Measuring partisan media bias in US newscasts from 2001 to 2012[☆]

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ABSTRACT

This paper investigates the positioning in political news coverage of the big four US newscasts, *ABC News*, *CBS News*, *FOX News* and *NBC News,* as well as how they alter their positions when president Barack Obama took over from George W. Bush. Our empirical analysis is based on the tonality of their political coverage using more than 815,000 news items on Democrats and Republicans from 2001 through 2012. Using the Political Coverage Index (PCI), we find evidence for partisan and biased news coverage across all of the newscasts, with a general tendency of *ABC News, CBS News*, and *NBC News* to be slightly more critical of the Republicans, and of *FOX News* with a clear tendency to be more critical of Democrats. Moreover, and even more interesting, two of the newscasts – *CBS News* and *NBC News* – changed their political coverage such that it became more conservative when Democrat Barack Obama became president. This effect becomes even more pronounced when observations from election campaign periods are dropped. We interpret these results as evidence for a watchdog-like anti-government bias on the part of the observed newscasts. In contrast, *FOX News* remains Democrat-critical independent of who is in office and can be seen as partisan from this perspective. The results are confirmed when controlling for differences in reporting rates between the parties and the administrations using interaction terms.

1. Introduction

Media play an important role in the perceptions and decisions of individuals in economic and political contexts, with information typically gathered indirectly through media channels alongside direct communication and personal experience. Thereby, media can only provide a partial picture and not a complete coverage of everything that is happening in the world. Moreover, media reality is prone to various types of distortions, so-called media bias (Entman 2007).[1]

In the political context, one bias of interest is if media outlets favor one or another side of the political spectrum. In addition, it is of

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[1] We use the term "bias" throughout this paper as an expression for the slant of political news coverage.

interest if the political media bias is constant or changing, for instance when another political party gains power. The results are by no means *a priori* clear: One perspective can be traced back to parliamentary debate in 1787 in the United Kingdom over providing media access to the parliament. In this debate, Edmund Burke claimed that media form the "fourth estate" and, with this, acted as an additional controlling instance over government.[2] In line with Burke, one could expect a critical anti-government bias in media reporting.

A different perspective is provided by Public Choice literature: For instance, Anderson and McLaren (2012) argue that media are owned by people with political and profit motives, who use their influence to change policy. Other authors claim that governments capture the media through policy decisions in their favor or by access to news stories in order to maintain "a 'cozy' relationship" with the media (Besley and Prat 2006, 720). In particular, the latter explanation of media capture implies that media outlets tend to be less critical of the government resulting in a pro-government bias. The former explanation would lead us to expect that such pro-government bias exists among media outlets that are owned or edited by people aligned with the political party in power.

In this contribution, we analyze the political coverage of four leading news gathering organizations in the US – *ABC News, CBS News, FOX News,* and *NBC News* – on the basis of a unique dataset. It contains a large number of hand-coded media data from 2001 through 2012, which enables us to examine the tonality of political reporting by the aforementioned news organizations. Despite the fact that the selection of newscasts and timeframe is mainly driven by data availability, the selected news organizations are relevant, as *ABC News, CBS News,* and *NBC News* are the news divisions of the three big traditional commercial broadcast television networks in the US. Subsequently, in 1996, *FOX News* was established as cable news channel, competing, in large part, with the three aforementioned news gathering organizations.[3]

By applying a tonality-based approach to more than 815,000 news items on Democrats and Republicans from 2001 through 2012, we are able to identify the relative political positioning of the four newscasts during the time span analyzed. In a second step, we analyze whether media coverage of politicians and parties differs depending on the party affiliation of the president in office.

Methodologically, our analysis is based on a panel regression set up with media and time fixed effects as well as a multitude of economic and geopolitical controls. In order to reduce possible endogeneity issues, we first drop the months around the elections from our data and focus on periods from one month after an election to four months before the next election and, second, we extend our analysis by estimating the differences in media coverage about Democrats and Republicans during the presidency of Bush and the presidency of Obama, respectively.

Our results suggest that, overall, media reporting was more critical of Democrats when Democratic president Obama was in power than of Republicans when the Republican president Bush was in office. Interesting differences are observed between the newscasts: For *CBS News* and *NBC News,* we find indications of an anti-government-bias, whereas for *FOX News*, reports are always much more critical of the Democrats than of Republicans and can be seen as partisan from this perspective.

The remainder of our contribution is structured as follows: Section 2 provides an overview of the related literature and describes the research gap. In Section 3, the data are introduced and the political positioning of the newscasts is demonstrated by the Political Coverage Index. Section 4 empirically investigates if the positioning of the newscasts changes depending on the president in office for both the entire media set as well as for each single newscast in the timeframe analyzed and discusses the results. Finally, section 5 concludes.

2. Related literature

There exists a rich literature on the various types of media bias. The most prominent are the advertising bias, when media change their news coverage in tone or volume to favor their advertising clients (see Dewenter and Heimeshoff 2014, 2015; Gambaro and Puglisi, 2015b; or Reuter and Zitzewitz 2006); the distance bias, or when media report more on events that take place close to their main market (Berlemann and Thomas 2019); the negativity bias, when media focus more on catastrophes, crime, and threatening political and economic developments in comparison to more positive news (see Friebel and Heinz 2014; Garz 2013, 2014; Heinz and Swinnen 2015 or Soroka 2006); and the newsworthiness bias, when news on certain issues crowd out coverage on other issues because they are deemed as more newsworthy (see Durante and Zhuravskaya 2018 or Eisensee and Strömberg 2007).[4]

The question if media outlets favor one or another side of the political spectrum is in addition to political and communication sciences analyzed in the Public Choice literature. For instance, Groseclose and Milyo (2005), focusing on the US two party system, provide an index of media outlets by comparing the number of think tanks and interest groups cited by Democratic and Republican members of US Congress with the same groups quoted by the media. The results show a strong liberal bias among all US newscasts examined, except FOX News' Special Report.[5] Further, Gentzkow and Shapiro (2010) compare characteristic phrases frequently used in different media outlets, while Groeling (2008) analyzes the political bias in US TV News by examining the coverage of presidential approval polls. In addition, political media biases are measured by Larcinese et al. (2011) and Puglisi (2011) using references to core

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[2] From Burke's perspective, media forms a fourth estate beyond the three traditional ones: The Lords Spiritual, the Lords Temporal, and the House of Commons.

[3] See section 3.1 for a discussion about this selection.

[4] In addition, there is a large literature in communication and media science on the existence of media biases and its foundations (see, among others, Ball-Rokeach 1985, Ball-Rokeach and DeFleur 1976, and Dunham 2013).

[5] In contrast, Hassell et al. (2020) analyze the political media bias among US journalists and find that there is no liberal media bias, at least in which news stories the journalists choose to cover.

topics, Qin et al. (2018) count references to political leaders, while Chiang and Knight (2011) and Puglisi and Snyder (2015b) use newspapers' explicit endorsements and editorial positions. Subsequently, Dewenter et al. (2020), introduce a tonality-based Political Coverage Index (*PCI*), apply it to 35 opinion-leading media in Germany, and find empirical evidence that media have the tendency to report government-critical (see below).[6]

Consequently, individual perceptions and decisions based on biased political media reporting might deviate from perceptions and decisions based on more unbiased information.[7, 8] These deviations can affect both voters and politicians. For instance, Page et al. (1987) show that network television news accounts for a high proportion of changes in the policy preferences of U.S. citizens. Benesch et al. (2019) provide econometric evidence that media can affect the worries of the population about policy relevant topics, like migration, by using media spill-overs from one country to another as an instrument. The effect of media coverage on the redistribution preferences is analyzed theoretically by Di Gioacchino and Verashchagina (2020). A closer look at the impact of media coverage on political action is provided by Snyder and Strömberg (2010).[9] The authors find that voters living in regions with insufficient political media coverage are less able to recall or evaluate their representatives. This affects the work of politicians: Less covered congressional representatives are less willing to serve as witnesses at congressional hearings or serve on committees. In addition, regions with less press coverage of representatives receive less federal spending.[10] The opposite causation, i.e. the impact of government parties on media, is analyzed by Gentzkow et al. (2015). In the international political context, Eisensee and Strömberg (2007) show that media coverage of natural disasters causally affects US disaster relief. The authors find evidence that, in times of high news pressure caused by Olympic Games, natural disasters are less likely to be covered, which leads to lower disaster relief.[11]

Another outstanding reason for the relevance of political media coverage is that it can affect voting intentions and election outcomes: Dewenter et al. (2019) show that less critical tonality of the media coverage of a political party can increase the intention to vote for that party, at least in the short term. Prat (2018) demonstrates that media organizations are able to induce voters to make electoral decisions that they would not make if reporting were unbiased. Enikolopov et al. (2011) focus on the impact of media coverage on election outcomes. The authors, analyzing electoral outcomes of parliamentary elections in 1999 in Russian regions with different access to an independent national TV channel, find that access to independent TV led to decreased votes for the governing party and to an increased vote for major opposition parties. The results are comparable to those of DellaVigna and Kaplan (2007). Based on the successive rolling out of *FOX News* across US states, the authors find that Republicans gained additional votes in presidential elections between 1996 and 2000 in cities with access to *FOX News*.[12]

The demonstrated impact of media on perceptions and decisions in the political context draws attention to media bias and the role of the media in democracy as well. As mentioned in the introduction, the perspective of Public Choice literature on media in democracies is rather sobering: Anderson and McLaren (2012) argue that media are owned by people with political and profit motives who use their influence to change policy (see also Demsetz and Lehn, 1985). However, Gentzkow and Shapiro (2010) find that the

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[6] There is also existing research on the political bias of German media outlets, provided by Garz et al. (2020b). The authors construct an index of media slant by comparing the language of Facebook posts by 84 German news outlets on politicians who were investigated for criminal offenses with that of the main political parties. The results are comparable to those of Dewenter et al. (2020). That media coverage of the economy can be politically biased is shown by Lott and Hassett (2014). The authors find that American newspapers give more positive coverage to the same economic event when Democrats are running office than when Republicans are doing so. Empirical evidence for biased networks is provided as well by Mixon et al. (2004), who investigates the time difference between poll closing times in US states and the times at which CNN projected a winner of the 2000 presidential election.

