public opinion via media capture, contributing to further deviations from the ideal of a well-informed citizenry in a modern democracy. Such deviations may have implications for our society's ability to deal with the most pressing contemporary issues, including fundamental threats such as climate change.

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Appendix

A First stage: corporate advertisement and political events

A.1 Data description

A.1.1 Variable definitions

Table A.1: *Description of main variables*

	Description/Encoding	**Data source**
Main dependent variables		
Monthly TV/newspaper ad expenditure (inv. hyp. sine)	Total recorded advertising expenditure for a given news outlet/month/advertiser combination.	Kantar Media
Main independent variables		
Ad price ($1,000/unit)	Measure of the average (nominal) advertising price per unit in a given media outlet-month combination. The measure is produced by dividing the total recorded ad expenditures (by all advertisers, not limited to corporations with interests in slowing climate action) by the total number of recorded advertising units (which may be of different size, but this information is unavailable to the authors).	Kantar Media

A.1.2 Summary statistics

The annual advertising spending by big oil and Koch Industries in the media outlets in our sample is outlined in Tables A.2, A.3, A.4, and A.5, along with the number/units of ads (or ∼30-second ad segments for TV) and the number of media outlets with positive amounts of big oil/Koch Industries advertising in our sample. Overall, we record well over $4 billion in big oil and Koch Industries advertising spending in our 2006-2019 sample period.

Table A.2: *Big oil newspaper advertising*

Year	Ad Spending (Mio. $)	Total Units	No. Newspapers
2006	57.880	1,054	76
2007	55.056	1,033	97
2008	71.445	1,347	86
2009	35.838	896	51
2010	95.793	1,586	70
2011	30.673	932	69
2012	22.315	495	41
2013	45.704	798	49
2014	25.235	483	43
2015	6.021	221	40
2016	2.093	86	19
2017	3.826	113	38
2018	3.933	112	18
2019	2.402	81	16
Total	458.214	9,237	

Table A.3: *Big oil TV advertising*

Year	Ad Spending (Mio. $)	Total Units	No. TV stations
2006	171.989	60,765	470
2007	160.610	96,958	579
2008	216.724	109,214	635
2009	183.474	103,267	581
2010	280.623	107,880	687
2011	212.666	114,785	852
2012	276.033	101,408	704
2013	195.328	77,957	704
2014	217.519	66,470	511
2015	190.307	80,795	705
2016	160.104	70,005	377
2017	191.017	64,168	438
2018	154.930	71,379	475
2019	168.959	71,853	511
Total	2,780.283	1,196,904	

Table A.4: *Koch Industries newspaper advertising*

Year	Ad Spending (Mio. $)	Total Units	No. Newspapers
2006	0.013	3	3
2007	0.033	2	2
2008	1.617	23	9
2009	0.744	9	9
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0.027	1	1
2014	0	0	0
2015	0	0	0
2016	0	0	0
2017	0	0	0
2018	0	0	0
2019	0	0	0
Total	2.434	38	

Table A.5: *Koch Industries TV advertising*

Year	Ad Spending (Mio. $)	Total Units	No. TV stations
2006	32.982	11,601	183
2007	41.548	9,850	215
2008	67.694	15,970	433
2009	89.066	23,747	670
2010	94.903	24,891	694
2011	83.251	28,558	725
2012	74.487	29,977	823
2013	65.426	38,169	810
2014	47.591	97,919	767
2015	72.138	85,808	802
2016	59.257	97,572	821
2017	45.594	133,992	688
2018	51.617	122,642	781
2019	52.475	142,178	759
Total	878.029	862,874	

In what follows, we show big oil and Koch Industries advertising spending over time by media type, starting with big oil newspaper advertising in Figure A.1 and the corresponding TV spending in Figures A.2 and A.3, before moving to Koch Industries TV spending in Figure A.4.

For big oil newspaper advertising, we see a marked concentration of spending around election dates (denoted by vertical black lines) up until the 2010 midterm elections, despite the typically higher competition (and prices) for ads in these periods. Afterward, we can observe a shift in advertising patterns, first away from election dates in 2013/14, and then a general move away from the newspaper as a medium. While there is a general trend of a decline in newspaper-level advertising, this cannot explain the relatively sudden decline in big oil advertising, particularly for the national newspapers (*New York Times*, *USA Today*, *Wall Street Journal*), which have continued to attract substantial advertising revenue even in more recent times.

Turning to TV advertising by big oil, Figure A.2 shows that overall spending is more equally dispersed across time, although the early years of the Obama administration still exhibit the highest concentrations of funding. It is worth noting that there is a visible decline in local spot TV advertising – the channel of advertising typically used for targeted political ads – after the election of Donald Trump. In addition, the month with the overall highest big oil TV spending in our sample period, December 2015, coincides with the month in which the Paris Agreement was reached.

Next, in Figure A.3, we show a graph on TV spending by big oil compared to their smaller industry peers, "small oil," analogous to the newspaper figures shown in the main body of text. The companies designated as "small oil" consist of Ashland Inc., BHP Billiton Group, ConocoPhillips, Energy Transfer Partners, Equinor, Hess Corp., Marathon Oil, Marathon Petroleum, Petroleos De Venezuela, Phillips 66, and Valero Energy Corp.

Finally, as shown in Figure A.4, Koch Industries TV advertising peaked in 2010 and returned almost to 2006/07 levels in 2013/14 before another increase in the first half of 2015.

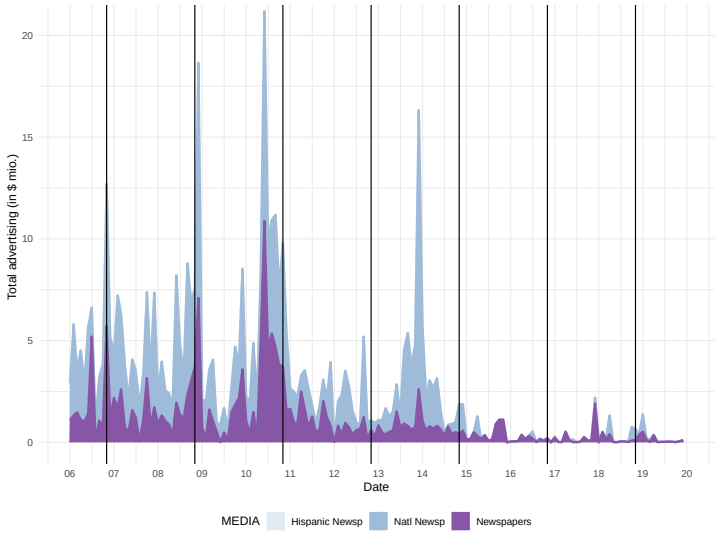

Figure A.1: *Big oil newspaper ads by media type*

National newspapers consist of the New York Times, USA Today, and the Wall Street Journal. All other local/regional outlets are classified as "Newspapers". Hispanic newspaper advertising tends to be too small to be visible.

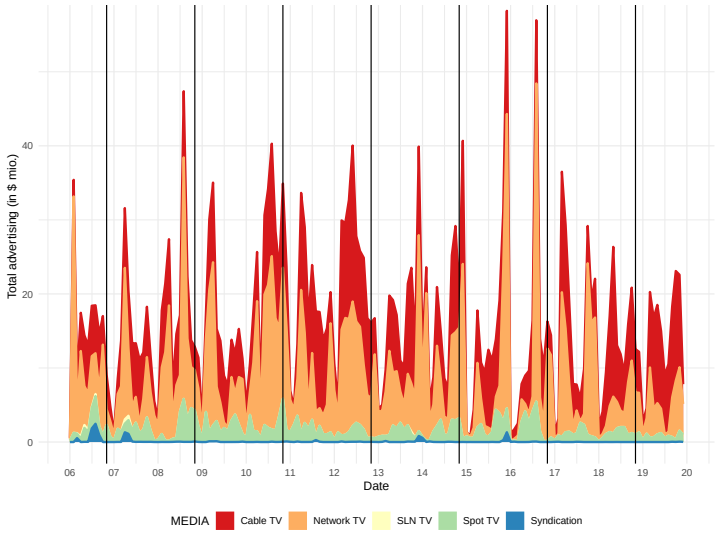

Figure A.2: *Big oil TV ads by media type*

Note that network TV consists of centralized advertising on the national broadcast networks (ABC, CBS, FOX, ION, MNTV, NBC, WB/UPN/CW), while smaller independent local affiliate stations are categorized as spot TV. "SLN TV" refers to Spanish language network TV, and, similar to syndication, only accounts for very small amounts of advertising.

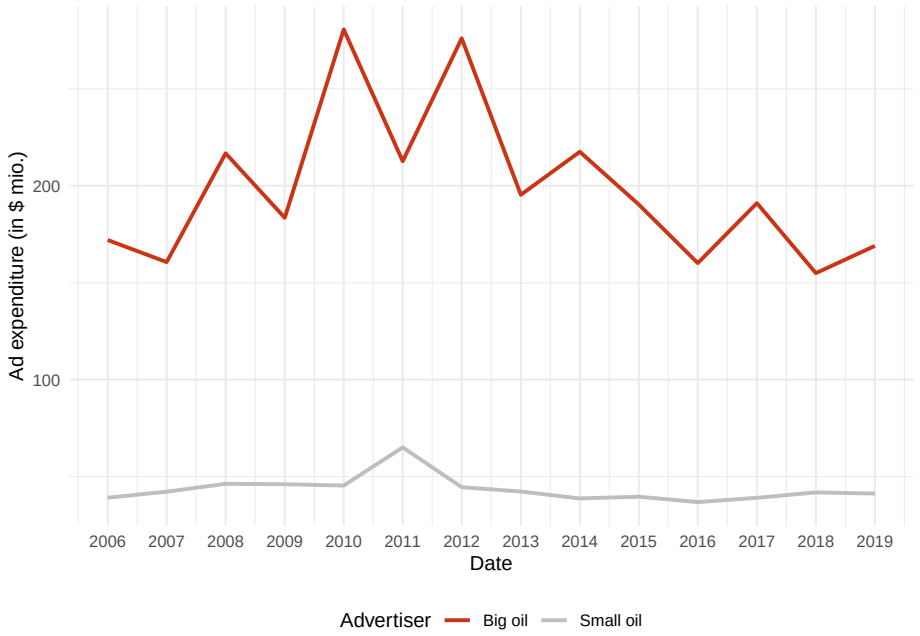

Figure A.3: *Big oil vs. small oil TV advertising*

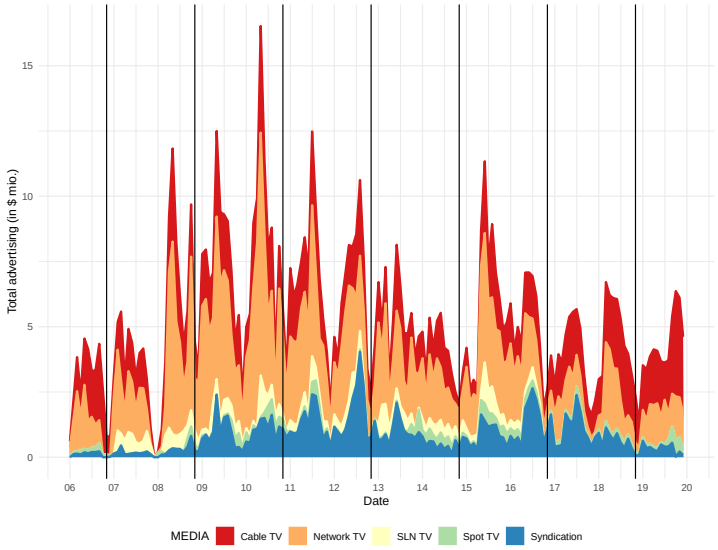

Figure A.4: *Koch Industries TV ads by media type*

Note that network TV consists of centralized advertising on the national broadcast networks (ABC, CBS, FOX, ION, MNTV, NBC, WB/UPN/CW), while smaller independent local affiliate stations are categorized as spot TV. "SLN TV" refers to Spanish language network TV.

A.2 Further evidence and robustness

A.2.1 Full estimates for Table 1

Table A.6: *Big oil vs. small oil advertising around elections (Sep, Oct, Nov)*

	Outcome: monthly newspaper ad expenditure (in $1,000)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.009		0.034		−0.012**	
	(0.007)		(0.070)		(0.006)	
Election period (excl. Nov) × big oil	0.078***		0.364*		0.060***	
	(0.017)		(0.186)		(0.014)	
Election period (incl. Nov)		−0.007		0.006		−0.008
		(0.006)		(0.060)		(0.005)
Election period (incl. Nov) × big oil		0.084***		0.528***		0.057***
		(0.017)		(0.195)		(0.013)
BP × deepwater	0.733***	0.735***	6.607***	6.614***	0.398***	0.400***
	(0.181)	(0.181)	(1.542)	(1.542)	(0.134)	(0.134)
Ad price ($1,000/unit)	−0.024***	−0.024***	−0.033***	−0.034***	0.0001	0.0001
	(0.007)	(0.007)	(0.010)	(0.010)	(0.002)	(0.002)
Firm × newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.088	0.088	0.616	0.616	0.056	0.056
R^2 (overall)	0.193	0.193	0.251	0.252	0.133	0.133
R^2 (projected/within)	0.005	0.005	0.028	0.029	0.001	0.001
Observations	457,815	457,815	26,310	26,310	431,505	431,505

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

A.2.2 Big oil advertising around elections with expanded reference group - full estimates for Table 2

The following estimates include an expanded reference group that extends small oil advertising data with an outlet-level advertising measure for the 500 largest corporate advertisers (excluding big oil and Koch Industries) by recorded spending. For these advertisers, we are limited to media market-level spending by media type, as well as total recorded monthly advertising revenue by outlet. Therefore, to incorporate this information into our media outlet level analysis, we create an imputed outlet-level advertising measure as follows. For every actor, their monthly media market (DMA) and media type (local TV, network TV, cable TV, local newspaper, national newspaper) spending is assigned to particular outlets in proportion to an outlet's total advertising share in the respective media market/outlet type category.

Table A.7 shows that big oil significantly increases spending relative to other major advertisers, and these increases tend to be driven by the largest newspapers. For outlets with a more limited reach, we find smaller relative increases for the two months before the election (September and October), but these increases do not appear to last into November.[3]

As shown in Table A.8, the nature of the results stays the same when we perform the analysis at the media market (DMA) aggregation level of the expanded corporate reference group. This specification eliminates the need for imputed data.

Taken together, this alternative control group supports the notion that big oil advertising ahead of important elections stands out relative to other large corporate advertisers.

[3]A quantitative interpretation directly as elasticities would require the usual caveating, as described in Chen and Roth (2024).