[7] In addition, the effect of media reporting on political information and knowledge is in the focus of several authors. For instance, Kendall (2010) finds, in a theoretical model framework, that the number of media outlets does not necessarily increases the level of information. In contrast, Chan and Stone (2013), also based on a theoretical analysis, determine that a higher number of outlets leads to better election outcomes as it increases the chance that voters receive at least some news independent of the degree of selective exposure. That voter information via news consumption is affected by a more intense exposure to the media is shown by Garz (2018). As a consequence, retirement improves the ability to answer political knowledge questions.

[8] Beside inquiries regarding the impact of media reporting on perception and behavior in the political context, there is also a huge and growing literature in the economic context. For instance, Nadeau et al. (2000), Soroka (2006), and van Raaij (1989) show that the assessment of the state of the economy and economic expectations depends, at least in part, on media reports. In this context, Ulbricht et al. (2017) use media data to improve economic forecasts. Alsem et al. (2008), Goidel and Langley (1995), as well as Doms and Morin (2004) analyze the impact of media reporting on the consumer climate. Garz (2012, 2013) investigates the impact of distorted media coverage of unemployment on the perception of job insecurity, while Lamla and Maag (2012) analyze the impact of media reporting on inflation forecasts of both households and professional forecasters. Chadi (2015) shows that media coverage of economic crises can even affect life satisfaction. In addition, media coverage can also affect decisions and behavior. For instance, Dewenter et al. (2016) find evidence that car sales depend, at least in part, on media coverage of the automotive industry.

[9] Further contributions in this context are Bernhardt et al. (2008), D'Alessio and Allen (2000), Druckman and Parkin (2005), Gentzkow et al. (2011) as well as Morris (2007).

[10] In addition, Garz and Sörensen (2017) analyze the effect of news media on the probability of resigning from office for politicians subject to criminal investigation. The authors find that a change from no coverage to the mean coverage increases the likelihood of resignation by 6.4 percentage points.

[11] More evidence on the effect of media coverage in the international political context is provided by Beckmann et al. (2017) and Jetter (2017) with focus on terror activities and by Durante and Zhuravskaya (2018) in the context of the Israeli-Palestinian conflict.

[12] In the European context, Aboura (2005) finds that during the campaign for the May 29, 2005, referendum on the Treaty Establishing a Constitution for Europe, French media were biased in favor of the Treaty. This has a counterintuitive effect on the rejection of the Treaty by people who felt that the coverage was not taking the worries of the people into account.

media's response to consumer preferences has a much higher explanatory power for media slant than ownership structures. The effect of consumer preferences on the political bias of media is confirmed by, among others, Garz et al. (2020a), who find that during the 2012 and 2016 US presidential campaigns the headlines of six online outlets were biased towards the preferences of the typical outlet-specific consumer. Besley and Prat (2006, 720) argue that governments capture media outlets through policy decisions in their favor in order to maintain "a 'cozy' relationship" with the media. Specifically, the latter explanation of media capture implies that media outlets tend to be less critical of the government. The former explanation would lead us to expect pro-government bias, especially for those media outlets that are owned or edited by people aligned with the political party in power. The idea that the political positioning of the media is not necessarily stable over time is analyzed by Kim et al. (2022). The authors examine the ideological or partisan political positioning of CNN, FOX News, and MSNBC over the 2010–2021 period and conclude that media orientation is highly dynamic, even in the short term. In contrast, Ladd and Lenz (2009), who analyze the communication shift of several British newspapers to the Labour Party and its impact on the 1997 UK general election, consider a change in the media's political positioning to be a "rare" event.

In this contribution, we analyze a novel dataset, apply a tonality-based approach and construct the Political Coverage Index (*PCI*) for our media outlets. In that sense, our work is connected to Groseclose and Milyo (2005), Gentzkow and Shapiro (2010), and Greenstein and Zhu (2012). However, in contrast to these contributions, we do not utilize quotes or characteristic phrases but rather analyze the tonality of news reports on political parties and politicians based on human-coded media data. Thereby, our contribution addresses the gap that analyzing media bias by "measuring the tone of articles and editorials, is relatively underutilized in economics" (Puglisi and Snyder, 2015a, 664).

3. Data

3.1. Political media coverage of ABC, CBS, FOX, and NBC news

The media dataset

Our dataset, collected and coded by Media Tenor International,[13] comprises news programs by four major US news gathering organizations – *ABC News, CBS News, FOX News,* and *NBC News* – namely *ABC World News Tonight,* the *CBS Evening News, NBC Nightly News,* and FOX's *Special Report* from the beginning of 2001 through the end of 2012, due to data availability. We are aware that by focusing on *ABC News, CBS News, FOX News,* and *NBC News*, we are mixing aired channels (*ABC News, CBS News, and NBC News*) with a cable channel (*FOX News*). In addition, other news organizations, like *CNN* or *MSNBC*, could also be of interest. Although the selection of the media in our analysis is mainly driven by data availability, *FOX News* has higher ratings than *CNN* or *MSNBC*.[14]

The "Media Bias/Fact check" website, which sees itself as "the most comprehensive media bias resource,"[15] provides the following information on the political positioning of the four newscasts: *ABC,*[16] *NBC,*[17] and *CBS*[18] *News* having a slight to moderate liberal or left-center bias with a high share of factual reporting, *FOX*[19] *News* having a strong conservative or right bias with a mixed share of factual reporting.

4.1.2. Human coding

Each news program in our dataset was coded by Media Tenor's human analysts, based on over 700 characteristics that are defined in a binding coding manual ("the codebook"), including the reported topic (e.g. domestic policy, health reform, military actions, etc.), participating persons (e.g. politicians, entrepreneurs, managers, celebrities, etc.), participating institutions (e.g. political parties, companies, football clubs, etc.), region of reference (such as USA, UK, world), time reference (future, present, past), and the source of information (journalist, politician, expert, etc.). Each report was analyzed news item by news item, i.e. each time that a new topic, person, institution, region, time reference, or source was mentioned, an additional news item was coded. In addition, the analysts captured if the relevant protagonists and/or institutions receive positive ($+1$), neutral (0), or negative (-1) tone of coverage. The human analysts had to enter their coding into a computerized coding mask that listed all variables and possible values according to the codebook. Skipping all items that are not on political topics results in a total of 815,252 observations that are used in our analysis.

4.1.3. Accuracy

The accuracy, e.g. the share of correct coding, of the human-coded data utilized in the current study was checked monthly by Media Tenor. Specifically, spot checks of the coding were regularly verified by a team of trainers on the basis of the codebook, who coded the items themselves and then compared with the initial coding. This approach is standard and comparable to van Atteveldt et al. (2021). In the comparative study, the authors define the coding of a text by three coders based on a codebook with discussion of possible disagreements among them as the "gold standard" and compare it with other methods (see below for the results). Thereby, errors in

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[13] For more information, see: www.mediatenor.com (last checked: December 11, 2022).
[14] See for instance: https://variety.com/2021/tv/news/network-ratings-2021-top-channels-1235143630/(last checked: December 11, 2022).
[15] See: https://mediabiasfactcheck.com/(last checked: December 11, 2022).
[16] See: https://mediabiasfactcheck.com/abc-news/(last checked: December 11, 2022).
[17] See: https://mediabiasfactcheck.com/nbc-news/(last checked: December 11, 2022).
[18] See: https://mediabiasfactcheck.com/cbs-news/(last checked: December 11, 2022).
[19] See: https://mediabiasfactcheck.com/fox-news-bias/(last checked: December 11, 2022).

coding are often caused by misinterpretation of the sentence or coding rules. The data utilized in the current study achieved in all months an accuracy of at least 0.85 compared to the "gold standard"-coding by the team of trainers.

The question whether human coding or automated text analysis is an appropriate basis for scientific research on – for instance – the impact of media coverage on perception and behavior or the positioning of media in the political spectrum is itself an intensively debated research topic. Automated procedures have significantly improved in the last years and achieve results with high quality. However, unlike evaluating the number of citations of a particular institution or person or the share-of coverage respectively, the analysis of the tonality or the topical context is still a challenge for automated methods. In this context, Grimmer and Steward (2013) find for political text analysis that computational linguistic approaches achieve a maximum accuracy of 0.65. Therefore, Grimmer and Steward (2013) conclude that there is no adequate substitute for human coding in political text analysis (at least so far).[20] Similarly, Puglisi and Snyder (2015a, 656) state that "compared to human-based coding, automated coding is less accurate in detecting the tone of each specific text analyzed." More recently, Nelson et al. (2021, 226) concluded in their comparative study of manual and computer-assisted text analysis methods that "none of the methods replace the human researcher." In the same vein, van Atteveldt et al. (2021), in their comparative coding quality assessments, find that individual coders achieve an accuracy of 0.82 and teams of three coders achieve an accuracy of 0.88. Both (so far) exceed the accuracy of human crowd coding (0.72–0.77), machine learning approaches (0.57–0.63), and automated dictionary-based approaches (0.39–0.50) especially when it comes to encoding tonality (van Atteveldt et al., 2021, 128). Therefore, the accuracy of the hand-coded data in the current analysis of at least 0.85 is in line with the state of the art of van Atteveldt et al. (2021) and is an advantage of the current study as it focuses on the tonality of the reporting.

4.1.4. Tone and tonality

One of the variables coded is tone of coverage on the relevant protagonist, which can be positive ($+1$), neutral (0), or negative (-1). More precisely, it is coded in which tone the source (e.g. the journalist or an expert quoted) is talking about the protagonist (e.g. the politician or the political party) in a topical context (e.g. economic growth, terrorism, or unemployment). Hence, the topic itself does not say nothing about the tone. For instance, in the context of terrorism, the tone on the president could be negative if a quoted expert states that the president did never find a way to reduce the threat of terrorism or positive if a quoted expert states that the president did win the "war on terrorism."

On average, the tone of the 815,252 news items observed is negative, with a mean of -0.06, hinting at the well-known negativity bias of media reporting.[21] In addition, the average tone in the reporting of *FOX News* is, at -0.08, more negative than the average tone of *ABC News, CBS News*, and *NBC News*, which range from -0.03 to -0.05 (see Table 1). Interestingly, the overall majority of news items, across all media, is coded as neutral (75.98%). The highest amount of neutral coded news can be found with NBC (78.82%), followed by ABC (77.98%) and FOX (74.87%). CBS has the lowest number of neutral coded news items (73.48%). It should be noted, however, that the number of observations of CBS news items is also the lowest of the four media (see Table 1 for an overview).

Our dataset covers all political coverage of the newscasts analyzed for both Democrats and Republicans during the Republican presidency of George W. Bush as well as the Democratic presidency of Barack Obama. By comparing the tone in media reporting between the time of George W. Bush's and Barack Obama's administrations, respectively, we can observe differences in the political coverage of the newscasts analyzed (see Fig. 1). Media reporting, for most newscasts, seems to be more critical of Republicans during their presidency and vice versa for Democrats.

Based on the number of positive, negative, and neutral news items, the tonality S on all specific persons or institutions j related to a specific political party p, extracted from a newscast i, during time t (measured in months), can be defined as:

$$S_{i,t}^p = \frac{\sum_{j=1}^{n} n_{i,t}^{p,+} - \sum_{j=1}^{n} n_{i,t}^{p,-}}{\sum_{j=1}^{n} N_{i,t}^p},$$

where $N_{i,t}^p$ is the total of all news items on all specific persons or institutions j related to a specific political party p, $n_{i,t}^{p,+}$ is the number of positively rated reports, and $n_{i,t}^{p,-}$ the equivalent for negative reports.

3.2. The Political Coverage Index

The Political Coverage Index (*PCI*) is based on tonalities of news reports about political parties and politicians (see Dewenter et al., 2020). The *PCI* serves as a measure of the relative political positioning of the media.

By constructing the index, we are able to identify possible media biases and to analyze how critically media covers specific parties, governments, or presidents. The *PCI* is measured as the difference between the two values, with $S_{i,t}^{Rep}$ consisting of the tonality about the

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[20] Earlier contributions on the comparison of human coding and computer assisted methods go back to Nacos et al. (1991). More recent discussion on the topic are – among others – found in Baden et al. (2022), Chan et al. (2021), Church and Mark Liberman (2021), Hartmann et al. (2019), and Munnes et al. (2022).

[21] The negativity bias in media reporting indicates that media focus more on catastrophes, crime, as well as threatening political and economic developments than on more positive news (see among others Friebel and Heinz 2014; Garz 2013, 2014; Heinz and Swinnen 2015 or Soroka 2006).

Table 1

Summary statistics for all newscasts: ABC, CBS, FOX and NBC News.

Medium	Obs.	Mean	Std. Dev.	Min	Max
ABC News	135,128	−0.0388	0.4677	−1	1
CBS News	121,286	−0.0472	0.5128	−1	1
FOX News	394,736	−0.0831	0.4944	−1	1
NBC News	164,102	−0.0341	0.4589	−1	1
Total	815,252	−0.0605	0.4864	−1	1

Note: The mean indicates whether a newscast is, on average, less critical of the Republican President G.W. Bush (positive values) or less critical of the Democratic President Obama (negative values). The last row of the table provides a summary of all newscasts.
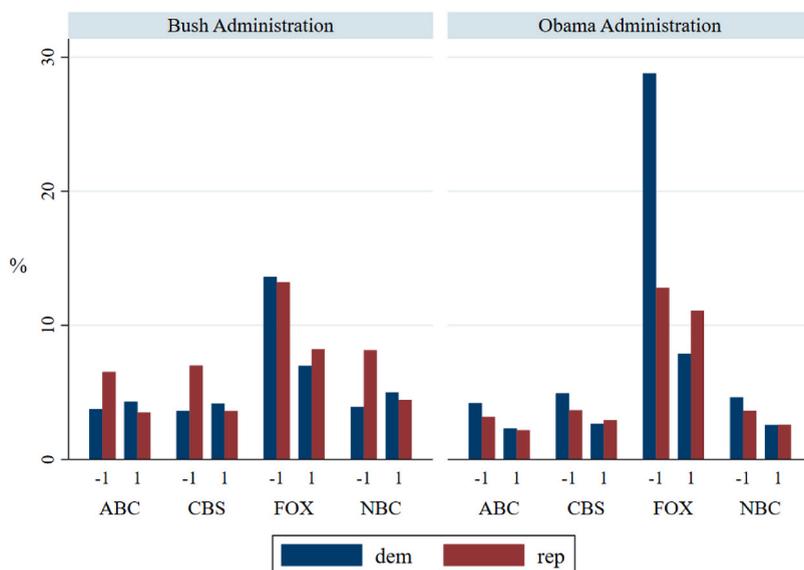

Fig. 1. Share of positive and negative News during Bush (left) and Obama (right) administrations, respectively. Note: For each network (ABC, CBS, FOX and NBC), the percentage of positive (1) and negative (−1) news items compared to all news within that network are displayed. As discussed above, most items are coded as neutral and, thus, are excluded from this figure for better presentation of the positive and negative news. News about Republican President Bush are colored as red bars, news about Democratic President Obama are colored in blue. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

Republicans and $S_{i,t}^{Dem}$ about the Democrats:

$$PCI_{i,t} = S_{i,t}^{Rep} - S_{i,t}^{Dem}.$$

As per definition of the *PCI*, positive values indicate a more conservative positioning of media outlet *i*, whereas negative values indicate more liberal reporting. In other words, positive values of the *PCI* indicate less critical coverage of the Republican Party and negative values less critical coverage of the Democratic Party.

3.3. Application of the media data to the PCI

By applying the media data to the *PCI*, as defined in the previous section, the picture in Fig. 2 emerges. The aggregated *PCI* of all four newscasts varies between −0.40 and + 0.79, with an average standard deviation of 0.15 (see Table 2) . The index starts with relatively high values but also with sharp fluctuations around the events of the terrorist attacks in the period after 9/11 and the Iraq War in 2003. After a dip in 2004, the *PCI* varies around zero until 2007, when it becomes less steady.

By splitting the data between the newscasts, we can see differences in the PCI of certain newscasts over time (see Fig. 3). The vertical lines indicate a new administration.[22]

Focusing on the average PCI of each medium during the Bush and Obama administration, respectively, one can see interesting differences in the political coverage of ABC News, CBS News, FOX News, and NBC News (Fig. 4).[23]

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[22] Note that for *FOX* News, the obtained observations only begin in July 2004.

[23] For the aggregated *PCI* for each medium over the whole timespan, see Figure A1 in the Appendix.
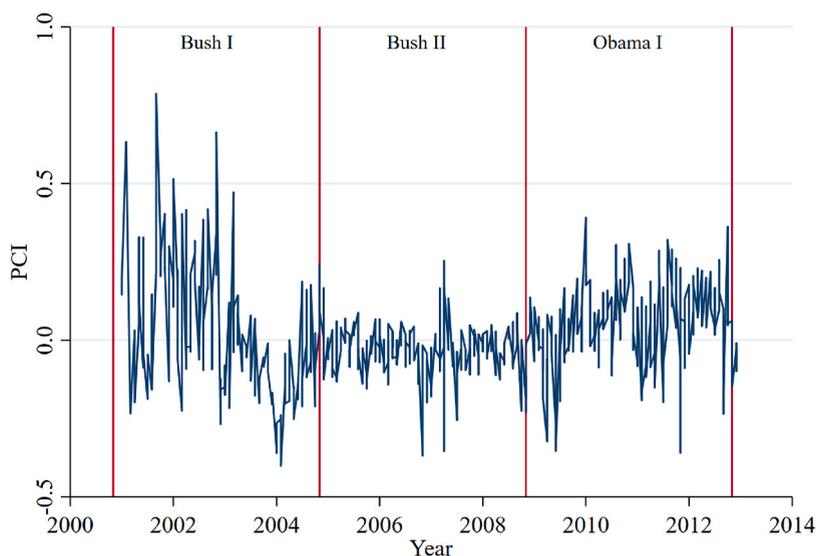
Fig. 2. Monthly PCI, aggregated for all media. **Note:** Vertical bars (red) indicate the four presidential election dates in our sample, starting from the first election of G.W. Bush in November 2000 (first line), to his second election in 2004 (second line), up to the first (third line) and second elections (fourth line) of Obama in November 2008 and 2012, respectively. For more information and a detailed overview of these election dates, see Table 3. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

Table 2
Monthly PCI values for ABC, CBS, FOX, and NBC News.