Table A.7: *Big oil vs. other corporate newspaper advertising around elections (Sep, Oct, Nov) - expanded reference group*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	0.024***		−0.022		0.027***	
	(0.004)		(0.018)		(0.004)	
Election period (excl. Nov) × big oil	0.058***		0.440**		0.036***	
	(0.017)		(0.185)		(0.014)	
Election period (incl. Nov)		0.011***		−0.020		0.013***
		(0.004)		(0.017)		(0.004)
Election period (incl. Nov) × big oil		−0.004		0.491**		−0.030**
		(0.017)		(0.195)		(0.013)
BP × deepwater	0.757***	0.763***	6.479***	6.497***	0.422***	0.428***
	(0.180)	(0.180)	(1.520)	(1.521)	(0.134)	(0.134)
Ad price ($1,000/unit)	−0.054***	−0.054***	−0.071***	−0.071***	0.007*	0.007*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.33	2.33	3.276	3.276	2.244	2.244
R^2 (overall)	0.6	0.6	0.548	0.548	0.606	0.606
R^2 (projected/within)	0.003	0.002	0.023	0.023	0	0
Observations	9,113,638	9,113,638	757,910	757,910	8,355,728	8,355,728

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media outlet in a given month. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.8: *Big oil vs. other corporate newspaper advertising around elections (Sep, Oct, Nov) - expanded reference group - DMA level*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)	
	(1)	(2)
Election period (excl. Nov)	−0.010	
	(0.013)	
Election period (excl. Nov) × big oil	0.155***	
	(0.036)	
Election period (incl. Nov)		−0.029**
		(0.013)
Election period (incl. Nov) × big oil		0.091**
		(0.035)
BP × deepwater	1.725***	1.735***
	(0.434)	(0.434)
DMA FE	Yes	Yes
Month-of-year FE	Yes	Yes
Mean dependent variable	2.067	2.067
R^2 (overall)	0.036	0.036
R^2 (projected/within)	0.001	0.001
Observations	3,960,545	3,960,545

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media market (DMA) in a given month. Standard errors clustered at the DMA level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

A.2.3 Big oil TV advertising and elections

Table A.9: *Big oil vs. small oil TV advertising around elections (Sep, Oct, Nov)*

	Outcome: monthly TV ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.049***		−0.049***		−0.128***	
	(0.004)		(0.005)		(0.026)	
Election period (excl. Nov) × big oil	0.034***		0.017**		0.237***	
	(0.008)		(0.007)		(0.055)	
Election period (incl. Nov)		−0.043***		−0.042***		−0.122***
		(0.003)		(0.004)		(0.024)
Election period (incl. Nov) × bil oil		−0.006		−0.013**		0.083
		(0.007)		(0.007)		(0.053)
BP × deepwater	0.319***	0.321***	0.196***	0.198***	1.932***	1.947***
	(0.059)	(0.059)	(0.053)	(0.053)	(0.406)	(0.406)
Ad price ($1,000/unit)	0.004*	0.004*	0.149***	0.152***	0.005**	0.005**
	(0.002)	(0.002)	(0.041)	(0.041)	(0.002)	(0.002)
Media	All TV	All TV	Spot TV	Spot TV	Netw./ Cable TV	Netw./ Cable TV
Firm × TV station FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.218	0.218	0.173	0.173	0.769	0.769
R^2 (overall)	0.275	0.275	0.207	0.207	0.391	0.391
R^2 (projected/within)	0	0	0	0	0.002	0.002
Observations	2,774,595	2,774,595	2,562,375	2,562,375	212,220	212,220

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise. All specifications control for a measure of average advertising price in a given media outlet and month, as well as a dummy for advertising by BP during the period of the Deepwater Horizon oil spill (April to September 2010).

Table A.10: *Big oil vs. other corporate TV advertising around elections (Sep, Oct, Nov) - expanded reference group*

	Outcome: monthly TV ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	-0.087^{***}		-0.164^{***}		-0.106^{***}	
	(0.002)		(0.002)		(0.005)	
Election period (excl. Nov) × big oil	0.010		0.036^{***}		0.149^{***}	
	(0.007)		(0.007)		(0.052)	
Election period (incl. Nov)		-0.078^{***}		-0.137^{***}		-0.113^{***}
		(0.002)		(0.002)		(0.004)
Election period (incl. Nov) × big oil		-0.046^{***}		-0.016^{**}		-0.027
		(0.007)		(0.007)		(0.051)
BP × deepwater	0.359^{***}	0.360^{***}	0.223^{***}	0.224^{***}	2.049^{***}	2.063^{***}
	(0.059)	(0.059)	(0.052)	(0.052)	(0.406)	(0.406)
Ad price ($1,000/unit)	0.010^{***}	0.010^{***}	1.323^{***}	1.323^{***}	0.009^{***}	0.009^{***}
	(0.001)	(0.001)	(0.017)	(0.017)	(0.001)	(0.001)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Media	All TV	All TV	Spot TV	Spot TV	Netw./ Cable TV	Netw./ Cable TV
Mean dependent variable	4.023	4.023	3.471	3.471	7.173	7.173
R^2 (overall)	0.665	0.665	0.625	0.625	0.653	0.653
R^2 (projected/within)	0	0	0.003	0.003	0.001	0.001
Observations	45,811,985	45,811,985	38,982,322	38,982,322	6,829,663	6,829,663

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media outlet in a given month. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

A.2.4 Advertising and elections excluding BP

Table A.11: *Big oil vs. small oil newspaper advertising around elections (Sep, Oct, Nov) - without BP*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.008		0.004		−0.009	
	(0.007)		(0.069)		(0.006)	
Election period (excl. Nov) × big oil	0.070***		0.499**		0.044***	
	(0.020)		(0.225)		(0.014)	
Election period (incl. Nov)		−0.010		−0.018		−0.009*
		(0.006)		(0.059)		(0.005)
Election period (incl. Nov) × big oil		0.079***		0.685***		0.041***
		(0.020)		(0.242)		(0.013)
Ad price ($1,000/unit)	−0.022***	−0.022***	−0.031***	−0.031***	−0.001	−0.001
	(0.007)	(0.007)	(0.010)	(0.010)	(0.002)	(0.002)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.076	0.076	0.541	0.541	0.047	0.047
R^2	0.207	0.207	0.251	0.252	0.149	0.149
Observations	427,294	427,294	24,556	24,556	402,738	402,738

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.12: *Big oil vs. other corporate newspaper advertising around elections (Sep, Oct, Nov) - expanded reference group without BP*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	0.024***		−0.023		0.027***	
	(0.004)		(0.018)		(0.004)	
Election period (excl. Nov) × big oil	0.051**		0.574**		0.021	
	(0.020)		(0.225)		(0.014)	
Election period (incl. Nov)		0.011***		−0.021		0.013***
		(0.004)		(0.017)		(0.004)
Election period (incl. Nov) × big oil		−0.009		0.648***		−0.046***
		(0.021)		(0.243)		(0.013)
Ad price ($1,000/unit)	−0.054***	−0.054***	−0.071***	−0.071***	0.007*	0.007*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.337	2.337	3.28	3.28	2.251	2.251
R^2 (overall)	0.6	0.6	0.549	0.549	0.606	0.606
R^2 (projected/within)	0.002	0.002	0.023	0.023	0	0
Observations	9,083,117	9,083,117	756,156	756,156	8,326,961	8,326,961

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

A.2.5 Koch Industries TV advertising around elections

Table A.13 compares paper product advertising spending between Koch Industries and competitors from the same sector. Only competing firms with at least $1 million in recorded advertising spending are considered, which includes the following: Atlas Holdings, Dart Container, Huhtamaki, Kimberly-Clark, Kruger, Oasis Brands, Procter & Gamble, and Rank Group.

Table A.13: *Koch vs. non-Koch paper product advertising around elections (Sep, Oct, Nov)*

	Outcome: monthly ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.082***		−0.086***		0.036*	
	(0.005)		(0.006)		(0.022)	
Election period (excl. Nov) × Koch	0.132***		0.158***		−0.189***	
	(0.018)		(0.019)		(0.070)	
Election period (incl. Nov)		−0.071***		−0.078***		0.062***
		(0.005)		(0.006)		(0.023)
Election period (incl. Nov) × Koch		0.073***		0.101***		−0.266***
		(0.018)		(0.018)		(0.074)
Ad price ($1,000/unit)	0.00004	0.00003	−0.122**	−0.118**	0.001	0.001
	(0.001)	(0.001)	(0.058)	(0.058)	(0.001)	(0.001)
Media	All TV	All TV	Spot TV	Spot TV	Netw./ Cable TV	Netw./ Cable TV
Firm × TV station FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.63	0.63	0.536	0.536	1.763	1.763
R^2 (overall)	0.524	0.524	0.404	0.404	0.753	0.753
R^2 (projected/within)	0	0	0	0	0	0
Observations	1,661,292	1,661,292	1,533,942	1,533,942	127,350	127,350

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media outlet in a given month. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

A.2.6 Advertising and elections in different time periods

Table A.14: *Big oil vs. small oil advertising around elections (Sep, Oct, Nov) - 2007-2010*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.029**		−0.032		−0.029***	
	(0.013)		(0.148)		(0.011)	
Election period (excl. Nov) × big oil	0.207***		0.933**		0.167***	
	(0.043)		(0.398)		(0.039)	
Election period (incl. Nov)		−0.028**		−0.115		−0.023**
		(0.011)		(0.131)		(0.009)
Election period (incl. Nov) × big oil		0.216***		1.145***		0.164***
		(0.044)		(0.396)		(0.040)
BP × deepwater	0.557***	0.564***	6.305***	6.333***	0.236*	0.242*
	(0.179)	(0.179)	(1.494)	(1.500)	(0.135)	(0.135)
Ad price ($1,000/unit)	−0.011	−0.011	−0.034*	−0.034*	−0.013*	−0.013*
	(0.009)	(0.009)	(0.019)	(0.019)	(0.007)	(0.007)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.13	0.13	1.044	1.044	0.08	0.08
R^2	0.338	0.338	0.482	0.483	0.199	0.2
Observations	137,880	137,880	7,155	7,155	130,725	130,725

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.15: *Big oil vs. small oil advertising around elections (Sep, Oct, Nov) - 2011-2019*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.018***		−0.070		−0.014***	
	(0.006)		(0.068)		(0.005)	
Election period (excl. Nov) × big oil	0.031*		0.204		0.020	
	(0.019)		(0.162)		(0.017)	
Election period (incl. Nov)		−0.013**		−0.059		−0.010**
		(0.006)		(0.062)		(0.005)
Election period (incl. Nov) × big oil		0.013		0.179		0.003
		(0.017)		(0.155)		(0.015)
Ad price ($1,000/unit)	−0.010*	−0.010*	−0.014**	−0.014**	0.004	0.004
	(0.005)	(0.005)	(0.007)	(0.007)	(0.003)	(0.003)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.063	0.063	0.402	0.402	0.041	0.041
R^2	0.189	0.189	0.18	0.18	0.181	0.181
Observations	267,210	267,210	15,825	15,825	251,385	251,385

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.16: *Big oil vs. other corporate newspaper advertising around elections (Sep, Oct, Nov) - extended reference group - 2007-2010*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.080***		−0.166***		−0.079***	
	(0.008)		(0.039)		(0.008)	
Election period (excl. Nov) × big oil	0.242***		1.058***		0.200***	
	(0.043)		(0.385)		(0.039)	
Election period (incl. Nov)		−0.114***		−0.223***		−0.111***
		(0.007)		(0.034)		(0.008)
Election period (incl. Nov) × big oil		0.198***		1.175***		0.147***
		(0.044)		(0.387)		(0.040)
BP × deepwater	0.591***	0.608***	6.242***	6.292***	0.273**	0.288**
	(0.178)	(0.179)	(1.491)	(1.499)	(0.134)	(0.135)
Ad price ($1,000/unit)	−0.033***	−0.033***	−0.019***	−0.019***	−0.065***	−0.066***
	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	3.206	3.206	4.547	4.547	3.093	3.093
R^2 (overall)	0.718	0.718	0.663	0.663	0.723	0.723
R^2 (projected/within)	0	0	0.001	0.002	0	0.001
Observations	2,504,286	2,504,286	195,450	195,450	2,308,836	2,308,836

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.17: *Big oil vs. other corporate newspaper advertising around elections (Sep, Oct, Nov) - extended reference group - 2011-2019*

	Outcome: monthly newspaper ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.103***		−0.145***		−0.100***	
	(0.005)		(0.022)		(0.005)	
Election period (excl. Nov) × big oil	0.071***		0.240		0.062***	
	(0.019)		(0.158)		(0.017)	
Election period (incl. Nov)		−0.108***		−0.138***		−0.106***
		(0.004)		(0.020)		(0.004)
Election period (incl. Nov) × big oil		−0.011		0.129		−0.018
		(0.017)		(0.150)		(0.015)
Ad price ($1,000/unit)	−0.016***	−0.016***	−0.024***	−0.024***	0.023***	0.023***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Firm x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	1.866	1.866	2.727	2.727	1.788	1.788
R^2 (overall)	0.643	0.643	0.6	0.6	0.648	0.648
R^2 (projected/within)	0	0	0.003	0.003	0	0
Observations	5,689,754	5,689,754	473,070	473,070	5,216,684	5,216,684

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular advertiser-media outlet-month combination. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.18: *Koch vs. non-Koch paper product advertising around elections (Sep, Oct, Nov) - 2007-2010*

	Outcome: monthly ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.146***		−0.163***		−0.010	
	(0.011)		(0.012)		(0.035)	
Election period (excl. Nov) × Koch	0.546***		0.555***		0.433**	
	(0.044)		(0.045)		(0.174)	
Election period (incl. Nov)		−0.127***		−0.140***		−0.027
		(0.011)		(0.011)		(0.037)
Election period (incl. Nov) × Koch		0.417***		0.419***		0.402**
		(0.043)		(0.044)		(0.180)
Ad price ($1,000/unit)	0.001	0.0005	0.156**	0.154**	0.002	0.002
	(0.001)	(0.001)	(0.064)	(0.063)	(0.001)	(0.001)
Media	All TV	All TV	Spot TV	Spot TV	Netw./ Cable TV	Netw./ Cable TV
Firm × TV station FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.599	0.599	0.508	0.508	1.69	1.69
R^2 (overall)	0.626	0.626	0.54	0.54	0.803	0.803
R^2 (projected/within)	0.002	0.001	0.002	0.002	0.001	0.001
Observations	415,206	415,206	383,346	383,346	31,860	31,860

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media outlet in a given month. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

Table A.19: *Koch vs. non-Koch paper product advertising around elections (Sep, Oct, Nov) - 2011-2019*

	Outcome: monthly ad expenditure (inv. hyp. sine)					
	(1)	(2)	(3)	(4)	(5)	(6)
Election period (excl. Nov)	−0.063***		−0.074***		0.198***	
	(0.006)		(0.006)		(0.038)	
Election period (excl. Nov) × Koch	−0.040*		−0.001		−0.512***	
	(0.024)		(0.024)		(0.106)	
Election period (incl. Nov)		−0.063***		−0.078***		0.218***
		(0.006)		(0.005)		(0.040)
Election period (incl. Nov) × Koch		−0.062***		−0.018		−0.591***
		(0.023)		(0.023)		(0.115)
Ad price ($1,000/unit)	−0.0002	−0.0002	−0.307***	−0.296***	0.001	0.001
	(0.001)	(0.001)	(0.067)	(0.067)	(0.001)	(0.001)
Media	All TV	All TV	Spot TV	Spot TV	Netw./ Cable TV	Netw./ Cable TV
Firm × TV station FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.615	0.615	0.519	0.519	1.784	1.784
R^2 (overall)	0.546	0.546	0.408	0.408	0.794	0.794
R^2 (projected/within)	0	0	0	0	0.001	0.001
Observations	1,062,549	1,062,549	981,702	981,702	80,847	80,847

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is advertiser spending in a particular media outlet in a given month. Standard errors clustered at the advertiser × media outlet level in parentheses. "Election period" is a dummy taking the value 1 for advertising in the months of September, October, and November (if included) in an election year, and 0 otherwise.

A.2.7 Big oil advertising and demand for gas

In this section, we perform an analysis of gas station and media market-level demand based on mobile device traffic data provided by Safegraph. These data contain anonymized location information of millions of mobile devices, including the number of device visits at given commercial locations, including gas stations. Data availability starts in January 2018, and our sample period runs from this date until the end of February 2020 (due to the onset of the COVID-19 pandemic in the United States).

Our unit of analysis is a visit-based proxy for fuel demand in a given gas-station/DMA month combination for a particular big oil branded station, which includes nearly 40,000 individual locations for these brands (BP, Chevron, Exxon Mobil, and Shell Oil, as reported in Table A.20).

We perform the analysis both at the individual gas station level, which allows for station fixed effects, and at the media market level, which is the level at which we can observe local advertising spending. We look at relative numbers of visits within a given media market area (for both levels of aggregation) to account for potential changes in the underlying mobile device population providing the data over time. Lastly, advertising intensity is scaled by the media market population.

Tables A.21 and A.22 contain descriptive statistics for station-level and DMA-level variables, respectively. As shown in Tables A.23 and A.24, we do not find any indications of a significant correlation between big oil advertising intensity and oil demand, even when we vary advertisement timing and include smaller competitors in the big oil demand shares as well.

Table A.20: *Number of gas stations by corporate affiliation in the Safegraph data*

Brand	Number of Stations
BP	6,899
Chevron	6,830
Circle K	5,174
CITGO	3,871
Exxon Mobil	11,756
Marathon	5,812
Phillips 66	2,588
Shell Oil	13,671
Speedway	3,436
Sunoco	5,467
Valero Energy	5,191

Table A.21: *Gas station-level gas demand indicators - descriptive statistics*

Statistic	N	Mean	St. Dev.	Min	Max
Gas station visit share (station visits/10,000 DMA station visits)	944,682	56.146	163.079	0.012	10,000.000
Gas station visit share (station visits/10,000 DMA station visits), including small oil	944,682	32.403	95.631	0.008	7,382.550

Table A.22: *DMA-level petrol demand indicators - descriptive statistics*

Statistic	N	Mean	St. Dev.	Min	Max
Gas brand DMA level visitor share (percent)	21,320	24.878	26.365	0.000	100.000
Gas brand DMA level visitor share (percent), including small oil	21,320	14.357	17.689	0.000	100.000
Big oil advertising dollars per 1000 population	21,320	0.252	2.714	0.000	95.752
Big oil advertising dollars per 1000 population, 3 month total	21,320	0.806	7.551	0.000	239.784
Big oil advertising dollars per 1000 population, 6 month total	21,320	1.675	14.335	0.000	394.189
Big oil advertising dollars per 1000 population, 12 month total	21,320	3.476	27.082	0.000	670.664
Small oil advertising dollars per 1000 population	21,320	1.293	5.421	0.000	78.674
Small oil advertising dollars per 1000 population, 3 month total	21,320	4.113	13.423	0.000	193.966
Small oil advertising dollars per 1000 population, 6 month total	21,320	8.632	23.948	0.000	302.827
Small oil advertising dollars per 1000 population, 12 month total	21,320	17.924	43.186	0.000	570.275

Table A.23: *Big oil ad spending and station-level petrol demand*

	Outcome: Gas station visit share (station visits/10,000 DMA station visits)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ad $/1000 pop.	−0.00005				0.0001			
	(0.004)				(0.003)			
Big oil competitor ad $/1000 pop.	0.001				0.0005			
	(0.003)				(0.002)			
Ad $/1000 pop., 3 month total		−0.00004				0.001		
		(0.002)				(0.001)		
Big oil competitor ad $/1000 pop., 3 month total		0.001				0.001		
		(0.001)				(0.001)		
Ad $/1000 pop., 6 month total			−0.0001				0.0003	
			(0.001)				(0.001)	
Big oil competitor ad $/1000 pop., 6 month total			0.0004				0.0005	
			(0.001)				(0.001)	
Ad $/1000 pop., 12 month total				0.001				0.001
				(0.001)				(0.001)
Big oil competitor ad $/1000 pop., 12 month total				−0.0002				−0.00001
				(0.001)				(0.001)
Small oil competitor ad $/1000 pop.					−0.002			
					(0.002)			
Small oil competitor ad $/1000 pop., 3 month total						−0.0003		
						(0.001)		
Small oil competitor ad $/1000 pop., 6 month total							−0.0001	
							(0.0005)	
Small oil competitor ad $/1000 pop., 12 month total								−0.0002
								(0.0003)
Visit share includes small oil	No	No	No	No	Yes	Yes	Yes	Yes
Station fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year x month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE clustered at	Station	Station	Station	Station	Station	Station	Station	Station
Mean dependent variable	56.146	56.146	56.146	56.146	32.403	32.403	32.403	32.403
R^2 (full)	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
R^2 (projected/within)	0	0	0	0	0	0	0	0
Observations	944,682	944,682	944,682	944,682	944,682	944,682	944,682	944,682

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. Standard errors clustered at the gas station level in parentheses.

Table A.24: *Big oil ad spending and media market-level petrol demand*

	Outcome: Gas brand DMA level visitor share (percent)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ad $/1000 pop.	−0.002				0.001			
	(0.003)				(0.004)			
Big oil competitor ad $/1000 pop.	0.001				0.001			
	(0.002)				(0.002)			
Ad $/1000 pop., 3 month total		−0.001				0.001		
		(0.002)				(0.002)		
Big oil competitor ad $/1000 pop., 3 month total		0.0002				0.001		
		(0.001)				(0.001)		
Ad $/1000 pop., 6 month total			−0.001				0.001	
			(0.001)				(0.001)	
Big oil competitor ad $/1000 pop., 6 month total			0.0002				0.001	
			(0.001)				(0.001)	
Ad $/1000 pop., 12 month total				0.001				0.002
				(0.001)				(0.001)
Big oil competitor ad $/1000 pop., 12 month total				−0.0003				0.0001
				(0.001)				(0.0004)
Small oil competitor ad $/1000 pop.					−0.001			
					(0.002)			
Small oil competitor ad $/1000 pop., 3 month total						0.00001		
						(0.001)		
Small oil competitor ad $/1000 pop., 6 month total							0.0002	
							(0.0005)	
Small oil competitor ad $/1000 pop., 12 month total								0.0002
								(0.0005)
Visitor share includes small oil	No	No	No	No	Yes	Yes	Yes	Yes
DMA x Brand fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year x month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE clustered at	DMA x brand	DMA x brand	DMA x brand	DMA x brand	DMA x brand	DMA x brand	DMA x brand	DMA x brand
Mean dependent variable	24.878	24.878	24.878	24.878	14.357	14.357	14.357	14.357
R^2 (full)	0.998	0.998	0.998	0.998	0.997	0.997	0.997	0.997
R^2 (projected/within)	0	0	0	0	0	0	0	0.001
Observations	21,320	21,320	21,320	21,320	21,320	21,320	21,320	21,320

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. Standard errors clustered at the media market (DMA) × gasoline brand-level in parentheses.

A.2.8 Koch paper and industry competitor product advertising and demand for paper products

In this section, we perform an analysis of annual household paper product spending (sourced from Simply Analytics estimates generated with information from the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey) for the years 2011 to 2019. Spending is only available in aggregate figures, not separated by brand. Our unit of analysis is a U.S. mainland county in a given year, and advertising spending is measured at the media market (DMA) level and reflects all available DMA-specific newspaper and TV advertising from our Kantar data. To account for different market size, we divide the total spending by the DMA population to get a per capita advertising measure (dollars per capita).

Table A.25 contains descriptive statistics for the main variables. Table A.26 displays the results of the county-level demand regressions. The coefficients indicate that while there is a strong positive association between household expenditures and local advertising in the same year (and to a more limited extent with the amount of advertising in the previous year), this relationship does not exist for Koch Industries' paper product advertising, since the coefficients (baseline and interaction with Koch) sum up to approximately zero or even a negative value. These results are consistent with the conjecture that Koch advertising may not entirely (or, given the estimates, at all) be driven by the demand potential of the local consumer market for their products.

Table A.25: *Paper demand analysis - descriptive statistics*

Statistic	N	Mean	St. Dev.	Min	Max
Paper product demand	55,872	117.550	10.409	16.200	146.880
Ad spending ($/cap.)	55,872	0.008	0.014	0.000	0.190
Koch	55,872	0.500	0.500	0	1

Table A.26: *Koch paper vs. other paper product advertising and local demand for household paper products*

	Outcome: household paper product demand ($/year)					
	(1)	(2)	(3)	(4)	(5)	(6)
Ad spending ($/cap.)	15.478***		16.271***			
	(1.507)		(1.896)			
Lagged ad spending ($/cap.)		5.324***	−0.738			
		(1.536)	(1.498)			
Ad spending (per cap., inv. hyp. sine)				15.500***		16.284***
				(1.509)		(1.898)
Lag ad spending (inv. hyp. sine)					5.327***	−0.745
					(1.539)	(1.501)
Koch x ad spending ($/cap.)	−19.088***		−29.608***			
	(5.077)		(5.338)			
Koch x lag ad spending ($/cap.)		−8.055*	4.627			
		(4.225)	(4.200)			
Koch x ad spending (inv. hyp. sine)				−19.108***		−29.619***
				(5.078)		(5.339)
Koch x lag spending (inv. hyp. sine)					−8.062*	4.632
					(4.226)	(4.202)
Koch	0.198***	0.075***	0.206***	0.199***	0.075***	0.206***
	(0.031)	(0.023)	(0.035)	(0.031)	(0.023)	(0.035)
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	117.55	117.991	117.991	117.55	117.991	117.991
R^2	0.705	0.706	0.706	0.705	0.706	0.706
Observations	55,872	49,664	49,664	55,872	49,664	49,664

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a county-year. Standard errors clustered at the county level in parentheses.

A.2.9 Advertising and local ballots

Here, we explore whether spending by big oil and Koch Industries increases (relative to their respective reference groups) before state-level ballot initiatives with potential implications for their core fossil fuel-related business activities. We identify a set of 33 ballot initiatives during our sample period, which mostly fall into one of the following categories: (i) higher taxes on oil/carbon tax, (ii) renewable energy requirements/large investments in renewables, (iii) environmental regulations with potential impacts on drilling and fossil fuel processing-related pollution. Table A.27 provides an overview of the ballot items considered.

The results of this analysis are presented in Tables A.28, A.29, and A.30 , respectively. We see positive but insignificant point estimates for big oil and newspapers, which is not entirely surprising given that our newspaper sample is considerably smaller and, while being a good selection of larger to medium-sized outlets, has less complete geographical coverage compared to our TV station-level advertising data. For TV, we do find some positive and significant coefficients for big oil spending in the three months running up to the ballot vote date, and again positive point estimates throughout. Similarly, we find increases in Koch paper product advertising in the months prior to the ballots.[4]

Table A.27: *In-scope ballots*

State	Year	Month	Proposal	Main Component	In-Scope Rationale
AK	2014	8	Alaska Oil Tax Cuts Veto Referendum, Ballot Measure 1	Referendum vote to eliminate oil tax cuts	Oil tax
AK	2018	11	Alaska Ballot Measure 1, Salmon Habitat Protections and Permits Initiative	Oil development restrictions	Oil drilling regulation
AZ	2018	11	Arizona Proposition 127, Renewable Energy Standards Initiative	Increase the government's renewable energy portfolio	Renewable energy
CA	2008	11	November 2008, California Proposition 1A, High-Speed Rail Bond Measure	Construction of new high-speed railway & commuter railway	Ecological transportation
CA	2008	11	California Proposition 7, Renewable Energy Standards and Market Regulations Initiative	More renewable energy in government; faster approvals for renewable energy plants	Renewable energy

[4]We do not report results for Koch newspaper advertising here, given the scarcity of Koch advertising in these outlets, as mentioned previously.

State	Year	Month	Proposal	Main Component	In-Scope Rationale
CA	2008	11	California Proposition 10, Bonds for Alternative Fuels Initiative	Funding for making NEV more affordable; funding for researching renewable energy	Ecological transportation
CA	2010	11	California Proposition 23, Suspension of Greenhouse Gas Emissions Reduction Law Initiative	Loosening greenhouse gas emission reduction policies by making them conditional on unemployment figures	Greenhouse gas emission targets
CA	2018	11	California Proposition 6, Voter Approval for Future Gas and Vehicle Taxes and 2017 Tax Repeal Initiative	Repeal taxes on fuel that had been introduced in 2017	Oil tax
CO	2018	11	Colorado Proposition 112, Minimum Distance Requirements for New Oil, Gas, and Fracking Projects Initiative	Oil/gas drilling restrictions	Oil drilling regulation
FL	2016	11	Florida Solar Energy Subsidies and Personal Solar Use Initiative	Giving citizens right to produce solar while also allowing non-producers not to subsidize solar (overall effect likely to lead to less solar energy)	Renewable energy
FL	2018	11	Florida Amendment 9, Ban Offshore Oil and Gas Drilling and Ban Vaping in Enclosed Indoor Workplaces Amendment	Restrict offshore drilling	Oil drilling regulation
ME	2009	11	Maine Auto Excise Tax Repeal, Question 2	Lower taxes for hyprid and low gasoline consumption ($>$ 40 mpg)	Carbon tax
MA	2014	11	Massachusetts Automatic Gas Tax Increase Repeal Initiative, Question 1	Repeal automatic gas tax increases and minimum cap	Oil tax
MI	2012	11	Michigan Renewable Energy Amendment, Proposal 3	Requiring increased renewable production	Renewable energy
MO	2008	11	Missouri Clean Energy, Proposition C	Minimum of 15 percent of electric energy should be renewable	Renewable energy
NJ	2021	11	New York Proposal 2, Environmental Rights Amendment	Add a right to clean water, clean air, and a healthful environment to the New York Constitution's Bill of Rights	Expand environmental rights
NV	2014	11	Nevada Mining Tax Cap Amendment, Question 2	Removal of 5% tax cap on mining (including oil and gas)	Drilling tax
NV	2018	11	Nevada Question 6, Renewable Energy Standards Initiative	Require 50% of energy from renewable sources by 2030	Renewable energy
NV	2020	11	Nevada Question 6, Renewable Energy Standards Initiative	Require 50% of energy from renewable sources by 2030	Renewable energy
OH	2013	11	Ohio Clean Energy Projects Amendment	Provide $13 billion for clean energy initiatives over 10 years	Renewable energy
OH	2016	11	Ohio Clean Energy Initiative invest $14 billion dollar in research, infrastructure, and developing sites for alternative energy sources	Renewable energy	

State	Year	Month	Proposal	Main Component	In-Scope Rationale
OH	2020	11	Ohio Surcharges for Nuclear, Coal, and Solar Subsidies and Decrease to Renewable Standards Referendum	Overturn HB6, which enacted surcharges to customers of electric utility to support certain electricity providers and decrease renewable portfolio standards	Renewable energy
RI	2014	11	Rhode Island Mass Transit Hub Infrastructure Bonds, Question 6	$35 million in bonds for mass transportation infrastructure	Ecological transportation
UT	2018	11	Utah Nonbinding Opinion Question 1, 10 Cents per Gallon	Gas Tax Increase for Education and Local Roads increase gas tax by 10 cents per gallon to fund local road construction and thereby free up money for education	Oil tax
WA	2006	11	Washington Energy Conservation, Initiative 937	Require certain electric utilities with 25,000 or more customers to meet certain targets for energy conservation and use of renewable energy resources	Renewable energy
WA	2013	11	Washington Aircraft Excise Tax Question, Advisory Vote 4	Impose tax on commuter air carriers	Oil tax
WA	2015	11	Washington Oil Spill Prevention Taxes Advisory Vote No. 10	Retain oil transportation tax	Oil transportation tax
WA	2016	11	Washington Carbon Emission Tax and Sales Tax Reduction, Initiative 732	Carbon tax on fossil fuels and fossil-fuels-generated energy	Carbon tax
WA	2016	11	Washington Modifying Tax Exemption Criteria for Alternative Fuel Vehicles, Advisory Vote 15	Tax exemption for certain alternative fuel vehicles (especially electric vehicles)	Ecological transportation
WA	2018	11	Washington Advisory Vote 19, Non-Binding Question on Oil Spill Tax Repeal	Support Senate Bill 6269, which applied a tax on crude oil and petroleum products when received through a pipeline	Oil transportation tax
WA	2018	11	Washington Initiative 1631, Carbon Emissions Fee Measure	Carbon tax	Carbon tax
WA	2019	11	Washington Initiative 976, Limits on Motor Vehicle Taxes and Fees Measure	Limit annual vehicle fees, change vehicle tax calculation and repeal certain motor tax authorization	Vehicle tax
WA	2019	11	Washington Advisory Vote 27, Nonbinding Question on Petroleum Product Tax	Keep a bill which increases taxes on petroleum products	Oil tax

Table A.28: *Big oil vs. small oil local newspaper advertising around ballot initiative votes*

	Outcome: monthly TV ad expenditure (inv. hyp. sine)		
	(1)	(2)	(3)
Big oil	0.836***	0.832***	0.833***
	(0.263)	(0.265)	(0.268)
Ballot this month	−0.154		
	(0.254)		
Big oil x ballot this month	0.802		
	(0.745)		
Ballot next 3 months		−0.194	
		(0.222)	
Big oil x ballot next 3 months		0.524	
		(0.560)	
Ballot next 6 months			−0.026
			(0.212)
Big oil x ballot next 6 months			0.237
			(0.437)
Media market (DMA) FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Mean dependent variable	0.968	0.968	0.968
R^2 (overall)	0.228	0.228	0.228
R^2 (projected/within)	0.023	0.023	0.023
Observations	24,366	24,366	24,366

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a DMA-month. Standard errors clustered at the DMA level in parentheses. "Ballot next 3 months" takes the value of 1 if there is a relevant ballot taking place in a state overlapping with the DMA in question in any of the 3 months after the current month, and 0 otherwise. Other ballot variables are similarly coded.