Medium	Obs.	Mean	Std. Dev.	Min	Max
ABC News	143	−0.0127	0.1516	−0.3596	0.6634
CBS News	140	−0.0094	0.1597	−0.4006	0.4713
FOX News	98	0.1017	0.0983	−0.0437	0.3918
NBC News	142	−0.0015	0.1553	−0.3683	0.7868
Total	523	0.0126	0.1523	−0.4006	0.7868

Note: The number of observations refers to the aggregated, monthly PCI values. The mean indicates whether a newscast is, on average, less critical of Republican President G.W. Bush (positive values) or less critical of Democratic President Obama (negative values). The last row of the table provides a summary of all newscasts.

During the Obama administration, the *PCI* shows positive values for all newscasts, thus indicating that media reporting was more critical of the Democrats in power than it was when Bush was president. This can be seen as a first hint of reporting that is critical of the government during the Obama administration. However, the *PCI* value of *FOX News* is, at +0.17, much higher than the *PCI* values of *ABC News, CBS News,* and *NBC News*, which range from 0.006 to 0.01. This shows how conservative the media reporting of *FOX News* was during the Obama administration.

In contrast, during the Bush administration, the *PCI* values of *ABC News, CBS News,* and *NBC News* show negative values, indicating that the media reporting was more critical of Republican President Bush than of Democratic President Obama. Again, this can be seen as a hint of government critical reporting, now during the Bush administration. However, the *PCI* values of *ABC News, CBS News*, and *NBC News* during the Bush administration are, from −0.02 to −0.01, much more negative than their positive values during the Obama administration, from +0.006 to +0.1. This can be seen as a hint of the generally Republican-critical political positioning of *ABC News, CBS News,* and *NBC News*. The political reporting of *FOX News* during the Bush administration clearly presents a different picture. In contrast to *ABC News, CBS News*, and *NBC News*, during the Bush administration, the *PCI* values of *FOX News* are still positive, thus indicating that *FOX News* was still reporting more critically on the Democrats even when Republican President Bush was in power. The *FOX News PCI* value is, at +0.04, somewhat smaller than it was during the Obama administration, at +0.17. However, it is still more positive than the *PCI* values for *ABC News, CBS News*, and *NBC News*. Of course, this simple chart inspection can only provide first hints of systematic differences in the media reporting of the newscasts analyzed and is not a substitute for a robust empirical analysis, which we provide in section 4.

4. Analysis

In this section, we analyze econometrically the obtained Political Coverage Index *PCI* values of *ABC, CBS, FOX,* and *NBC* during the Republican presidency of George W. Bush and during the Democratic presidency of Barack Obama. First, the results for the entire media set are presented, second, a more in-depth analysis of each respective newscast in our media dataset is given, and, third, we estimate the differences in reporting for both Democrats and Republicans during the Bush and Obama administrations, respectively.
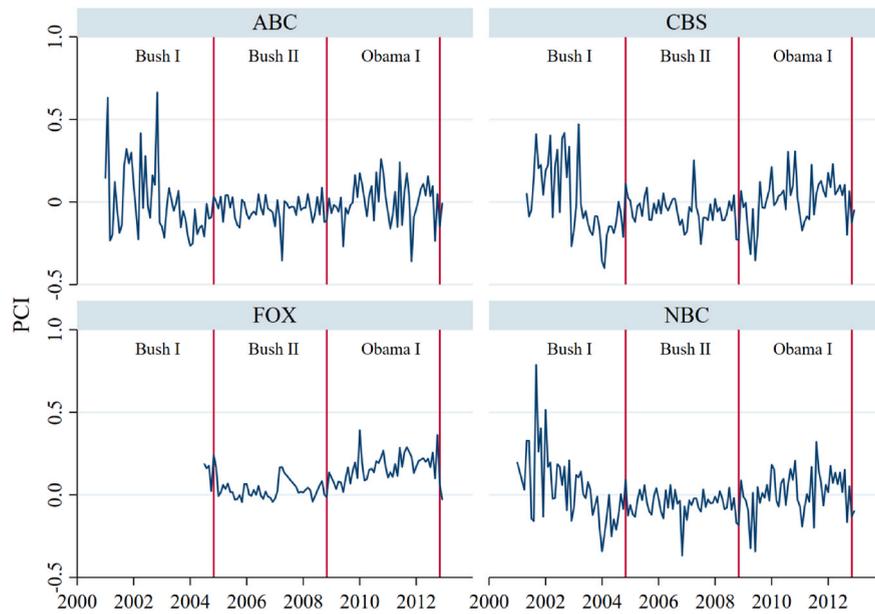
Fig. 3. Monthly PCI per medium and presidencies. Note: Observations for ABC, CBS, and NBC start in January 2001 and end in December 2012, in contrast to FOX News where coded data is available only from July 2004 to the end of 2012. PCI values range from −0.5 up to 1.0. Red lines indicate election dates: The second election of G.W. Bush in November 2004 (first line), the first election of Obama in November 2008 (second line) and his second election in November 2012 (third line). For more information and a detailed overview on these election dates, see Table 3. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)
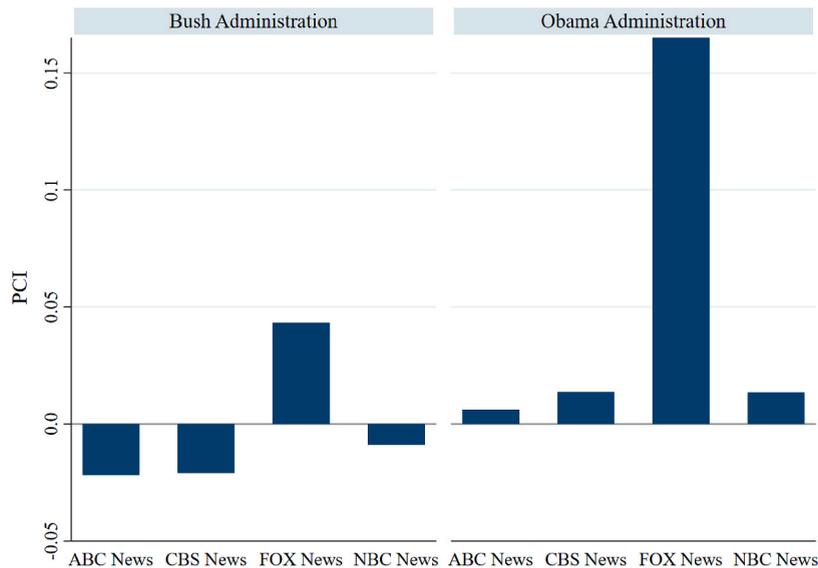
Fig. 4. PCI per medium during Bush and Obama administration, respectively. Note: Average monthly PCI values for ABC, CBS, FOX, and NBC News (from left to right), aggregated from 2001 to 2012 (2004–2012 in case of FOX). The horizontal grey line indicates a PCI value of zero. Bars below this line hint at more liberal media coverage whereas observations above zero indicate more conservative reporting by the media. During the administration of Bush, only FOX News shows positive PCI values. During Obama's term in office, all media seem to be more conservative in their reports.

4.1. Empirical strategy

4.1.1. Model set up

To analyze empirically if *ABC News, CBS News, FOX News,* and *NBC News* change the tonality of their media coverage when the presidency changes, we first conduct a basic Ordinary Least Squares (OLS) regression to estimate a model explaining *PCI* as the dependent variable. We include a dummy variable *Obama,* which represents the presidential incumbent: taking the value of 1 during the Democratic presidency of Obama and 0 during the Republican presidency of Bush.

In addition, to capture at least part of the factual performance of the government, which is likely to be a major driver of the political media coverage and the *PCI* as well, we add several economic and geopolitical controls. Specifically, we add monthly variables for the seasonally adjusted unemployment rate (*Unemployment*), the consumer price index (*CPI*), which accounts for all items in the United States with base year 2015, and business tendency surveys for manufacturing as a confidence indicator (*Business*). For the latter, we expect the tonality of reports to become more negative, the smaller the confidence indicator due to a more negative economic outlook, which can be reflected in media coverage. Similar applies to high unemployment or inflation rates, which we assume to influence media coverage in a negative way. As shown in a study by Dewenter et al. (2019) for German media, higher unemployment or inflation rates are associated with lower tendencies to vote for parties on the left in the political spectrum. In addition, we add the geopolitical risk index (*GPR*) to our regressions, which reflects the occurrence of military tensions, terrorist attacks, or similar threats worldwide to account for the role and the self-understanding of the United States as a global superpower. We expect the tonality of the reports to be more negative the higher the risk index becomes, as reports about military conflicts or other geopolitical risks should be perceived as more negative than reports where the GPR is small.

Accounting for unobserved heterogeneity by using both media fixed effects α_i as well as month fixed effects T_t, the regression is then specified as follows:

$$PCI_{i,t} = \alpha_i + T_t + \beta_0 + \beta_1 Obama_t + \gamma_1 CPI_t + \gamma_2 Unemployment_t + \gamma_3 Business_t + \gamma_4 GPR_t + \varepsilon_{i,t},$$

where $PCI_{i,t}$ is the Political Coverage Index for media newscast i at time t. $Obama_t$ is a dummy variable indicating that the Democratic president Obama is the sitting president of the United States of America at time t, the coefficients β and γ are to be estimated, and ε represents the error term.