Table A.29: *Big oil vs. small oil local TV advertising around ballot initiative votes*

	Outcome: monthly TV ad expenditure (inv. hyp. sine)		
	(1)	(2)	(3)
Big oil	0.701***	0.693***	0.696***
	(0.144)	(0.144)	(0.144)
Ballot this month	−0.517		
	(0.361)		
Big oil x ballot this month	0.279		
	(0.613)		
Ballot next 3 months		−0.342	
		(0.288)	
Big oil x ballot next 3 months		0.829**	
		(0.409)	
Ballot next 6 months			0.182
			(0.278)
Big oil x ballot next 6 months			0.309
			(0.433)
Media market (DMA) FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Mean dependent variable	1.999	1.999	1.999
R^2 (overall)	0.289	0.289	0.29
R^2 (projected/within)	0.012	0.012	0.012
Observations	75,940	75,940	75,940

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a DMA-month. Standard errors clustered at the DMA level in parentheses. "Ballot next 3 months" takes the value of 1 if there is a relevant ballot taking place in a state overlapping with the DMA in question in any of the 3 months after the current month, and 0 otherwise. Other ballot variables are similarly coded.

Table A.30: *Koch vs. non-Koch local TV paper product advertising around ballot initiative votes*

	Outcome: monthly TV ad expenditure (inv. hyp. sine)		
	(1)	(2)	(3)
Koch	−2.429***	−2.434***	−2.445***
	(0.059)	(0.059)	(0.060)
Ballot this month	−0.131		
	(0.160)		
Koch x ballot this month	0.326		
	(0.322)		
Ballot next 3 months		−0.473***	
		(0.112)	
Koch x ballot next 3 months		0.663***	
		(0.246)	
Ballot next 6 months			−0.524***
			(0.112)
Koch x ballot next 6 months			0.830***
			(0.239)
Media market (DMA) FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Mean dependent variable	4.327	4.327	4.327
R^2 (overall)	0.527	0.527	0.527
R^2 (projected/within)	0.198	0.198	0.199
Observations	75,940	75,940	75,940

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a DMA-month. Standard errors clustered at the DMA level in parentheses. "Ballot next 3 months" takes the value of 1 if there is a relevant ballot taking place in a state overlapping with the DMA in question in any of the 3 months after the current month, and 0 otherwise. Other ballot variables are similarly coded.

B Second stage: corporate advertisement and media content

B.1 Data description

B.1.1 Variable definition

Table B.1: *Description of main variables*

	Description/Encoding	**Data source**
Main dependent variables		
Results for query: CC/GW	Share of newspaper articles containing either the phrase "climate change" and/or "global warming" in a given newspaper-month. The total number of articles is determined by the number of database results for "the" in the same newspaper-month combination.	Factiva, ProQuest
Results for query: Wildfire + CC/GW	Share of newspaper articles containing "wildfire"/"forest fire" (excluding "like wildfire") that also contain either the phrase "climate change" and/or "global warming" in a given newspaper-month.	Factiva, ProQuest
Results for query: CC + Policy	Number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming" in a given newspaper-month.	Factiva, ProQuest
Results for query: CC + Cap and Trade	Number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*) in a given newspaper-month.	Factiva, ProQuest

Results for query: CC + Carbon Tax	number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*) in a given newspaper-month.	Factiva, ProQuest
Results for query: Hurricane + CC/GW	Share of newspaper articles containing "hurricane" that also contain either the phrase "climate change" and/or "global warming" in a given newspaper-month.	Factiva, ProQuest
Climate change leaning	A score of the climate science-friendly vs. skeptical leaning of a given newspaper article/item. Computed by taking the most indicative bigrams (by chi-squared statistic as defined by Gentzkow and Shapiro 2010) that make up 5% of the cleaned IPCC and NIPCC report bigrams, respectively, and calculating the difference in the share of article text corresponding to these indicative sets of phrases. A positive score implies a higher share of article phrases present in a given article belonging to the climate science-friendly/IPCC phrase set relative to the corresponding NIPCC share.	IPCC, Heartland Institute, Factiva, LexisNexis, ProQuest
Main independent variables		
Big oil ads (last 3 months, Mio. $)	Ad spending by big oil (ExxonMobil, Shell, Chevron, BP) in the three months prior to the month to which the outcome variable refers to.	Kantar Media
Big oil ad share (last 3 months)	Similar to above, but divided by the total amount of advertisement spending (by any advertiser) recorded by Kantar for the given media outlet in the same period.	Kantar Media

B.1.2 Summary statistics – newspaper article count data

In this section, we present descriptive statistics (Table B.2) and an overview of the newspaper sample (Table B.3) used in our analysis of monthly newspaper article counts based on keyword matches.

The newspaper sample is determined by the overlap between our Kantar advertising data availability and the availability of the newspaper on the Factiva and Proquest databases. In addition, we keep only newspapers with a minimum of 60 months of coverage to remove the most incomplete cases.

Table B.2: *Newspaper article count analysis - descriptive statistics*

Statistic	N	Mean	St. Dev.	Min	Max
Share of articles mentioning climate change/global warming (scaled 0-100)	8,032	0.765	0.680	0.000	7.034
Share of wildfire articles mentioning climate change/global warming	6,369	0.097	0.204	0.000	1.000
Number of policy articles mentioning climate change/global warming	8,032	7.898	10.378	0	106
Number of articles on emissions trading	8,032	0.881	2.037	0	34
Number of articles on carbon taxation	8,032	2.369	3.279	0	35
Share of hurricane articles mentioning climate change/global warming	7,862	3.824	7.622	0.000	100.000
Big oil advertising (mio. $, last 3 months)	7,936	0.142	0.785	0.000	13.677
Big oil advertising share (last 3 months)	7,936	0.001	0.004	0.000	0.069
Advertising price ($ 1000/unit)	7,968	6.536	9.361	0.511	98.953

Table B.3: *Newspaper article count sample*

Newspaper	Months of coverage (2006-19)	Big oil ads (mio. $)
Allentown Morning Call	168	0.027
Arizona Republic	168	0.285
Asbury Park Press	168	0.031
Asheville Citizen-Times	168	0.016
Atlanta Journal Constitution	168	0.389
Austin American-Statesman	165	1.863
Baltimore Sun	168	0.262
Bergen Record	139	0.068
Boston Globe	168	0.814
Camden Courier-Post	168	0
Cincinnati Enquirer	168	0.944
Dayton Daily News	147	0.067
Daytona Beach News-Journal	63	0.035
Detroit Free Press	167	1.182
Detroit News	87	1.091
Greenville News	168	0.037
Hartford Courant	168	0.235
Indianapolis Star	168	1.006
Inland Valley Daily Bulletin	166	0.001
Jacksonville Florida Times-Union	168	0.274
Las Vegas Review-Journal	85	0.108
Long Beach Press Telegram	167	0.080
Los Angeles Daily News	157	0.119
Los Angeles Times	168	10.081
Louisville Courier-Journal	168	0.270
Memphis Commercial Appeal	129	0.177
Minneapolis Star Tribune	168	0.419
Morristown Record	63	0
Nashville Tennessean	167	0.347
New Haven Register	163	0.001
New York Post	168	1.243
New York Times	168	60.958
Newsday	168	0.285
Oakland Tribune	121	0.659
Orlando Sentinel	168	0.466
Palm Beach Post	167	0.313
Philadelphia Daily News	168	0.013
Pittsburgh Post-Gazette	168	2.252
Pittsburgh Tribune Review	128	0.658
Salt Lake Tribune	164	0.171
San Bernardino The Sun	168	0
San Gabriel Valley Tribune	164	0.0002
San Jose Mercury News	72	1.058
Santa Rosa Press Democrat	63	0
South Florida Sun Sentinel	168	0.161
Spartanburg Herald-Journal	101	0.005
St Louis Post-Dispatch	168	1.133
St. Paul Pioneer Press	78	0.093
Tacoma News Tribune	72	0
Tampa Bay Times	166	6.386
Torrance Daily Breeze	167	0.857
USA Today	168	34.825
Wall Street Journal	168	187.125
Washington Post	168	60.983
Total		379.876

B.1.3 Summary statistics – newspaper full text data

In this section, we present an overview of the full-text newspaper article data used in our analysis. Our sample consists of about 180,000 articles on climate change based on containing at least one of the following terms (adopted from Wetts 2020): "climate change," "global warming," "greenhouse effect," and "greenhouse gas/gases/gasses." The newspapers were chosen based on the overlap between the Factiva/Proquest/LexisNexis databases and our advertising information from Kantar. When collecting articles, we removed duplicates and limited our search to articles appearing in the print versions of the newspapers.

An overview of the newspapers and the number of extracted articles is provided in Table B.4. Thereafter, in Figure B.1 we plot the distribution of our index, as described in Section 3.2. Tables and B.6 provide more insight into the most indicative phrases from the IPCC/NIPCC reference texts and a sample of the resulting article classifications at either end of the index scale, respectively.

Table B.4: *Newspaper full text data coverage*

Newspaper	Total CC articles
Albuquerque Journal	729
Allentown Morning Call	1837
Arizona Republic	3217
Asbury Park Press	3026
Asheville Citizen-Times	2636
Atlanta Journal Constitution	2253
Atlantic City Press	320
Austin American-Statesman	1539
Baltimore Sun	2099
Bergen Record	1723
Boston Globe	7784
Bucks County Courier Times	344
Buffalo News	1803
Camden Courier-Post	1202
Chicago Tribune	5891
Cincinnati Enquirer	1441
Daily Herald (Arlington Heights)	5837
Dayton Daily News	2004
Daytona Beach News-Journal	709
Detroit Free Press	2146
Detroit News	1083
East Brunswick Home Nws& Trib	1272
Greenville News	996
Hartford Courant	3063
Indianapolis Star	1488
Inland Valley Daily Bulletin	1198
Jacksonville Florida Times-Union	1104
Las Vegas Review-Journal	850
Long Beach Press Telegram	1199
Los Angeles Daily News	1458
Los Angeles Times	10520
Louisville Courier-Journal	1980
Marin Independent Journal	438
Memphis Commercial Appeal	1809
Milwaukee Journal-Sentinel	848
Minneapolis Star Tribune	2862
Morristown Record	1234
Nashville Tennessean	1207
New Haven Register	592
New York Daily News	1297
New York Post	1541
New York Times	16574
Newsday	3145
Oakland Tribune	5349
Oklahoma Oklahoman	1571
Orlando Sentinel	4404
Palm Beach Post	1216
Philadelphia Daily News	503
Philadelphia Inquirer	2728
Pittsburgh Post-Gazette	4587
Pittsburgh Tribune Review	2316
Providence Journal	3048
Richmond Times Dispatch	3141
Salt Lake Tribune	3845
San Bernardino The Sun	2037
San Gabriel Valley Tribune	1930
San Jose Mercury News	1763
Santa Rosa Press Democrat	2861
South Florida Sun Sentinel	5054
Spartanburg Herald-Journal	568
St Louis Post-Dispatch	3803
St. Paul Pioneer Press	1043
Tampa Bay Times	3101
Tampa Tribune	1546
Torrance Daily Breeze	1858
Usa Today	2924
Ventura County Star	1894
Wall Street Journal	8076
Washington Post	13084

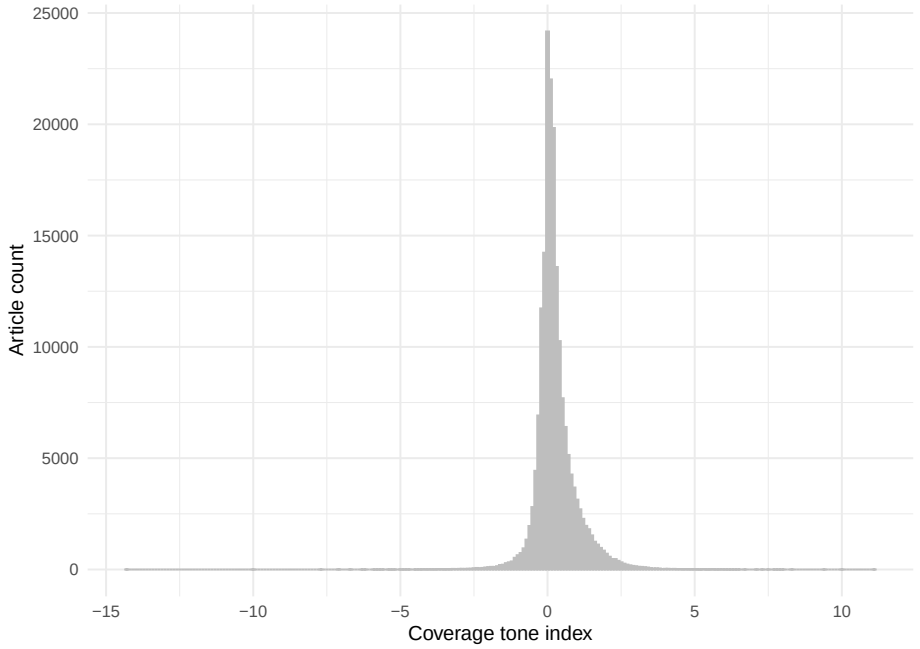

Figure B.1: *Distribution of climate change tone index scores (negative = more skepticism)*

Table B.5: *Top 10 bigrams for each side of the climate change debate*

Top bigrams - pro CC science	Top bigrams - CC skeptical
climat chang	elev co
high confid	co enrich
medium confid	atmospher co
ghg emiss	co concentr
develop countri	air co
low confid	warm period
land use	littl ice
sustain develop	co content
emiss reduct	twentieth centuri
global mean	ice age

Bigrams have been stemmed (using the Porter2 stemming algorithm). All general English language stopwords, as well as numerals, have been removed before separating the underlying texts into bigrams.

Table B.6: *Sample of article titles on each end of the tone index distribution*

Titles - pro CC science	Titles - CC skeptical
Deal At U.N. Climate Talks	Global Warming Maybe?
Blue States, Green Skies	Enter: Global Warming Candidate Al Gore!
Enviroguy: Climate Report: Coastal, Low-Lying Areas At Risk	Thermometer Envy
Greenhouse-Gas Lawsuit Tossed:	So Much Hot Air
Aps Gets $8.9 Million For Natural-Gas Program	He's Feeling It
Rich Or Healthy?	Less Snow, But More Blizzards
Earth Day Events	It's Cold Outside
Data: Oklahoma Power Plants Greenhouse Gas Emissions	It's Simple: Just Stop Breathing
Lawmakers Must Take Next Step, And Plan For Impacts Of Warming	Polar Bears Need Our Protection
Don't Forget About Methane	Who Says Climate Change Isn't Real?

Each column represents a sample of 10 article titles with the highest (pro climate science) and lowest (skeptical) tone index scores. These samples were retrieved by sorting articles by index value and removing any non-descript titles (such as "Corrections," "Inside" or "For The Record") to improve the interpretability.

B.1.4 Summary statistics – TV content data

Below, we provide an overview of the archive.org's TV news archive data employed in our study.[5] The archive contains closed caption data on a wide range of U.S. TV stations. These closed caption segments consist of many subdivided "snippets," which form the basis of our count measures analogously to articles in a newspaper. In some instances, the available snippets go back as far as 2009, but we restrict our attention to 2010-2019 and further drop stations with less than 40 months of coverage in the data to avoid large compositional changes in the sample over time due to the presence of stations with only very scarce coverage.

Descriptive statistics are shown in Table B.7, followed by Table B.8 with an overview of the stations matching the minimum coverage criteria set out above, along with paper product advertising spending from Koch Industries and their competitors, as well as big oil advertising. Interestingly, our data do not contain any Koch advertising for Fox News and CNN, two of the main U.S. TV networks.

Table B.7: *TV News Archive analysis - descriptive statistics*

Statistic	N	Mean	St. Dev.	Min	Max
Share of snippets containing climate change/global warming	2,476	0.199	0.279	0.000	3.022
Share of hurricane snippets mentioning climate change/global warming	2,056	0.861	4.011	0.000	100.000
Koch Industries paper product advertising (mio. $, last 3 months)	2,476	0.002	0.010	0.000	0.157
Koch Industries paper product advertising share (last 3 months)	2,441	0.0001	0.0004	0.000	0.005
Competitor paper product advertising (mio. $, last 3 months)	2,476	0.126	0.546	0.000	7.015
Competitor paper product advertising share (last 3 months)	2,441	0.001	0.001	0.000	0.009
Big oil advertising (mio. $, last 3 months)	2,476	0.301	1.044	0.000	22.616
Big oil advertising share (last 3 months)	2,441	0.004	0.006	0.000	0.057
Advertising price ($ 1000/unit)	2,462	7.337	33.612	0.044	329.977

[5]The raw data collection underlying this analysis builds on the following GitHub repository: https://github.com/notnews/archive_news_cc (last accessed: 7 February 2023).

Table B.8: *TV News Archive - station coverage overview*

TV station/network	Months of coverage (2010-19)	Koch paper ads (mio. $)	Non-Koch paper ads (mio. $)	Big oil ads (mio. $)
CNBC	101	0.046	2.341	22.129
CNN	120	0	3.918	47.579
COM	104	0.136	6.191	3.066
FOX	120	0	86.209	116.135
KBCW	44	0.022	0.029	0.020
KDTV	114	0.001	0.015	1.832
KGO	114	0.036	0.037	2.669
KICU	48	0.0002	0.019	0.025
KNTV	114	0.064	0.053	3.694
KOFY	95	0.027	0.087	0.078
KPIX	114	0.173	0.032	2.542
KRON	114	0.054	0.102	0.247
KSTS	114	0.001	0.006	0.401
KTVU	114	0.009	0.080	4.132
KYW	46	0.027	0.046	0.028
MSNB	120	0.028	5.483	25.105
WBAL	45	0.022	0.078	0.297
WBFF	46	0.003	0.049	0.191
WCAU	46	0.035	0.024	0.008
WFDC	45	0	0.0005	0.031
WGN	56	0.421	0.697	0.718
WJLA	96	0.068	0.109	3.119
WJZ	43	0.051	0.077	0.201
WMAR	46	0.013	0.047	0.044
WNUV	43	0	0.181	0.052
WPVI	46	0.068	0.121	0.010
WRC	109	0.086	0.086	6.395
WTTG	77	0.060	0.124	3.889
WTXF	46	0.053	0.034	0.005
WUSA	96	0.030	0.113	2.741
WUVP	40	0	0.006	0
Total		1.535	106.394	247.380

B.2 Further evidence and robustness

B.2.1 Full estimates for Table 3

Table B.9: *Big oil advertising and articles mentioning climate change/global warming*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.038***		−0.062**		−0.035	
	(0.006)		(0.014)		(0.033)	
Big oil ad share (last 3 months)		−6.811***		−12.009***		−2.317
		(1.986)		(2.407)		(1.774)
Ad price ($1,000/unit)	0.009**	0.009**	0.001	0.001	0.001	0.001
	(0.005)	(0.004)	(0.003)	(0.002)	(0.007)	(0.007)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.792	0.792	1.68	1.68	0.69	0.69
R^2 (overall)	0.778	0.778	0.814	0.815	0.709	0.709
R^2 (projected/within)	0.003	0.004	0.022	0.023	0	0
Observations	8,204	8,204	851	851	7,353	7,353

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

B.2.2 Full estimates for Table 4

Table B.10: *Big oil advertising and share of wildfire articles mentioning climate change/global warming*

	Results for query:					
	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.003*		−0.002*		−0.025	
	(0.002)		(0.001)		(0.016)	
Big oil ad share (last 3 months)		−0.716**		−0.324**		−1.625*
		(0.354)		(0.086)		(0.910)
Ad price ($1,000/unit)	0.001	0.001	0.0004	0.0004	0.006	0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.101	0.101	0.151	0.151	0.094	0.094
R^2 (overall)	0.254	0.254	0.322	0.322	0.24	0.24
R^2 (projected/within)	0	0	0	0	0	0.001
Observations	6,525	6,525	811	811	5,714	5,714

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

B.2.3 Full estimates for Table 6

Table B.11: *Big oil advertising and newspaper article climate change leaning*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	-0.007^{**}		-0.008^{**}		0.018	
	(0.003)		(0.004)		(0.027)	
Big oil ad share (last 3 months)		-1.134^{*}		-1.546^{**}		0.167
		(0.621)		(0.716)		(0.948)
Ad price ($1,000/unit)	−0.001	−0.001	−0.001	−0.001	−0.005	−0.005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.263	0.263	0.277	0.277	0.257	0.257
SD dependent variable	0.189	0.189	0.152	0.152	0.203	0.203
R^2 (overall)	0.074	0.074	0.055	0.055	0.082	0.082
R^2 (projected/within)	0	0	0	0	0	0
Observations	178,031	178,031	56,030	56,030	122,001	122,001

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

B.2.4 Advertising and media coverage - climate policy coverage

Table B.12: *Big oil advertising and articles mentioning policy terms and climate change*

	Results for query:					
	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.812***		−1.251***		−0.005	
	(0.197)		(0.232)		(0.506)	
Big oil ad share (last 3 months)		−110.465**		−216.009**		−2.449
		(52.381)		(69.738)		(19.923)
Ad price ($1,000/unit)	0.143	0.141	0.032	0.035	0.075	0.076
	(0.133)	(0.132)	(0.111)	(0.110)	(0.077)	(0.076)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	7.999	7.999	26.456	26.456	5.863	5.863
R^2 (overall)	0.831	0.83	0.791	0.79	0.71	0.71
R^2 (projected/within)	0.007	0.006	0.024	0.021	0	0
Observations	8,204	8,204	851	851	7,353	7,353

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming". The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.13: *Big oil advertising and articles mentioning cap and trade/emissions trading*

	Results for query:					
	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.155***		−0.200***		0.030	
	(0.037)		(0.027)		(0.309)	
Big oil ad share (last 3 months)		−20.660*		−34.721**		−2.835
		(11.723)		(11.282)		(12.052)
Ad price ($1,000/unit)	0.018	0.018	0.004	0.005	0.016	0.016
	(0.018)	(0.017)	(0.015)	(0.015)	(0.022)	(0.022)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.848	0.848	3.255	3.255	0.57	0.57
R^2 (overall)	0.636	0.636	0.693	0.693	0.434	0.434
R^2 (projected/within)	0.003	0.002	0.01	0.008	0	0
Observations	8,204	8,204	851	851	7,353	7,353

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.14: *Big oil advertising and articles mentioning "carbon tax"*

	Results for query:					
	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.010		−0.141		−0.064	
	(0.040)		(0.067)		(0.143)	
Big oil ad share (last 3 months)		−12.051*		−26.840*		−10.402
		(6.609)		(9.961)		(10.993)
Ad price ($1,000/unit)	−0.005	−0.004	−0.044	−0.044	0.016	0.016
	(0.017)	(0.017)	(0.022)	(0.022)	(0.024)	(0.024)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.372	2.372	7.51	7.51	1.777	1.777
R^2 (overall)	0.676	0.676	0.624	0.624	0.521	0.521
R^2 (projected/within)	0	0	0.005	0.006	0	0
Observations	8,204	8,204	851	851	7,353	7,353

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

B.2.5 Advertising and media coverage - including month × year fixed effects

Table B.15: *Big oil advertising and articles mentioning climate change/global warming*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.019***		−0.022**		0.024	
	(0.006)		(0.005)		(0.033)	
Big oil ad share (last 3 months)		−3.646*		−4.980**		−0.491
		(1.880)		(1.649)		(1.862)
Ad price ($1,000/unit)	0.009*	0.009*	−0.0005	−0.0004	0.005	0.005
	(0.005)	(0.005)	(0.002)	(0.001)	(0.005)	(0.005)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x month FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.792	0.792	1.68	1.68	0.69	0.69
R^2(*overall*)	0.831	0.831	0.932	0.932	0.773	0.773
R^2 (projected/within)	0.003	0.003	0.004	0.004	0	0
Observations	8,204	8,204	851	851	7,353	7,353

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.16: *Big oil advertising and share of wildfire articles mentioning climate change/global warming*

	Results for query:					
	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.0003		0.001		−0.022	
	(0.002)		(0.003)		(0.021)	
Big oil ad share (last 3 months)		−0.358		0.146		−1.454
		(0.448)		(0.703)		(1.007)
Ad price ($1,000/unit)	−0.0004	−0.0004	−0.0001	−0.0001	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x month FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.101	0.101	0.151	0.151	0.094	0.094
R^2 (overall)	0.322	0.322	0.532	0.532	0.311	0.311
R^2 (projected/within)	0	0	0	0	0	0
Observations	6,525	6,525	811	811	5,714	5,714

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.17: *Big oil advertising and articles mentioning policy terms and climate change*

	Results for query:					
	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.581**		−0.785**		0.244	
	(0.219)		(0.177)		(0.589)	
Big oil ad share (last 3 months)		−77.669		−125.487		6.571
		(47.832)		(62.429)		(22.263)
Ad price ($1,000/unit)	0.141	0.140	−0.005	0.001	0.081	0.081
	(0.129)	(0.128)	(0.089)	(0.087)	(0.082)	(0.082)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x month FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	7.999	7.999	26.456	26.456	5.863	5.863
R^2 (overall)	0.859	0.859	0.899	0.899	0.756	0.756
R^2 (projected/within)	0.005	0.005	0.01	0.006	0	0
Observations	8,204	8,204	851	851	7,353	7,353

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming". The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.18: *Big oil advertising and articles mentioning cap and trade/emissions trading*

	Results for query:					
	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.117***		−0.121**		0.012	
	(0.040)		(0.028)		(0.335)	
Big oil ad share (last 3 months)		−16.815		−17.078**		−4.772
		(10.320)		(4.610)		(13.316)
Ad price ($1,000/unit)	0.015	0.015	0.008	0.009	−0.008	−0.007
	(0.016)	(0.016)	(0.010)	(0.009)	(0.026)	(0.026)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x month FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.848	0.848	3.255	3.255	0.57	0.57
R^2 (overall)	0.667	0.667	0.795	0.794	0.486	0.486
R^2 (projected/within)	0.002	0.002	0.003	0.002	0	0
Observations	8,204	8,204	851	851	7,353	7,353

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.19: *Big oil advertising and articles mentioning "carbon tax"*

	Results for query:					
	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	0.067*		0.076		−0.154	
	(0.038)		(0.099)		(0.136)	
Big oil ad share (last 3 months)		−6.245		−2.813		−13.899
		(4.779)		(21.366)		(8.792)
Ad price ($1,000/unit)	0.006	0.007	−0.025	−0.026	0.055**	0.056**
	(0.019)	(0.019)	(0.020)	(0.021)	(0.023)	(0.023)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x month FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.372	2.372	7.51	7.51	1.777	1.777
R^2 (overall)	0.703	0.703	0.764	0.764	0.556	0.557
R^2 (projected/within)	0	0	0.002	0.002	0	0.001
Observations	8,204	8,204	851	851	7,353	7,353

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.20: *Big oil advertising and newspaper article climate change leaning*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.004		−0.002		0.020	
	(0.003)		(0.003)		(0.027)	
Big oil ad share (last 3 months)		−0.732		−0.226		−0.226
		(0.598)		(0.751)		(1.045)
Ad price ($1,000/unit)	−0.0001	−0.0001	0.001	0.001	−0.006	−0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month x year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.263	0.263	0.277	0.277	0.257	0.257
SD dependent variable	0.194	0.194	0.161	0.161	0.209	0.209
R^2 (overall)	0.079	0.079	0.062	0.062	0.086	0.086
R^2 (projected/within)	0	0	0	0	0	0
Observations	178,031	178,031	56,030	56,030	122,001	122,001

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

B.2.6 Advertising and media coverage - last 6 months of ad spending

Table B.21: *Big oil advertising and articles mentioning climate change/global warming*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	−0.032***		−0.035**		−0.045	
	(0.006)		(0.008)		(0.037)	
Big oil ad share (last 6 months)		−11.891***		−15.987***		−4.847
		(2.874)		(2.890)		(3.618)
Ad price ($1,000/unit)	0.009**	0.010**	0.002	0.002	0.002	0.002
	(0.004)	(0.004)	(0.002)	(0.002)	(0.007)	(0.007)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.799	0.799	1.695	1.695	0.695	0.695
R^2 (overall)	0.779	0.779	0.813	0.814	0.711	0.711
R^2 (projected/within)	0.005	0.006	0.018	0.026	0	0
Observations	8,053	8,053	836	836	7,217	7,217

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.22: *Big oil advertising and share of wildfire articles mentioning climate change/global warming*

	Results for query:					
	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	0.0001		0.001		−0.010	
	(0.001)		(0.001)		(0.007)	
Big oil ad share (last 6 months)		−0.471		−0.288		−0.839
		(0.504)		(0.416)		(1.045)
Ad price ($1,000/unit)	0.001	0.001	0.0004	0.0004	0.007	0.007
	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.103	0.103	0.153	0.153	0.095	0.095
R^2 (overall)	0.252	0.252	0.322	0.322	0.238	0.238
R^2 (projected/within)	0	0	0	0	0	0
Observations	6,400	6,400	797	797	5,603	5,603

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.23: *Big oil advertising and articles mentioning policy terms and climate change*

	Results for query:					
	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	−0.567***		−0.657***		−0.450	
	(0.076)		(0.128)		(0.427)	
Big oil ad share (last 6 months)		−169.160***		−256.569**		−29.003
		(60.317)		(76.796)		(27.202)
Ad price ($1,000/unit)	0.145	0.148	0.043	0.050	0.084	0.084
	(0.129)	(0.129)	(0.106)	(0.106)	(0.076)	(0.075)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	8.052	8.052	26.64	26.64	5.898	5.898
R^2 (overall)	0.832	0.832	0.791	0.791	0.712	0.712
R^2 (projected/within)	0.008	0.007	0.018	0.019	0	0
Observations	8,053	8,053	836	836	7,217	7,217

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming". The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.24: *Big oil advertising and articles mentioning cap and trade/emissions trading*

	Results for query:					
	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	−0.007		−0.012		0.125	
	(0.026)		(0.024)		(0.098)	
Big oil ad share (last 6 months)		−1.380		−4.031		3.525
		(8.697)		(9.511)		(14.117)
Ad price ($1,000/unit)	0.017	0.017	0.006	0.006	0.012	0.012
	(0.017)	(0.017)	(0.015)	(0.015)	(0.023)	(0.023)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.859	0.859	3.293	3.293	0.577	0.577
R^2 (overall)	0.64	0.64	0.691	0.691	0.438	0.438
R^2 (projected/within)	0.001	0.001	0	0	0	0
Observations	8,053	8,053	836	836	7,217	7,217

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.25: *Big oil advertising and articles mentioning "carbon tax"*

	Results for query:					
	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	0.052		0.022		0.200	
	(0.034)		(0.043)		(0.152)	
Big oil ad share (last 6 months)		5.957		−0.364		7.617
		(14.648)		(22.131)		(18.306)
Ad price ($1,000/unit)	−0.004	−0.004	−0.042	−0.042	0.016	0.016
	(0.017)	(0.017)	(0.020)	(0.021)	(0.023)	(0.023)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.382	2.382	7.577	7.577	1.781	1.781
R^2 (overall)	0.678	0.678	0.621	0.621	0.522	0.522
R^2 (projected/within)	0	0	0.003	0.003	0	0
Observations	8,053	8,053	836	836	7,217	7,217

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.26: *Big oil advertising and newspaper article climate change leaning*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	−0.002		−0.002		0.004	
	(0.002)		(0.002)		(0.022)	
Big oil ad share (last 6 months)		−1.293		−1.600*		−0.030
		(0.795)		(0.869)		(1.729)
Ad price ($1,000/unit)	−0.001	−0.001	−0.001	−0.001	−0.007*	−0.007*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.268	0.268	0.281	0.281	0.262	0.262
SD dependent variable	0.185	0.185	0.149	0.149	0.2	0.2
R^2 (overall)	0.072	0.072	0.053	0.053	0.079	0.079
R^2 (projected/within)	0	0	0	0	0	0
Observations	175,480	175,480	55,206	55,206	120,274	120,274

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

B.2.7 Advertising and newspaper article climate change leaning by article type

Below, we separate articles into different types and run our regressions for each case. We classified the articles based on the available article metadata. Most newspapers contain a dedicated "Letters" or "Editorial" section or clearly worded (albeit outlet-specific) article titles indicating the nature of the news piece. We categorized articles into editorial/opinion pieces, letters to the editor, and a residual category, "general news."