4.1.2. Consistency

We are aware that conducting this kind of two-way fixed effects model, which already controls, to some extent, for (time invariant) endogeneity, can still raise legitimate endogeneity concerns. Most importantly, we cannot identify whether the bias is driven by the media itself or the users of the media. Therefore, in this section, we discuss possible limitations of our approach and point to the consistency of our results. Endogeneity could arise due to two reasons: First, it is likely that the presidency not only affects the political positioning of the media measured by the PCI, but that their political coverage affects the outcome of elections and, thus, the president in office. For instance, DellaVigna and Kaplan (2007), Dewenter et al. (2019), and Enikolopov et al. (2011) provide empirical evidence regarding the impact of media reporting on election outcomes and voting intentions. If this is the case, the coefficients in our regression would be likely to be biased due to reverse causality. Secondly, although the macroeconomic factors of unemployment rates, the consumer price index, business confidence, and geopolitical risks are controlled for, we cannot fully account for the performance of the government. In case that there are additional factors describing the governments' performance that are not included in our regression, our estimates would be biased due to omitted variables.

By splitting our sample into different subsamples, consisting of periods with and without elections, we are able to account for media coverage during election campaign periods and, therefore, separate periods that should be more critical with respect to the endogeneity problems mentioned than others. For this purpose, we create time spans ranging from four months before the election dates up to one month after the election. The intuition behind this approach is, first, that in the four months before the election and, thus, during the campaign, media reporting affects election outcomes, as shown by DellaVigna and Kaplan (2007), Dewenter et al. (2019), and Enikolopov et al. (2011). Specifically, during this time, the coefficients could be biased due to both reverse causality and omitted variable bias, as discussed above. Not only are media newscasts more likely to act in a partisan manner during this period, but any underperformance of the government or any party are probably more exploited than usual. In addition, in the weeks directly after an election, another effect could lead to biased results. In the initial weeks following the November presidential election, there is somehow an intermediate period before the elector's election, which takes place on the first Monday after December 12th. During this period, political coverage is often dominated by reporting on electoral success and the new president, who is not even elected by the electors; this coverage of the presidential-elect tends to be positive, with minimal criticism levelled, something standing in stark contrast to subsequent coverage during the following presidential term.

As can be seen in Fig. 5, our observed data supports this assumption. The noticeable spread of the PCI data points around the election dates indicates that newscasters provide a different media coverage. The red observations in Fig. 5, which lie around elections and mid-term elections, have a visibly higher dispersion than the other observations.

Hence, for our regression analysis, we cut the months around the elections out of our data and focus on periods from one month after an election to four months before the next election. We are aware that this approach cannot solve the endogeneity problems completely, however, as we do observe differences in the campaign periods that confirm our previous assumptions, we believe that underlying endogeneity issues should at least be reduced. In particular, the endogeneity issue of reverse causality of the PCI on the incumbent dummy Obama should be limited, as despite the permanent campaigning hypothesis in political science (see Ícaro and Lilleker, 2020), the last months before an election are of particular importance for the voting result. Table 3 shows all relevant election dates for our dataset.

We also report differences in the reporting by using dummy variables for each specific presidency in our sample and compare the coverage on Democrats during a Democratic presidency to reports during a Republican presidency as well as reports on Democrats outside a Democratic presidency.

Fig. 5. PCI values over time for all media. Note: Observations with campaign periods are marked as red dots whereas blue dots indicate observations not in the campaign periods. The vertical lines represent election dates for presidential (solid lines) as well as midterm elections (dashed lines). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)
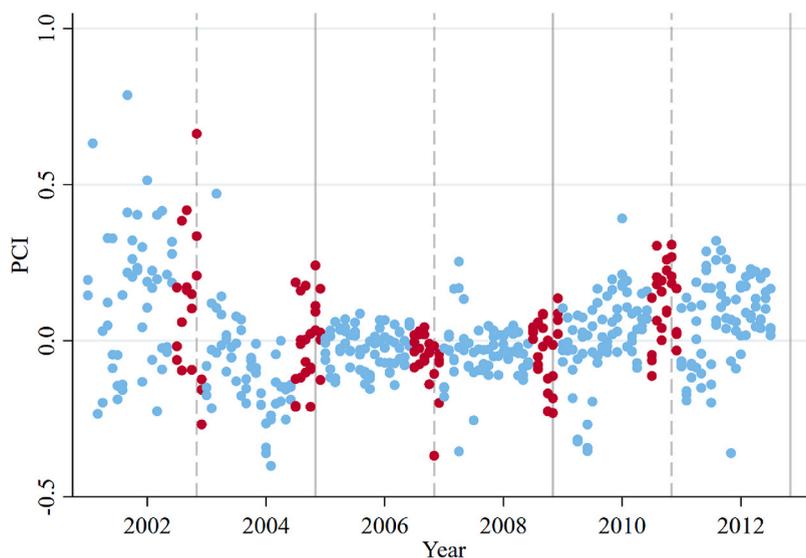
Table 3
Overview of all election dates, ranging from 2000 until 2017.

President	Election	Inauguration	Midterm Elections	End of Term
I G.W. Bush	November 7, 2000	January 20, 2001	November 5, 2002	January 20, 2005
II G.W. Bush	November 2, 2004	January 20, 2005	November 7, 2006	January 20, 2009
I Obama	November 4, 2008	January 20, 2009	November 2, 2010	January 20, 2013
II Obama	November 6, 2012	January 20, 2013	November 4, 2014	January 20, 2017

4.2. Empirical evidence

4.2.1. Average results for all newscasts

Six different specifications of our empirical investigation on the entire media set are presented in Table 4. Specifications OLS I to OLS III are estimated using ordinary least square regressions, FE I to FE III are the two-way fixed effect regressions. All regressions estimate the political positioning of the four newscasts measured by the *PCI* as the dependent variable and the incumbent dummy (Obama) as main explanatory variable, which measures the difference in average tonality during the Obama administration.

The first specifications, OLS I and FE I, respectively, include the entire sample without any restrictions. For the second specifications, OLS II and FE II, we drop the four months before and one month after a presidential election from our sample. Furthermore, in the third specification, OLS III and FE III, we not only drop the time span of four months before and one month after a presidential election but also around midterm elections; that is, August to December, every two years from 2002 onwards. By these means, we account for possible endogenity, at least to some extent.

The coefficient for the Democratic presidency (Obama) is positive and statistically significant for every specification. This indicates that media reporting during the Obama presidency is generally associated with higher *PCI* values, which can be interpreted as more conservative news coverage. When removing the time span around presidential elections from our sample, this effect intensifies, leading to even more conservative reporting. When excluding all election periods, the effect of the president's party affiliation on the political positioning of the four media outlets, as measured by the *PCI,* is even stronger. This can be seen as an indication that, around elections, the coefficients are biased due to the aforementioned endogeneity problems, particularly due to a more partisan media reporting. Although we cannot precisely identify the behavior of the media, the results tend to point to critical coverage of the government – at least outside of election campaign periods.

Both the *CPI* and the business tendency indicator (Business) have, in nearly all specifications (despite the *CPI* in OLS III), a significant and slightly negative influence on the *PCI*, suggesting that higher consumer prices or higher business confidence are connected with more conservative reporting. The coefficient for the unemployment rate is insignificant in specifications OLS I and FE I, which is, at least partly, explained by the high correlation between the macroeconomic variables. This could potentially hint at multi-collinearity, but the test with variance inflation factors indicates that the degree of collinearity is still tolerable. The coefficient for the geopolitical risk index is highly significant and positively associated with *PCI*, thus indicating that, in times with high geopolitical risk, media reporting tends to be less critical of Republicans than of Democrats in comparison to times with lower geopolitical risk. This is in

Table 4

Impact of the party affiliation of the president on the political positioning of all media.

Dependent variable: PCI	OLS I	OLS II	OLS III	FE I	FE II	FE III
Sample	Full sample	Presidential elections periods excluded	Presidential & midterm elections periods excluded	Full sample	Presidential elections Periods excluded	Presidential & midterm elections periods exc.
Obama	0.198*** (0.052)	0.232*** (0.064)	0.254*** (0.066)	0.221*** (0.053)	0.265*** (0.062)	0.288*** (0.064)
Consumer Price Index (CPI)	0.015*** (0.006)	0.017** (0.007)	0.016** (0.007)	0.020*** (0.008)	0.022** (0.010)	0.026** (0.011)
Unemployment	−0.008 (0.009)	−0.015 (0.012)	−0.028** (0.013)	−0.008 (0.009)	−0.017 (0.011)	−0.028** (0.012)
Business	−0.010 (0.006)	−0.012 (0.007)	−0.014* (0.007)	−0.010 (0.006)	−0.009 (0.007)	−0.011 (0.007)
GPR	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.000*** (0.000)
Trend	−0.046*** (0.014)	−0.048*** (0.017)	−0.045*** (0.017)	−0.060*** (0.020)	−0.064** (0.025)	−0.073*** (0.03)
Constant	91.31*** (28.52)	95.51*** (32.48)	89.86*** (32.75)	119.8*** (38.99)	127.0** (49.31)	145.2*** (54.24)
Observations	523	451	386	523	451	386
R-squared	0.122	0.137	0.133	0.241	0.248	0.245
Month FE	No	No	No	Yes	Yes	Yes
Media FE	No	No	No	Yes	Yes	Yes

Notes: Robust standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All media, elections periods: 4/1 months before/after an election.

line with the intuition.

The variable *Trend* captures a linear time trend that has a consistently negative impact on the *PCI*, indicating a more liberal media coverage over time. One might suspect that our results are driven by the fact that there has been a general trend toward more conservative media coverage. However, the negative trend suggests just the opposite. On average, media coverage seems to be more liberal, while reporting on Obama seems to be more conservative.

In addition, media dummies in FE I to FE III are statistically significant and differ between the newscasts: ABC News, CBS News, and NBC News are associated with a lower *PCI* and, thus, more liberal reporting, where FOX News positively affects the *PCI*, suggesting more conservative political coverage.