As shown in Table B.27, the observed effects following big oil advertising spending are driven by editorial/opinion content. The selection of letters produces negative coefficients as well (as shown in Table B.28), but these are never significant at any conventional level. The same is the case for other/general news content. There, coefficients are also smaller in magnitude and lacking significance, as displayed in Table B.29.

In sum, the evidence is consistent with newspaper coverage moving most where there is more scope to voice a particular position, which tends to be in opinion content rather than general news reporting.

Table B.27: *Big oil advertising and newspaper article climate change leaning - editorials/opinion pieces*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.013**		−0.015***		0.113*	
	(0.005)		(0.005)		(0.068)	
Big oil ad share (last 3 months)		−1.969*		−2.754**		3.819
		(1.187)		(1.142)		(3.435)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.296	0.296	0.308	0.308	0.29	0.29
SD dependent variable	0.264	0.264	0.205	0.205	0.29	0.29
R^2	0.132	0.132	0.101	0.101	0.143	0.143
Observations	33,780	33,780	11,666	11,666	22,114	22,114

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

Table B.28: *Big oil advertising and newspaper article climate change leaning - letters*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.012		−0.011		0.020	
	(0.035)		(0.036)		(0.116)	
Big oil ad share (last 3 months)		−1.089		−0.981		−1.954
		(5.406)		(8.121)		(3.553)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.176	0.176	0.394	0.394	0.121	0.121
SD dependent variable	0.362	0.362	0.353	0.353	0.344	0.344
R^2	0.264	0.264	0.184	0.184	0.272	0.272
Observations	13,135	13,135	2,639	2,639	10,496	10,496

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

Table B.29: *Big oil advertising and newspaper article climate change leaning - general news*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.005		−0.006		0.001	
	(0.005)		(0.005)		(0.025)	
Big oil ad share (last 3 months)		−1.019		−1.306		−0.607
		(0.805)		(0.947)		(1.122)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.262	0.262	0.256	0.256	0.265	0.265
SD dependent variable	0.174	0.174	0.141	0.141	0.188	0.188
R^2	0.071	0.071	0.054	0.054	0.077	0.077
Observations	130,467	130,467	41,449	41,449	89,018	89,018

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

B.2.8 Advertising and media coverage in different time periods

Table B.30: *Big oil advertising and articles mentioning climate change/global warming - 2007-2010*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.036**		−0.057		0.017	
	(0.016)		(0.029)		(0.036)	
Big oil ad share (last 3 months)		−5.729		−11.501		−0.899
		(3.583)		(5.981)		(2.408)
Ad price ($1,000/unit)	0.032***	0.032***	0.018**	0.020***	0.035***	0.036***
	(0.009)	(0.008)	(0.004)	(0.004)	(0.010)	(0.010)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.793	0.793	1.657	1.657	0.702	0.702
R^2 (overall)	0.769	0.769	0.729	0.733	0.71	0.71
R^2 (projected/within)	0.017	0.018	0.072	0.085	0.005	0.005
Observations	2,497	2,497	238	238	2,259	2,259

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.31: *Big oil advertising and articles mentioning climate change/global warming - 2011-2019*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.031***		−0.038**		−0.031	
	(0.007)		(0.012)		(0.112)	
Big oil ad share (last 3 months)		−5.471***		−7.323***		−1.029
		(1.138)		(0.794)		(3.716)
Ad price ($1,000/unit)	0.0005	0.0005	−0.005	−0.005	−0.005	−0.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.77	0.77	1.611	1.611	0.67	0.67
R^2 (overall)	0.788	0.788	0.847	0.847	0.718	0.718
R^2 (projected/within)	0.001	0.001	0.012	0.013	0	0
Observations	4,870	4,870	516	516	4,354	4,354

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.32: *Big oil advertising and share of wildfire articles mentioning climate change/global warming - 2007-2010*

	Results for query:					
	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	0.0003		0.003		0.012	
	(0.002)		(0.002)		(0.008)	
Big oil ad share (last 3 months)		0.397		0.491		0.540
		(0.317)		(0.469)		(0.503)
Ad price ($1,000/unit)	0.002	0.002	0.006	0.006	−0.001	−0.001
	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.053	0.053	0.095	0.095	0.048	0.048
R^2 (overall)	0.19	0.19	0.177	0.177	0.188	0.188
R^2 (projected/within)	0	0	0	0	0	0
Observations	1,966	1,966	219	219	1,747	1,747

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.33: *Big oil advertising and share of wildfire articles mentioning climate change/global warming - 2011-2019*

	Results for query:					
	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW	Wildfire + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.001		−0.001		−0.184*	
	(0.002)		(0.003)		(0.096)	
Big oil ad share (last 3 months)		−1.059		−0.152		−5.616*
		(0.891)		(0.545)		(3.039)
Ad price ($1,000/unit)	−0.0004	−0.0004	−0.001	−0.001	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.009)	(0.009)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.126	0.126	0.173	0.173	0.119	0.119
R^2 (overall)	0.239	0.239	0.33	0.33	0.226	0.226
R^2 (projected/within)	0	0	0	0	0	0
Observations	3,860	3,860	497	497	3,363	3,363

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.34: *Big oil advertising and articles mentioning policy terms and climate change - 2007-2010*

	Results for query:					
	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−1.007*		−1.283		0.183	
	(0.578)		(0.760)		(0.715)	
Big oil ad share (last 3 months)		−110.238		−198.495		6.746
		(82.673)		(124.641)		(24.886)
Ad price ($1,000/unit)	0.351**	0.348**	0.054	0.115	0.395*	0.395*
	(0.172)	(0.169)	(0.131)	(0.132)	(0.198)	(0.198)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	9.534	9.534	32.252	32.252	7.141	7.141
R^2 (overall)	0.864	0.864	0.792	0.79	0.782	0.782
R^2 (projected/within)	0.008	0.007	0.018	0.019	0	0
Observations	2,497	2,497	238	238	2,259	2,259

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming". The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.35: *Big oil advertising and articles mentioning policy terms and climate change - 2011-2019*

	Results for query:					
	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy	CC + Policy
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.650***		−0.904**		0.039	
	(0.179)		(0.323)		(2.254)	
Big oil ad share (last 3 months)		−101.546***		−162.282***		−15.708
		(28.510)		(34.384)		(63.458)
Ad price ($1,000/unit)	0.002	0.002	−0.059	−0.059	0.017	0.016
	(0.051)	(0.049)	(0.041)	(0.040)	(0.100)	(0.100)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	7.178	7.178	23.349	23.349	5.261	5.261
R^2 (overall)	0.813	0.813	0.796	0.796	0.641	0.641
R^2 (projected/within)	0.008	0.007	0.018	0.019	0	0
Observations	4,870	4,870	516	516	4,354	4,354

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*regulation, legislation, congress, white house, federal reserve, the fed, regulations, deficit, deficits, regulatory, congressional, legislative, legislature*) as well as "climate change" and/or "global warming". The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.36: *Big oil advertising and articles mentioning cap and trade/emissions trading - 2007-2010*

	Results for query:					
	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.285*		−0.362		0.071	
	(0.153)		(0.175)		(0.266)	
Big oil ad share (last 3 months)		−25.050		−40.185		1.618
		(22.648)		(28.240)		(10.385)
Ad price ($1,000/unit)	0.091**	0.091**	0.021	0.043	0.092	0.092
	(0.036)	(0.036)	(0.044)	(0.029)	(0.080)	(0.080)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	1.651	1.651	6.5	6.5	1.14	1.14
R^2 (overall)	0.669	0.667	0.692	0.687	0.418	0.418
R^2 (projected/within)	0.001	0.001	0	0	0	0
Observations	2,497	2,497	238	238	2,259	2,259

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.37: *Big oil advertising and articles mentioning cap and trade/emissions trading - 2011-2019*

	Results for query:					
	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade	CC + Cap and Trade
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.050		−0.051		−0.987	
	(0.052)		(0.065)		(0.737)	
Big oil ad share (last 3 months)		−14.715**		−12.664		−31.774*
		(7.010)		(8.822)		(16.535)
Ad price ($1,000/unit)	−0.004	−0.004	−0.010	−0.010	−0.026	−0.027
	(0.010)	(0.010)	(0.010)	(0.010)	(0.026)	(0.026)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.53	0.53	2.107	2.107	0.343	0.343
R^2 (overall)	0.487	0.488	0.431	0.431	0.338	0.338
R^2 (projected/within)	0.001	0.001	0	0	0	0
Observations	4,870	4,870	516	516	4,354	4,354

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*ETS, trading scheme, trading system, cap and trade, cap-and-trade, emissions trading*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.38: *Big oil advertising and articles mentioning "carbon tax" - 2007-2010*

	Results for query:					
	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	0.241**		0.386**		−0.144	
	(0.093)		(0.133)		(0.201)	
Big oil ad share (last 3 months)		2.113		39.050		−15.861
		(9.201)		(25.490)		(14.127)
Ad price ($1,000/unit)	0.040*	0.041*	0.020	−0.005	0.130*	0.132*
	(0.023)	(0.023)	(0.063)	(0.077)	(0.074)	(0.074)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.99	2.99	9.761	9.761	2.277	2.277
R^2 (overall)	0.714	0.713	0.678	0.673	0.535	0.535
R^2 (projected/within)	0	0	0.003	0.003	0	0
Observations	2,497	2,497	238	238	2,259	2,259

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.39: *Big oil advertising and articles mentioning "carbon tax" - 2011-2019*

	Results for query:					
	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax	CC + Carbon Tax
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.228***		−0.340**		−0.179	
	(0.021)		(0.076)		(0.754)	
Big oil ad share (last 3 months)		−29.535***		−52.189***		−6.189
		(8.581)		(5.881)		(16.347)
Ad price ($1,000/unit)	−0.006	−0.006	−0.025	−0.025	−0.0002	−0.0003
	(0.028)	(0.027)	(0.016)	(0.016)	(0.029)	(0.029)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.1	2.1	6.641	6.641	1.562	1.562
R^2 (overall)	0.649	0.648	0.589	0.588	0.482	0.482
R^2 (projected/within)	0	0	0.003	0.003	0	0
Observations	4,870	4,870	516	516	4,354	4,354

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The dependent variable measures the number of articles that mention one or more of (*fee, fees, tax, taxes, levy, subsidy, subsidies, pricing, feed-in-tariff*) within 30 words of one or more of (*climate change, global warming, carbon, emission, greenhouse gas, GHG, carbon dioxide, CO2*). The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses.

Table B.40: *Big oil advertising and share of hurricane articles mentioning climate change/global warming - 2006 - Sep. 2013*

	Results for query:					
	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.002		0.013		−0.438	
	(0.144)		(0.182)		(0.303)	
Big oil ad share (last 3 months)		9.404		27.467		−5.385
		(18.681)		(26.258)		(23.258)
Ad price ($1,000/unit)	0.068**	0.068**	0.060*	0.063**	−0.009	−0.011
	(0.033)	(0.033)	(0.023)	(0.022)	(0.112)	(0.113)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	2.888	2.888	5.308	5.308	2.621	2.621
R^2 (overall)	0.214	0.214	0.261	0.262	0.2	0.2
R^2 (projected/within)	0	0	0.002	0.004	0	0
Observations	4,557	4,557	453	453	4,104	4,104

(∗∗∗, ∗∗, ∗) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses. The time period cutoff corresponds to the publication of the summary for policymakers of the first part (climate science basis) of the IPCC's 5$^{\text{th}}$ Assessment Report. Therein, the IPCC deems it "virtually certain" that tropical cyclone activity (which includes hurricanes) has increased in the North Atlantic since 1970 and "more likely than not" that there will be further changes in the 21$^{\text{th}}$ century (IPCC 2013:7). The high certainty about the post-1970 increase in North Atlantic hurricane activity represents a considerable confidence gain over the previous report, where the comparable scenario was merely assessed as "likely" (IPCC 2007:8).

Table B.41: *Big oil advertising and share of hurricane articles mentioning climate change/global warming - Oct. 2013-2019*

	Results for query:					
	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW	Hurricane + CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.509**		−0.483**		−9.735*	
	(0.209)		(0.155)		(4.860)	
Big oil ad share (last 3 months)		−107.392*		−96.137		−172.257
		(59.184)		(45.658)		(107.587)
Ad price ($1,000/unit)	0.056	0.055	0.009	0.009	0.181	0.180
	(0.056)	(0.055)	(0.026)	(0.026)	(0.283)	(0.286)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	5.158	5.158	9.568	9.568	4.605	4.605
R^2 (overall)	0.247	0.248	0.337	0.338	0.215	0.215
R^2 (projected/within)	0.001	0.001	0.004	0.005	0	0
Observations	3,147	3,147	351	351	2,796	2,796

(∗∗∗, ∗∗, ∗) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the newspaper level in parentheses. The time period cutoff corresponds to the publication of the summary for policymakers of the first part (climate science basis) of the IPCC's 5$^{\text{th}}$ Assessment Report.

Table B.42: *Big oil advertising and newspaper article climate change leaning - 2007-2010*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.013***		−0.016***		0.021	
	(0.004)		(0.004)		(0.034)	
Big oil ad share (last 3 months)		−2.179***		−3.032***		0.663
		(0.576)		(0.530)		(1.273)
Ad price ($1,000/unit)	−0.003	−0.004	−0.005	−0.005	−0.009	−0.008
	(0.003)	(0.003)	(0.004)	(0.004)	(0.006)	(0.006)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.138	0.138	0.181	0.181	0.121	0.121
SD dependent variable	0.139	0.139	0.127	0.127	0.141	0.141
R^2 (overall)	0.04	0.04	0.036	0.036	0.04	0.04
R^2 (projected/within)	0	0	0.001	0.001	0	0
Observations	65,776	65,776	18,419	18,419	47,357	47,357

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

Table B.43: *Big oil advertising and newspaper article climate change leaning - 2011-2019*

	Climate change leaning					
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	0.002		0.001		−0.049	
	(0.005)		(0.005)		(0.107)	
Big oil ad share (last 3 months)		0.024		0.095		−2.739
		(1.183)		(1.320)		(2.736)
Ad price ($1,000/unit)	0.001	0.001	0.001	0.001	−0.008	−0.008
	(0.002)	(0.002)	(0.002)	(0.002)	(0.008)	(0.008)
Year x newspaper FE	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	Top 10	Top 10	Rest	Rest
Mean dependent variable	0.381	0.381	0.362	0.362	0.39	0.39
SD dependent variable	0.117	0.117	0.096	0.096	0.126	0.126
R^2 (overall)	0.03	0.03	0.023	0.023	0.033	0.033
R^2 (projected/within)	0	0	0	0	0	0
Observations	93,754	93,754	30,626	30,626	63,128	63,128

$(***, **, *)$ denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a newspaper article (with associated newspaper-level advertising spending in the month of article publication). Standard errors clustered at the newspaper-year level in parentheses.