4.2.2. Robustness checks and extensions

Now, we check if our results are robust to different variations in model settings and across different periods of time and some extensions.

First, we focus on different election campaign periods, which could influence our results. Therefore, we vary the number of months before and after an election when campaigns are supposed to happen. Overall, the results are quite stable independent of this variation. See Table A1 in the appendix for regression results using election campaign periods of three months before an election and a honeymoon period of one month. Using the full sample (FE I), the results are similar to those from Table 4. However, on average, the effect of the party affiliation of the incumbent president on the *PCI* seems to be weaker when assuming that election campaigns are three months long.

Second, although the trend variable already indicates a general trend toward more liberal coverage, there could also be nonlinear fluctuations in political climate. In order to identify respective trends or political moods, one could include variables such as identification of voters and approval rates of both presidents. These data are, however, inherently endogenous with media coverage and, thus, we do not use them as ordinary controls. However, a close inspection of these variables does not show any indication of a more "conservative political climate" on the contrary, party identification with the Democratic Party is slightly higher than for the Republican Party in the observation period, which, again, corresponds with our estimate of a negative trend.[24]

We also check for possible shifts in the topics covered by media outlets over time. In case topics differ substantially between these two presidents, differences could drive the tonality. Our models would then suffer from omitted variable bias. Therefore, we identify the 50 most frequent topics across both administrations and compare the results (see Figure A3 in the appendix). For both presidents, most news reports are categorized as related to election campaigns, the personality of the presidents, and party politics. There are some interesting differences with regards to a greater focus on health policy and reform during Obama's term and a slightly higher emphasis on international conflicts and leadership during Bush's term. Overall, these differences seem to correspond with political agendas during the respective presidencies, but the changes are comparably small in the total number of items per topics.

Third, we also test the inclusion of dummies for the parties holding the majority in the House of Representatives. One hypothesis is

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[24] See, for example, https://news.gallup.com/poll/388781/political-party-preferences-shifted-greatly-during-2021.aspx (last checked on December 11, 2022).

that if one party controls the majority in Congress (consisting of both the House of Representatives and the Senate), it is more likely to get the news coverage. We do, however, observe only modest changes to our regression coefficients. For OLS I, we report values for the Obama coefficient at 0.172, for OLS II at 0.187, and for OLS III 0.184, compared to 0.198, 0.232, and 0.254, respectively, as shown in Table 4. All coefficients are highly statistically significant and positive, but slightly lower than in the model specifications without the majority dummy. Similarly, we obtain values of 0.192 for FE I, 0.217 for FE II, and 0.214 for FE III. These are, again, all significant at the 1%-level and positive albeit smaller compared to the coefficients in Table 4.

Fourth, we also investigate the effects during the election campaign periods in separate regressions, although our sample is limited and, thus, the number of observations strongly reduced. Analyzing the full sample of TV newscasts, the incumbent dummy (Obama) turns insignificant in three of four regressions. Only FE I shows significant results with a positive coefficient. Overall, this can be seen as an empirical hint of less critical media reporting on the upcoming president during the election campaign. During the campaign, it can become increasingly clear that one candidate has a good chance to become/remain president, which can result in more positive (less critical) reporting on the candidate who is perceived as likely to win the election. We cautiously interpret these results as some evidence for our assumption that the incumbent dummy and the *PCI* are differently linked to each other during election campaigns, which supports our approach to drop election campaigns from our sample.

Finally, we restrict our observation period to all data points after January 1, 2002. As the terrorist attacks on September 11, 2001 had a remarkable impact on the approval rates of President Bush (see also Footnote 24), the days after this event are associated with extraordinarily positive media coverage. Our results do show some variations with slightly lower coefficients, as in the specification in Table 4: Estimating only after 2002, results in a highly significant coefficient at 0.0987 compared to a value of 0.198 for OLS I. For FE III, excluding all election points, we obtain a value of 0.157 compared to 0.288, as shown in Table 4. All coefficients remain highly statistically significant and positive but they are smaller compared to the previous results. This could be seen as a hint for relatively less liberal reporting right after 9/11, which follows intuition and is in line with higher approval rates for Bush.

In summary, based on our approach of dropping election campaign periods from our sample, we find robust empirical evidence that during the Democratic presidency of Obama, the coverage of all four newscasts is generally more conservative than it was during the Republican presidency of Bush and vice versa. So far, when generally analyzing these newscasts, our results are consistent with our hypothesis that the newscasts' coverage is more critical of parties in power and serve as an additional control for governmental activities.

4.2.3. Detailed results on ABC, CBS, FOX, and NBC news

We now provide a more in-depth analysis of each single newscast in our media set to determine if we are able to find any indications of a biased reporting.

For *CBS News*, coefficients showing the impact of presidential party affiliation on political positioning are positive and statistically significant in all specifications (see Table 5, FE I - III). It shows that *CBS News* reports are more conservative when Obama is in office and vice versa. This government-critical reporting by *CBS News* is stronger than the average government-critical reporting of the other newscasts (see Table 4). Dropping election campaign windows with respect to presidential and midterm elections from our sample (see Table 5, FE III), the incumbent dummy shows, with a coefficient of 0.345, the strongest effect of presidential party affiliation on the political positioning of *CBS News*. This can, again, be seen as an indicator that, during election campaigns, the results are biased due to the several aforementioned endogeneity problems.

Results for *NBC News* draw a similar picture. The coefficients indicating the impact of presidential party affiliation on political positioning are positive and statistically significant in all specifications (see Table 5, FE IV - VI). This suggests that *NBC News* reports are more conservative when Democrat Obama is in office and vice versa. Dropping election campaign times with respect to presidential and midterm elections from our sample results in a coefficient of 0.347, the strongest effect of presidential party affiliation on the political positioning of *NBC News* (see Table 5, FE VI). Thus, *NBC News* appears to be even slightly more critical than *CBS News*.

Turning to *FOX News*, we obtain different results. None of the coefficients indicating the impact of presidential party affiliation on the political positioning of *FOX News* are statistically significant (see Table 6, FE I - III). This shows that *FOX News* does not change its political positioning significantly, regardless of who is in the Oval Office. These results are in line with the descriptive statistics, which show that *FOX News* reports are always more critical of Obama than of Bush (see Fig. 4).

Finally, focusing on *ABC News* exclusively, none of the coefficients indicating the impact of presidential party affiliation on the political positioning of *ABC News* are statistically significant (see Table 6, FE IV - VI).

While both *FOX News* and *ABC News* show a similar pattern in their reporting, their respective political coverage clearly differs. While the average *PCI* of *ABC News*, at −0.01269, indicates rather liberal reporting, the average *PCI* of *FOX News*, at 0.10166, indicates strongly conservative reporting on average. In addition, descriptive statistics show that, on average, *ABC News* reports are more liberal during the Republican presidency of Bush and more conservative during Democratic presidency of Obama, whereas *FOX News* reports are always more critical of Obama than of Bush, relatively speaking, regardless of who is the Oval Office (see Fig. 4). However, the varying political positioning of *ABC News* dependent on presidential party affiliation is not statistically significant.

4.2.4. Differences in media coverage

Finally, we extend our analysis by estimating the differences in media coverage about Democrats and Republicans during the presidency of Bush and the presidency of Obama, respectively. Instead of using the PCI, we now select the tonality of the *single news items* as the dependent variable of interest and estimate a probit model for the binary outcome if a report is declared positive (pos). Note that because data is now based on single news items and because there is more than one news item a day, we cannot use true panel techniques but pooled regressions instead.

Table 5
Impact of the party affiliation of the president on the political positioning of CBS News & NBC News.

Dependent variable:	FE I CBS News	FE II CBS News	FE III CBS News	FE IV NBC News	FE V NBC News	FE VI NBC News
PCI						
Sample	Full sample	Presidential elections periods excluded	Presidential & midterm elections periods excluded	Full sample	Presidential elections Periods excluded	Presidential & midterm elections periods excluded
Obama	0.251**	0.314**	0.345**	0.279**	0.325**	0.347**
	(0.105)	(0.128)	(0.139)	(0.110)	(0.132)	(0.135)
CPI	0.026	0.028	0.036	0.031*	0.040*	0.036
	(0.016)	(0.019)	(0.029)	(0.017)	(0.023)	(0.023)
Unemployment	−0.016	−0.029	−0.042	−0.015	−0.023	−0.037
	(0.019)	(0.024)	(0.027)	(0.019)	(0.025)	(0.026)
Business	−0.004	−0.002	−0.005	−0.017	−0.011	−0.016
	(0.014)	(0.018)	(0.019)	(0.014)	(0.017)	(0.017)
GPR	0.001***	0.001***	0.001**	0.000**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trend	−0.072*	−0.076	−0.093*	−0.090**	−0.111**	−0.100*
	(0.039)	(0.046)	(0.054)	(0.042)	(0.055)	(0.056)
Constant	1.365	1.418	1.889	3.192**	3.046*	3.367**
	(1.426)	(1.638)	(1.699)	(1.550)	(1.678)	(1.688)
Observations	140	122	104	142	124	106
R-squared	0.237	0.281	0.232	0.205	0.229	0.253
Month FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Election periods: 4/1 months before/after an election.

Table 6
Impact of the party affiliation of the president on the political positioning of FOX News & ABC News.

Dependent variable:	FE I FOX News	FE II FOX News	FE III FOX News	FE IV ABC News	FE V ABC News	FE VI ABC News
PCI						
Sample	Full sample	Presidential elections periods excluded	Presidential & midterm elections periods excluded	Full sample	Presidential elections Periods excluded	Presidential & midterm elections periods excluded
Obama	−0.069	−0.028	−0.011	0.148	0.149	0.153
	(0.060)	(0.054)	(0.060)	(0.097)	(0.115)	(0.113)
Consumer Price Index	−0.023**	−0.023*	−0.028*	0.018	0.006	0.019
	(0.0093)	(0.0120)	(0.016)	(0.015)	(0.018)	(0.023)
Unemploy-ment	0.019	0.002	−0.006	0.003	−0.003	−0.003
	(0.013)	(0.010)	(0.011)	(0.018)	(0.022)	(0.024)
Business	0.019***	0.013**	0.010	−0.015	−0.020*	−0.018
	(0.006)	(0.006)	(0.006)	(0.010)	(0.012)	(0.012)
GPR	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Trend	0.070***	0.082**	0.094**	0.070***	0.082**	0.094**
	(0.026)	(0.032)	(0.042)	(0.026)	(0.032)	(0.042)
Constant	−140.9***	−163.3**	−187.5**	2.446*	2.695*	2.806*
	(50.41)	(62.14)	(81.94)	(1.353)	(1.422)	(1.470)
Observations	98	80	68	143	125	108
R-squared	0.458	0.635	0.584	0.128	0.161	0.122
Month FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Election periods: 4/1 months before/after an election.

To focus on news items that exclusively deal with coverage of Democrats, we construct a variable, *ObamaDem,* indicating the interaction between the time dimension of Obama's presidency, that is from January 2009 onwards, and the news items about (members of) the Democratic Party. Therefore, we are able to identify reports on Democrats during a Democratic presidency in comparison to reports during a Republican presidency as well as news items on Republicans. Thus, differences that are only due to the temporal variation in reporting are filtered out, as are general differences between the reporting on Democrats and Republicans.[25]

Further, we incorporate dummy variables for each specific presidency in our sample, that is one for George W. Bush's first term

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[25] This approach is quite similar to a standard difference-in-differences (DiD) technique as our interaction term can be seen as the equivalent to the treatment effect in a DiD analysis. However, as coverage on Democrats during a Democratic government period is not identical to the respective coverage during a Republican government period, we do not end up with a standard DiD analysis.

Table 7

Results for estimating the tonality of the individual news reports for all media, separating the administrations of Bush and of Obama.

Dependent variable:	Model specifications			
Pos	I	II	III	IV
ObamaDem	−0.439***	−0.597***	−0.417***	−0.468***
	(0.050)	(0.001)	(0.052)	(0.054)
Democrat	0.151***	0.230***	0.122***	0.170***
	(0.004)	(0.003)	(0.007)	(0.010)
Journalist	−0.126***	−0.107***	−0.092**	−0.120***
	(0.019)	(0.027)	(0.041)	(0.021)
Obama I	−0.031	0.125***	−0.049	−0.032
	(0.129)	(0.017)	(0.168)	(0.138)
Bush II	−0.201***	−0.385***	−0.196***	−0.200***
	(0.050)	(0.026)	(0.027)	(0.052)
Iran	−0.708***	−0.808***	−0.539*	
	(0.192)	(0.223)	(0.280)	
Iraq	−0.455***	−0.563***	−0.436***	
	(0.101)	(0.068)	(0.080)	
Afghanistan	−0.375***	−0.332***	−0.329***	
	(0.036)	(0.116)	(0.023)	
North Korea	−0.369*	−0.523**	−0.321**	
	(0.203)	(0.231)	(0.146)	
Libya	−0.691**	−0.597**	−0.617**	
	(0.275)	(0.238)	(0.275)	
Constant	−1.155***	−1.379***	−0.856***	−1.149***
	(0.275)	(0.169)	(0.153)	(0.274)
Observations	596,154	596,156	646,079	596,154
Year FE	Yes	No	Yes	Yes
Style FE	Yes	Yes	No	Yes

Robust and clustered standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

(Bush I), for his second term (Bush II) and for Obama's presidency (Obama). For our explanatory variables, we also add the source of information (Journalist) and some country dummies for specific countries of interest such as North Korea, Libya, Afghanistan, Iran, and Iraq. We expect that reports about these countries are generally associated with a more negative tonality compared to other reports. Similar to the previous estimations, we include time fixed effects for the corresponding years and, in addition, style fixed effects for the different types of reports like interviews or comments.

The results, as shown in Table 7, indicate a lower likelihood for positive media coverage of Democrats during the presidency of Obama, keeping everything else constant. This is in line with our previous findings. The coefficient of *ObamaDem* is negative in various specifications in models II to V: In the second specification, we do not include the time fixed effects but keep everything else, whereas in the third model, we omit the style fixed effects. Finally, in model IV, we include both fixed effects but exclude the specific countries of coverage.

In summary, we obtain overall significant coefficients and, thus, are able to confirm our previous findings. As marginal effects of interaction terms are somewhat hard to interpret, we now take a closer look at the predicted probabilities (see Table A2 in the appendix for an overview). Our dummy variable *ObamaDem* indicates the news coverage about Democrats during the Obama administration relative to the Bush presidency as well as to reports on Republicans. While news coverage about Democrats was less likely to be positive during the Obama administration (7.14%) relative to the reporting during the Bush administration and the coverage about Republicans, the coverage about Republicans was comparatively more likely to be positive during this time (11.76%). Focusing on the coverage about Republicans during the Bush presidency, it is relatively less likely to be positive (9.93%) than coverage about Democrats during this period (11.38%). Consequently, even when controlling for effects in reporting over time as well as between political parties, reporting on the governing party is always less likely to be positive.

Additionally, we distinguish between the different media outlets. As Table 8 shows, FOX News has a negative coefficient on *Democrat*, whereas the other three outlets have a positive coefficient. Moreover, the effect of the interaction term *ObamaDem* is smaller than for ABC, NBC, and CBS News.

Table A3 in the appendix includes the predicted probabilities for the big four news outlets, matching regressions (1)–(4) in Table 8. Nearly all of the newscasts show the same patterns as the results using the entire sample. Namely, that relative positive coverage of governing parties is always less likely than that of the opposition. However, relative news coverage from *FOX News* about Democrats is always lower compared to Republicans, regardless of the administration. Even during the Bush administration, Democrats are less likely to receive positive coverage than Republicans. This clearly distinguishes *FOX News* from the other programs. Put differently, while all other programs are more critical about the governing party, regardless of the governing party, *FOX News* is always more likely to report positively about Republicans.

Table 8
Results for estimating the tonality of the individual news reports, distinguished by media, for the different administrations of Bush versus Obama.

Dependent variable:	(1)	(2)	(3)	(4)
Pos	FOX News	ABC News	NBC News	CBS News
ObamaDem	−0.318***	−0.389***	−0.469***	−0.523***
	(0.035)	(0.040)	(0.055)	(0.064)
Democrat	−0.0656***	0.257***	0.247***	0.306***
	(0.0045)	(0.013)	(0.013)	(0.005)
Journalist	−0.103	−0.173***	−0.173***	−0.114***
	(0.100)	(0.011)	(0.043)	(0.011)
Obama I	−0.0142	0.0930	−0.270**	0.070
	(0.188)	(0.210)	(0.111)	(0.219)
Bush II	−0.133	−0.153	−0.475***	−0.0724
	(0.102)	(0.113)	(0.0073)	(0.089)
Iran	−0.825***	−0.566***	−0.820***	−0.522**
	(0.158)	(0.189)	(0.211)	(0.232)
Iraq	−0.436***	−0.433***	−0.418***	−0.525***
	(0.072)	(0.095)	(0.082)	(0.15)
Afghanistan	−0.526**	−0.276***	−0.266***	−0.524**
	(0.218)	(0.070)	(0.050)	(0.213)
North Korea	−0.783***	−0.311**	−0.175	−0.305
	(0.000)	(0.157)	(0.186)	(0.358)
Libya	−0.774***	−0.621**	−0.522***	−0.837***
	(0.299)	(0.302)	(0.176)	(0.315)
Constant	−1.110***	−1.014***	−0.575***	−0.360
	(0.229)	(0.228)	(0.108)	(0.409)
Observations	246,688	112,638	136,373	100,366
Year FE	Yes	Yes	Yes	Yes
Style FE	Yes	Yes	Yes	Yes

Robust and clustered standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

5. Conclusion

In this contribution, we investigate how four US news gathering organizations – *ABC News, CBS News, FOX News,* and *NBC News* – differ in their coverage during the Republican presidency of George W. Bush and the Democratic presidency of Barack Obama.

By using a tonality-based approach with a novel dataset, containing over 815,000 news items on Democrats and Republicans from 2001 through 2012, we find interesting differences in the political coverage of *ABC News, CBS News, FOX News,* and *NBC News*: During the Democratic presidency of Barack Obama, the Political Coverage Index (*PCI*), which measures the political positioning of newscasts' media coverage, shows positive values for all newscasts, thus indicating that media reporting was more critical of Democrats when Democratic President Obama was in power than of Republicans when Republican President Bush was in office. This can be seen as a first hint of government critical reporting during the Democratic presidency of Obama. However, the *PCI* value of *FOX News* is, by far, higher than the *PCI* values of *ABC News, CBS News, and NBC News*. In contrast, during the Republican presidency of George W. Bush, the *PCI* values of *ABC News, CBS News,* and *NBC News* are negative, indicating that media reports were more critical of the Republicans than of the Democrats.