B.2.9 Local coverage response to natural disasters – event study

In this section, we leverage the exogenous timing and local incidence of wildfire and hurricane events to compare coverage effects across newspapers that received advertising from big oil in the three months leading up to the disaster (treated = 1) to the resulting coverage for newspapers in an affected media market (DMA) that did not receive any big oil advertising (treated = 0).

We use information from the SHELDUS (Spatial Hazard Events and Loss Database for the United States) data to define events of interest as follows.

For wildfires, we define a local event as a month where recorded per capita damages from wildfires in the DMA are equal or greater than $1 in 2019 terms or where at least one fatality was recorded, irrespective of the damages. This threshold is intended to exclude very small fires that do not spark significant news coverage. It corresponds roughly to the top quartile of a highly skewed damage distribution with mean real per capita damages of $54.24 in 2019 dollars.

For hurricanes, we define a local hurricane event as a month with non-zero per capita disaster damage or injuries from a hurricane in at least one county of a given DMA.[6]

Based on these disaster definitions, we restrict our respective event study samples to newspapers from DMAs that are observable for the entire 11-month period surrounding a disaster event (month of impact +- 5 months).

For the DMAs represented in our sample, we record 25 and 50 months with local wildfire and hurricane damage, respectively, in our sample period. These events are listed in Tables B.44 and B.45 below.[7]

Figures B.2 and B.3 contain descriptive evidence of the extent of wildfire coverage and the average number of monthly wildfire articles mentioning climate change/global

[6]This category captures the direct effects of a hurricane impact and represents the most targeted available indicator for local hurricane presence in the SHELDUS data. In addition, hurricane events may also have parts of (indirectly) related damages recorded as flooding and/or storm damage. We do not classify such additional damages as hurricane in the absence of locally recorded non-zero damage or injury values for the "Hurricane/Tropical Storm" hazard category in SHELDUS.

[7]For our analysis, we drop cases where multiple wildfire or hurricane damages are recorded less than 6 months apart in the same DMA to ensure a consistent and uniform pre- and post-event period definition.

warming depending on treatment status. These figures show an increase in coverage around the event, which tends to be more pronounced for the untreated newspaper-event cases. At the same time, we observe some coverage spikes outside of the local event, suggesting a need to control for newsworthy wildfire events outside the local DMA.

Analogously, Figures B.4 and B.5 contain descriptive evidence of the extent of hurricane coverage and the average number of monthly hurricane articles mentioning climate change/global warming depending on treatment status. Reassuringly for our event coding approach, there is a large spike in hurricane reporting at the event time (time = 0). Visually, coverage trends are very similar up until period $t = -2$. For both outcomes, the figures suggest a stronger response of untreated newspapers, i.e., newspapers that did not receive any advertising dollars from big oil in the 3 months leading up to (and including) the hurricane event month.

For the event study regressions, we use the following specification:

$$y_{i,j,t} = \sum_{k \in \{-5,5\}, k \neq t_{ref}} \beta_k \mathbb{1}\{k = t\} \times \text{Treated}_{i,j} + \eta_{i,j} + \eta_t + \varepsilon_{i,j,t}, \tag{4}$$

where $y_{i,j,t}$ is the outcome of interest from newspaper i at event time t for hurricane event j, $\mathbb{1}\{k = t\}$ is an indicator that takes the value 1 in event-time t. t_{ref} denotes the reference period. $\text{Treated}_{i,j}$ is equal to 1 if newspaper i received advertising dollars from big oil in the three months leading up to the local hurricane event j, and 0 otherwise. η_{ij} captures newspaper-event fixed effects. η_t denotes event time fixed effects, and $\varepsilon_{i,j,t}$ represents the error term.

For wildfires, we observe 15 distinct newspapers, 4 of which are treated at least once during a wildfire event period, and for hurricanes 23 distinct newspapers, 7 treated at least once, in wildfire and hurricane regions. Due to the limited size of our newspaper sample in wildfire and hurricane regions, we use a stacked specification where we treat each disaster event as a separate series of observations. For each local disaster event, we estimate a separate newspaper-event fixed effect, but we use a single set of shared

event-time fixed effects.[8]

For wildfires, we add an indicator for other in-state wildfire events (based on the same damage threshold) to account for other triggers of wildfire coverage caused by nearby fires. Such clustering of fire events can happen due to a correlated local climate (e.g. a regional dry spell), with other fires occurring in a nearby DMA shortly before or after the local fires.

Hurricanes tend to have a different profile, with one hurricane usually dominating the headlines, but hurricanes often hit a locality with a certain advance warning period. To address this, we use $t_{ref} = -2$ as our reference period given that there may be anticipation effects in hurricane coverage, for example, because a hurricane is forecast to hit a certain area ahead of time.

Turning to the event study regression results, in Figures B.6 and B.7 and the corresponding Tables B.46 and B.47, we see a significant decrease in wildfire articles and articles mentioning both "wildfire" and "climate change"/"global warming" in the month following the fire in newspapers that had recently received advertising dollars from big oil relative to control newspapers who had not.

The event study regression coefficients shown in Figure B.8 and coefficient Table B.48 produce point estimates that are consistently negative during the months following a hurricane, with some later months' coefficients reaching significance at the 10% level. In addition, as shown in Figure B.9 and coefficient Table B.49, we find a reduction (significant at the 10% level) in hurricane articles mentioning climate change in the month the hurricane hits a given media market.

Overall, these effects are in line with newspapers lowering their climate change-related issue coverage as they receive advertising money from big oil, particularly in times when such issues are highly salient.

[8]This stacked approach avoids the challenges associated with a staggered treatment estimation where twoway fixed effect estimation can produce undesired comparisons between observations at different points along the treatment timeline (see, e.g., Baker et al. 2025).

Table B.44: *Local Wildfire Events*

Local Wildfire Month	Media Market (DMA)
2011-04	AUSTIN(TX)
2011-09	AUSTIN(TX)
2018-03	AUSTIN(TX)
2007-05	JACKSONVILLE(FL)
2007-01	LOSANGELES(CA)
2007-10	LOSANGELES(CA)
2008-11	LOSANGELES(CA)
2016-08	LOSANGELES(CA)
2017-10	LOSANGELES(CA)
2018-11	LOSANGELES(CA)
2008-05	ORLANDO(FL)-DAYTONABEACH(FL)-MELBOURNE(FL)
2010-06	PHOENIX(AZ)
2011-06	PHOENIX(AZ)
2013-06	PHOENIX(AZ)
2014-05	PHOENIX(AZ)
2018-04	PHOENIX(AZ)
2007-06	SALTLAKECITY(UT)
2007-07	SALTLAKECITY(UT)
2010-09	SALTLAKECITY(UT)
2012-06	SALTLAKECITY(UT)
2012-07	SALTLAKECITY(UT)
2016-07	SALTLAKECITY(UT)
2018-08	SALTLAKECITY(UT)
2018-09	SALTLAKECITY(UT)
2015-09	SANFRANCISCO(CA)-OAKLAND(CA)-SANJOSE(CA)

Table B.45: *Local Hurricane Events*

Local Hurricane Month	Media Market (DMA)
2008-08	ATLANTA(GA)
2009-11	ATLANTA(GA)
2017-09	ATLANTA(GA)
2017-08	AUSTIN(TX)
2011-08	BALTIMORE(MD)
2008-09	BOSTON(MA)-MANCHESTER(NH)
2009-08	BOSTON(MA)-MANCHESTER(NH)
2010-09	BOSTON(MA)-MANCHESTER(NH)
2011-08	BOSTON(MA)-MANCHESTER(NH)
2016-09	BOSTON(MA)-MANCHESTER(NH)
2017-09	BOSTON(MA)-MANCHESTER(NH)
2019-09	BOSTON(MA)-MANCHESTER(NH)
2008-09	HARTFORD(CT)-NEWHAVEN(CT)
2011-08	HARTFORD(CT)-NEWHAVEN(CT)
2012-05	JACKSONVILLE(FL)
2016-09	JACKSONVILLE(FL)
2016-10	JACKSONVILLE(FL)
2017-09	JACKSONVILLE(FL)
2019-09	JACKSONVILLE(FL)
2008-09	MEMPHIS(TN)
2006-08	MIAMI(FL)-FT.LAUDERDALE(FL)
2008-08	MIAMI(FL)-FT.LAUDERDALE(FL)
2008-09	MIAMI(FL)-FT.LAUDERDALE(FL)
2010-07	MIAMI(FL)-FT.LAUDERDALE(FL)
2012-08	MIAMI(FL)-FT.LAUDERDALE(FL)
2012-10	MIAMI(FL)-FT.LAUDERDALE(FL)
2016-10	MIAMI(FL)-FT.LAUDERDALE(FL)
2017-09	MIAMI(FL)-FT.LAUDERDALE(FL)
2018-09	MIAMI(FL)-FT.LAUDERDALE(FL)
2008-09	NASHVILLE(TN)
2008-09	NEWYORK(NY)
2011-08	NEWYORK(NY)
2008-08	ORLANDO(FL)-DAYTONABEACH(FL)-MELBOURNE(FL)
2016-06	ORLANDO(FL)-DAYTONABEACH(FL)-MELBOURNE(FL)
2016-09	ORLANDO(FL)-DAYTONABEACH(FL)-MELBOURNE(FL)
2016-10	ORLANDO(FL)-DAYTONABEACH(FL)-MELBOURNE(FL)
2017-09	ORLANDO(FL)-DAYTONABEACH(FL)-MELBOURNE(FL)
2008-09	PHILADELPHIA(PA)
2011-08	PHILADELPHIA(PA)
2006-06	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2007-06	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2008-08	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2016-06	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2016-09	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2016-10	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2017-09	TAMPA(FL)-ST.PETERSBURG(FL)-SARASOTA(FL)
2008-08	WESTPALMBEACH(FL)-FT.PIERCE(FL)
2012-08	WESTPALMBEACH(FL)-FT.PIERCE(FL)
2016-10	WESTPALMBEACH(FL)-FT.PIERCE(FL)
2017-09	WESTPALMBEACH(FL)-FT.PIERCE(FL)

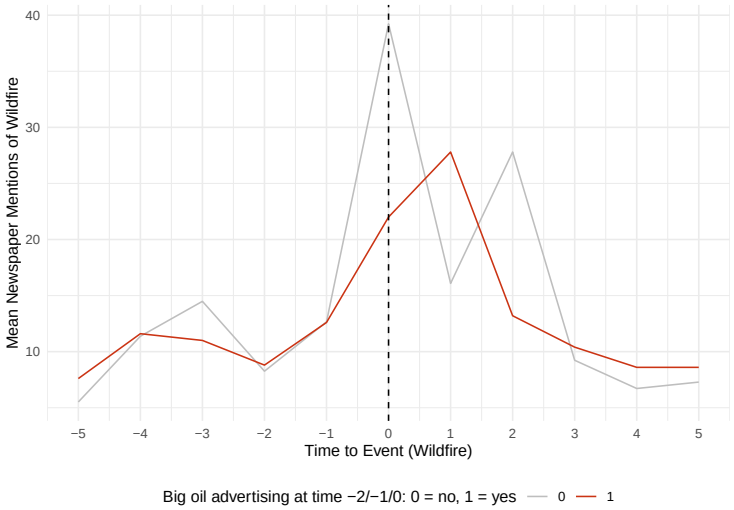

Figure B.2: *Wildfire coverage relative to local wildfire event*

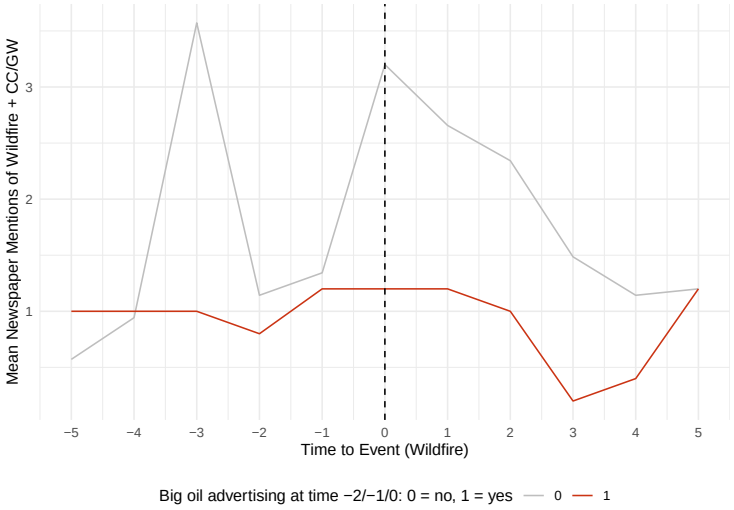

Figure B.3: *Wildfire coverage referencing climate change/global warming relative to local wildfire event*

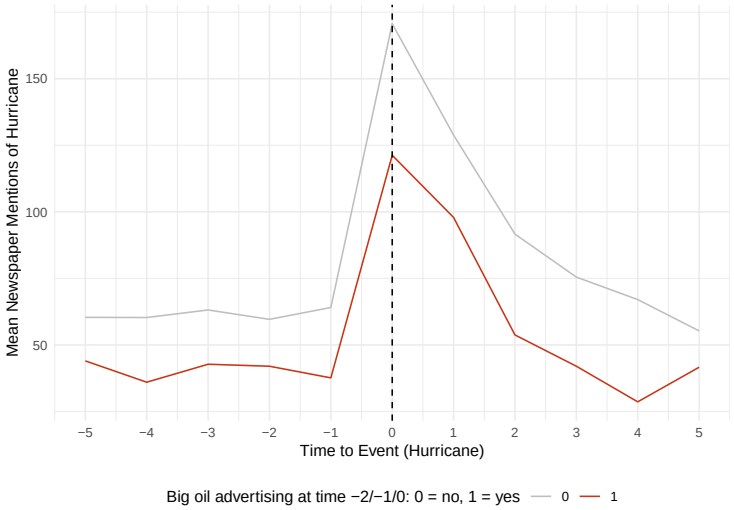

Figure B.4: *Hurricane coverage relative to local hurricane event*

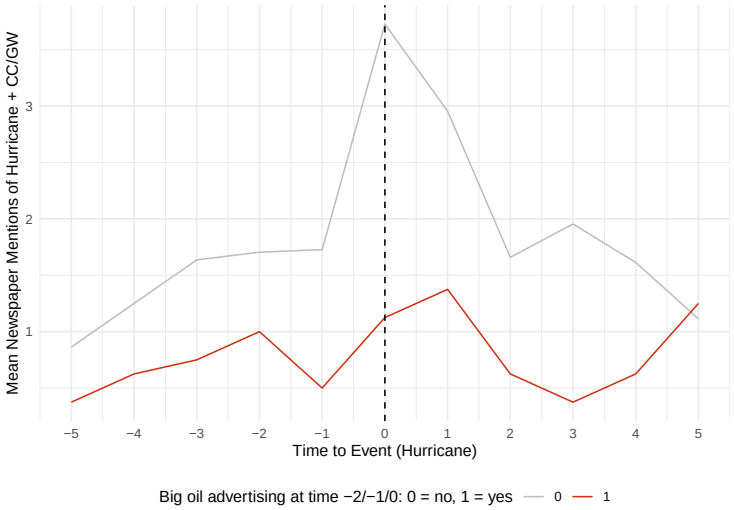

Figure B.5: *Hurricane coverage referencing climate change/global warming relative to local hurricane event*

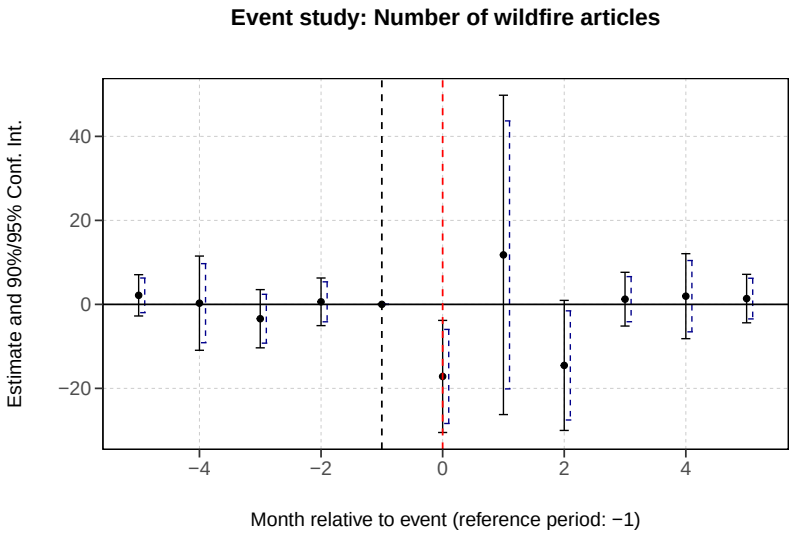

Figure B.6: *Event study estimates: Number of wildfire articles*

Number of observations = 440. The specification includes 40 newspaper × event fixed effects, 11 time-to-event fixed effects, and an indicator variable taking the value 1 if there is a wildfire in a different DMA of the state, and 0 otherwise. The dashed and solid error bars denote 90% and 95% confidence intervals, respectively. Standard errors are clustered at the newspaper × event level.

Table B.46: *Event study estimates: Coefficient table corresponding to Figure B.6*

	Estimate	Std. Error	N	Switchers
Treated x time=-5	2.15	2.51	40	5
Treated x time=-4	0.29	5.72	40	5
Treated x time=-3	−3.42	3.54	40	5
Treated x time=-2	0.61	2.89	40	5
Treated x time=0	−17.16	6.81	40	5
Treated x time=1	11.78	19.40	40	5
Treated x time=2	−14.53	7.90	40	5
Treated x time=3	1.24	3.27	40	5
Treated x time=4	1.95	5.16	40	5
Treated x time=5	1.38	2.94	40	5

Standard errors are clustered at the newspaper-event level.

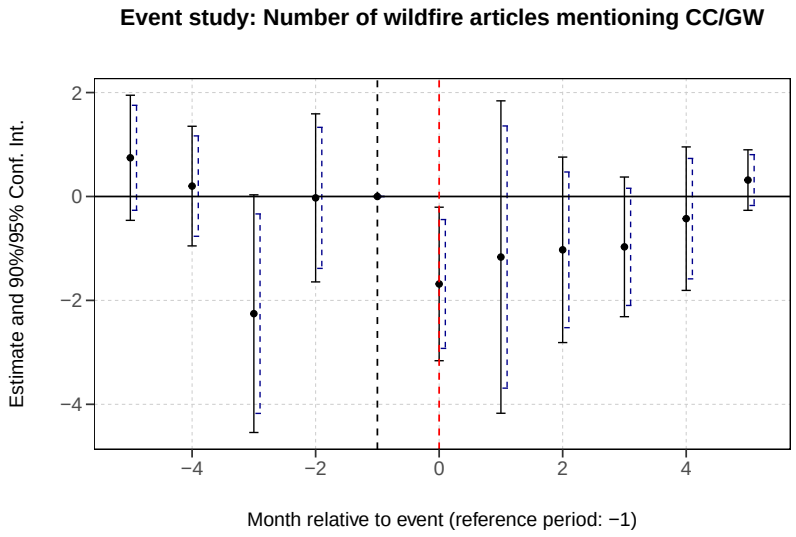

Figure B.7: *Event study estimates: Number of wildfire articles mentioning climate change/global warming*

Number of observations = 440. The specification includes 40 newspaper × event fixed effects, 11 time-to-event fixed effects, and an indicator variable taking the value 1 if there is a wildfire in a different DMA of the state, and 0 otherwise. The dashed and solid error bars denote 90% and 95% confidence intervals, respectively. Standard errors are clustered at the newspaper × event level.

Table B.47: *Event study estimates: Coefficient table corresponding to Figure B.7*

	Estimate	Std. Error	N	Switchers
Treated x time=-5	0.74	0.61	40	5
Treated x time=-4	0.20	0.59	40	5
Treated x time=-3	−2.26	1.17	40	5
Treated x time=-2	−0.03	0.83	40	5
Treated x time=0	−1.68	0.75	40	5
Treated x time=1	−1.17	1.53	40	5
Treated x time=2	−1.03	0.91	40	5
Treated x time=3	−0.97	0.69	40	5
Treated x time=4	−0.43	0.70	40	5
Treated x time=5	0.32	0.30	40	5

Standard errors are clustered at the newspaper-event level.

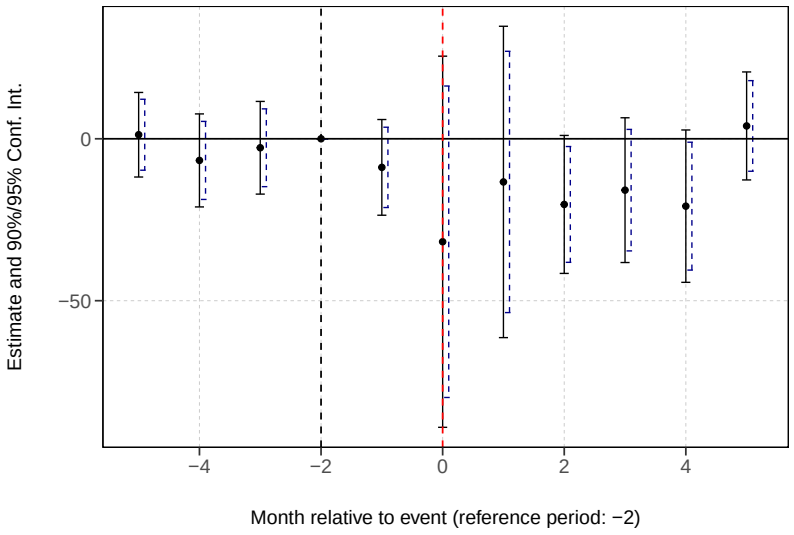

Figure B.8: *Event study estimates: Number of hurricane articles*

Number of observations = 572. The specification includes 52 newspaper × event fixed effects and 11 time-to-event fixed effects. The dashed and solid error bars denote 90% and 95% confidence intervals, respectively. Standard errors are clustered at the newspaper × event level.

Table B.48: *Event study estimates: Coefficient table corresponding to Figure B.8*

	Estimate	Std. Error	N	Switchers
Treated x time=-5	1.25	6.66	52	8
Treated x time=-4	−6.68	7.33	52	8
Treated x time=-3	−2.77	7.30	52	8
Treated x time=-1	−8.83	7.54	52	8
Treated x time=0	−31.80	29.24	52	8
Treated x time=1	−13.33	24.53	52	8
Treated x time=2	−20.27	10.87	52	8
Treated x time=3	−15.86	11.40	52	8
Treated x time=4	−20.81	12.00	52	8
Treated x time=5	3.97	8.51	52	8

Standard errors are clustered at the newspaper-event level.

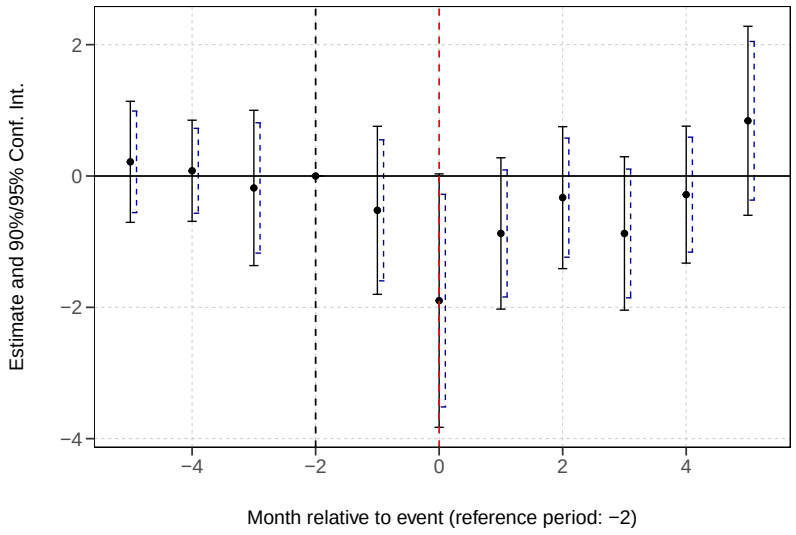

Figure B.9: *Event study estimates: Number of hurricane articles mentioning climate change/global warming*

Number of observations = 572. The specification includes 52 newspaper × event fixed effects and 11 time-to-event fixed effects. The dashed and solid error bars denote 90% and 95% confidence intervals, respectively. Standard errors are clustered at the newspaper × event level.

Table B.49: *Event study estimates: Coefficient table corresponding to Figure B.9*

	Estimate	SE	N	Switchers
Treated x time=-5	0.22	0.47	52	8
Treated x time=-4	0.08	0.39	52	8
Treated x time=-3	−0.18	0.60	52	8
Treated x time=-1	−0.52	0.65	52	8
Treated x time=0	−1.90	0.98	52	8
Treated x time=1	−0.88	0.59	52	8
Treated x time=2	−0.33	0.55	52	8
Treated x time=3	−0.88	0.60	52	8
Treated x time=4	−0.28	0.53	52	8
Treated x time=5	0.84	0.73	52	8

Standard errors are clustered at the newspaper-event level.

B.2.10 Advertising and TV coverage of climate change for big oil

Table B.50: *Big oil advertising and TV climate change coverage*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.011***		−0.014***		−0.166**	
	(0.001)		(0.002)		(0.067)	
Big oil ad share (last 3 months)		−1.626*		−2.221		−2.300**
		(0.796)		(1.260)		(0.989)
Ad price ($1,000/unit)	0.001***	0.001***	0.001**	0.0003	0.094**	0.076*
	(0.00005)	(0.0001)	(0.0002)	(0.0002)	(0.040)	(0.042)
Sample	All	All	Local TV	Local TV	National	National
Month of year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x TV outlet FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.198	0.197	0.394	0.394	0.14	0.14
R^2 (overall)	0.529	0.529	0.464	0.46	0.45	0.45
R^2 (projected/within)	0.003	0.003	0.005	0.002	0.006	0.004
Observations	2,462	2,441	555	542	1,907	1,899

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the TV station/network level in parentheses.

Table B.51: *Big oil advertising and TV climate change coverage - with month × year fixed effects*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 3 months, mio. $)	−0.004*		0.002		−0.094	
	(0.002)		(0.004)		(0.086)	
Big oil ad share (last 3 months)		−0.602		−0.466		−0.749
		(0.787)		(3.203)		(0.850)
Ad price ($1,000/unit)	0.001***	0.001***	0.0004**	0.0005***	0.083**	0.073*
	(0.0001)	(0.00004)	(0.0001)	(0.00004)	(0.036)	(0.037)
Sample	All	All	Local TV	Local TV	National	National
Year x month FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x TV outlet FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.198	0.197	0.394	0.394	0.14	0.14
R^2 (overall)	0.653	0.651	0.699	0.697	0.609	0.61
R^2 (projected/within)	0.002	0.003	0.002	0.003	0.004	0.003
Observations	2,462	2,441	555	542	1,907	1,899

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the TV station/network level in parentheses.

Table B.52: *Big oil advertising and TV climate change coverage - last 6 months' ad spending only*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Big oil ads (last 6 months, mio. $)	−0.006		−0.006		−0.175***	
	(0.005)		(0.006)		(0.034)	
Big oil ad share (last 6 months)		−2.994		2.072		−6.113***
		(1.859)		(2.527)		(2.058)
Ad price ($1,000/unit)	0.001***	0.001***	0.0004	0.001**	0.106**	0.082*
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.043)	(0.043)
Sample	All	All	Local TV	Local TV	National	National
Month of year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x TV outlet FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.198	0.196	0.394	0.392	0.14	0.14
R^2 (overall)	0.528	0.534	0.462	0.474	0.452	0.455
R^2 (projected/within)	0.002	0.006	0.002	0.004	0.011	0.01
Observations	2,462	2,418	555	531	1,907	1,887

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the TV station/network level in parentheses.

B.2.11 Advertising and TV coverage of climate change for Koch

Table B.53: *Koch Industries paper product advertising and TV climate change coverage*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Koch Industries ads (last 3 months, mio. $)	−1.072		−3.016**		−0.070	
	(0.912)		(0.831)		(0.296)	
Koch Industries ad share (last 3 months)		5.616		−350.483		6.734
		(8.661)		(226.151)		(7.682)
Ad price ($1,000/unit)	0.001***	0.001***	0.0003	0.0003	0.075*	0.069
	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.040)	(0.042)
Sample	All	All	Local TV	Local TV	National	National
Month of year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x TV outlet FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.198	0.197	0.394	0.394	0.14	0.14
R^2 (overall)	0.529	0.529	0.467	0.464	0.448	0.449
R^2 (projected/within)	0.003	0.002	0.01	0.008	0.002	0.002
Observations	2,462	2,441	555	542	1,907	1,899

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the TV station/network level in parentheses.

Table B.54: *Koch Industries paper product advertising and TV climate change coverage - including month × year fixed effects*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Koch Industries ads (last 3 months, mio. $)	−1.114*		−2.045***		−0.321	
	(0.643)		(0.378)		(0.289)	
Koch Industries ad share (last 3 months)		−12.326		−242.680*		−4.752
		(7.737)		(87.646)		(5.967)
Ad price ($1,000/unit)	0.001***	0.001***	0.0004**	0.0005***	0.074**	0.072*
	(0.00003)	(0.00004)	(0.0001)	(0.0001)	(0.036)	(0.036)
Sample	All	All	Local TV	Local TV	National	National
Month x year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x TV outlet FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.198	0.197	0.394	0.394	0.14	0.14
R^2 (overall)	0.654	0.651	0.701	0.698	0.608	0.61
R^2 (projected/within)	0.004	0.003	0.009	0.008	0.003	0.003
Observations	2,462	2,441	555	542	1,907	1,899

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the TV station/network level in parentheses.

Table B.55: *Koch Industries paper product advertising and TV climate change coverage - last 6 months of ad spending*

	Results for query:					
	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW	CC/GW
	(1)	(2)	(3)	(4)	(5)	(6)
Koch Industries ads (last 6 months, mio. $)	−1.445		−3.617**		−0.022	
	(1.132)		(0.904)		(0.301)	
Koch Industries ad share (last 6 months)		8.294		−799.641		17.317*
		(15.376)		(594.364)		(9.179)
Ad price ($1,000/unit)	0.001***	0.001***	0.0003	0.001*	0.074*	0.068
	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.039)	(0.042)
Sample	All	All	Local TV	Local TV	National	National
Month of year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year x TV outlet FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean dependent variable	0.198	0.196	0.394	0.392	0.14	0.14
R^2 (overall)	0.53	0.533	0.473	0.481	0.448	0.451
R^2 (projected/within)	0.006	0.004	0.022	0.018	0.002	0.003
Observations	2,462	2,418	555	531	1,907	1,887

(***, **, *) denotes significance at the 1%, 5%, and 10%-level, respectively. The unit of observation is a particular media outlet in a given month. Standard errors clustered at the TV station/network level in parentheses.