Furthermore, we provide panel regression analysis with media and time fixed effects as well as a multitude of economic and geopolitical controls to capture at least a part of the factual performance of the government, which is also likely to be a major driver of the political media coverage. When using the entire media set, the results of the econometric analysis show empirical results that are consistent with an anti-government bias. When Republican Bush is in office, political coverage tends to be more liberal, but it reverses to be more conservative after Democrat Obama becomes President.

As partisan newscasts are expected to be more likely to slant their reports in favor of their preferred parties during election campaigns, we re-run our regressions with different sub-samples in order to reduce possible issues of endogeneity. By removing observations from four months before and one month after general elections, we find even more critical coverage during non-election campaign periods. Omitting observations from mid-term campaigns strengthens this effect further. Coverage of Democrats is becoming more conservative even in the seemingly more liberal newscasts.

Again, interesting differences emerge when focusing on each single newscast in the media set: For *CBS News* and *NBC News,* we find indications of an anti-government-bias. Starting from a moderate liberal positioning, the political coverage of *CBS News* and *NBC News* became more liberal under the Bush administration, then more conservative under the Obama. The empirical analysis of the political reporting of *FOX News* presents a different picture. Here, we cannot find robust empirical evidence that *FOX News* significantly changes its position depending upon the party affiliation of the president in office. On average, *FOX News* reports are always much more critical of the Democrats than of Republicans. Although descriptive statistics show a certain tendency toward government-critical reporting by *ABC News*, we do not find empirical evidence that ABC significantly changes its position depending on the party affiliation of the president in office.

Finally, we conclude our analysis by estimating the differences in media coverage about Democrats and Republicans during the presidencies of Bush and Obama, respectively. The overall results are in line with our previous findings, indicating a reduced likelihood

of positive media coverage of Democrats during the presidency of Obama, keeping everything else constant. Focusing on *FOX News*, we observe a higher likelihood for positive coverage of Republicans, regardless of the governing party.

Although our findings are empirically robust, we point to some limitations to the explanatory power of our models, thus implying some room for further research. First, we are aware that our approach cannot solve possible endogeneity problem completely. Second, despite the huge number of more than 815,000 news items in our empirical analysis, the available information is limited. As our timespan is restricted to 2001 to 2012, there is not much variation in terms of changes in presidencies. This could potentially weaken the significance of our models and calls for a cautious approach in terms of general conclusions. Additionally, a larger selection of newscasts and more observations of different programs would strengthen the validity of our results in a broader setting. Third, future research could focus on different countries as well as on specific policy issues (foreign policy, domestic policy, economic policies, etc.). Fourth, it would be interesting to connect the results to the effects of media reporting on perception and behavior, with the aim of investigating if the impact of partisan media differ and change over time.

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Declaration of competing interest

All authors declare that they have no conflicts of interest.

Data availability

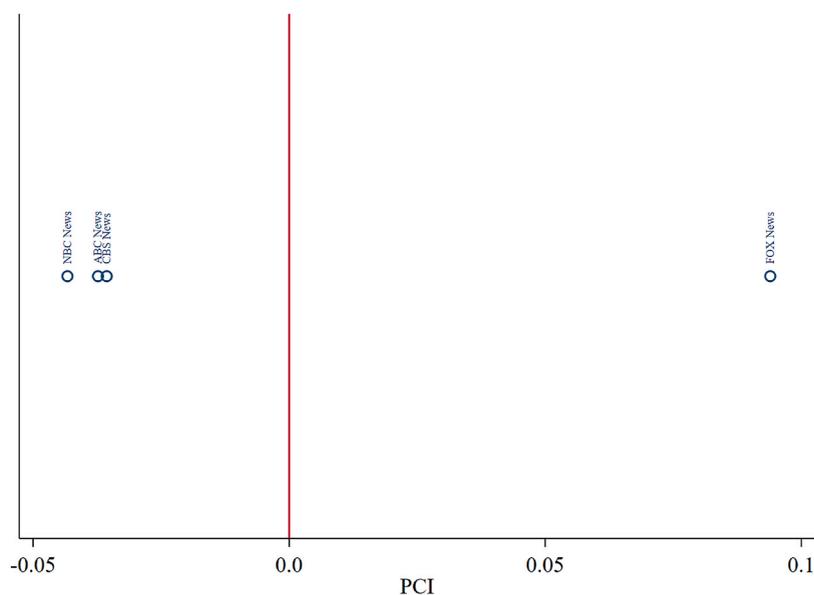Data will be made available on request.

Appendix. Figures

Fig. A1. PCI comparison, aggregated for each medium. The vertical red line indicates a PCI values of zero.
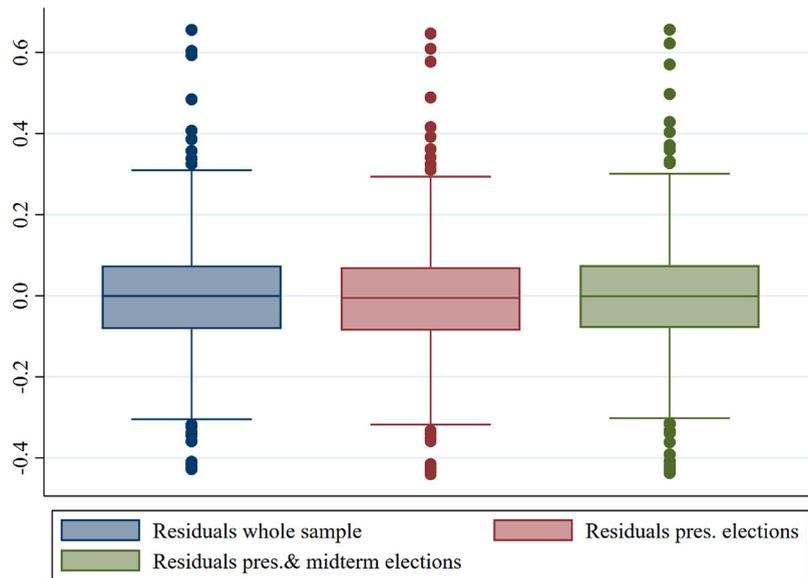
Fig. A2. Residuals compared: The residuals of the whole sample (blue), the residuals in the setting with presidential elections (red) and the those with both presidential and midterm elections (green).

Fig. A3. Word clouds of the 50 most frequent topics according to the codebook during the Bush administration (left) and the Obama administration (right).

Appendix. Tables

Table A1
Link/Impact of the party affiliation of the president on the political positioning of news outlets (Full Sample, election period: 3/1 months before/after an election).

Dependent variable:	OLS I	OLS II	OLS III	FE I	FE II	FE III
PCI						
Sample	Full sample	Presidential elections periods excluded	Presidential & midterm elections periods excluded	Full sample	Presidential elections Periods excluded	Presidential & midterm elections periods excluded
Obama	0.198***	0.227***	0.247***	0.221***	0.259***	0.283***
	(0.0515)	(0.0606)	(0.0631)	(0.0528)	(0.0615)	(0.0633)
Consumer Price Index (CPI)	0.0154***	0.0180***	0.0174***	0.0198***	0.0248***	0.0283***
	(0.00576)	(0.00636)	(0.00637)	(0.00752)	(0.00890)	(0.00933)
Unemployment	−0.00796	−0.0143	−0.0260**	−0.00786	−0.0156	−0.0260**
	(0.00947)	(0.0115)	(0.0119)	(0.00882)	(0.0105)	(0.0111)
Business	−0.0103	−0.0123*	−0.0149**	−0.00959	−0.00904	−0.0108
	(0.00640)	(0.00729)	(0.00733)	(0.00612)	(0.00699)	(0.00717)

(continued on next page)

Table A1 (*continued*)

Dependent variable:	OLS I	OLS II	OLS III	FE I	FE II	FE III
PCI						
Sample	Full sample	Presidential elections periods excluded	Presidential & midterm elections periods excluded	Full sample	Presidential elections Periods excluded	Presidential & midterm elections periods excluded
GPR	0.000444***	0.000472***	0.000449***	0.000491***	0.000516***	0.000498***
	(0.000152)	(0.000154)	(0.000164)	(0.000153)	(0.000155)	(0.000168)
Trend	−0.0457***	−0.0500***	−0.0471***	−0.0601***	−0.0699***	−0.0771***
	(0.0144)	(0.0155)	(0.0156)	(0.0198)	(0.0231)	(0.0243)
Constant	91.31***	100.0***	94.55***	119.8***	139.1***	153.4***
	(28.52)	(30.62)	(30.67)	(38.99)	(45.45)	(47.72)
Observations	523	463	409	523	463	409
R-squared	0.122	0.138	0.132	0.241	0.250	0.247
Month FE	No	No	No	Yes	Yes	Yes
Media FE	No	No	No	Yes	Yes	Yes

Note: Robust and clustered standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table A2
Predicted probabilities for positive = 1.

	Obama = 0	Obama = 1
Democrat = 0	0.0993*** (0.009)	0.1176*** (0.0223)
Democrat = 1	0.1138*** (0.0108)	0.0714*** (0.0091)

Note: Robust and clustered standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table A3
Predicted probabilities for positive = 1 for each medium individually.

	Obama = 0	Obama = 1
FOX		
Democrat = 0	0.0974*** (0.227)	0.1186*** (0.0297)
Democrat = 1	0.0870*** (0.0218)	0.0603*** (0.0124)
ABC		
Democrat = 0	0.0764*** (0.0038)	0.1165*** (0.0132)
Democrat = 1	0.1184*** (0.0027)	0.0935*** (0.0071)
CBS		
Democrat = 0	0.0980*** (0.0064)	0.1236*** (0.0181)
Democrat = 1	0.1583*** (0.0073)	0.0861*** (0.0048)
NBC		
Democrat = 0	0.0786*** (0.0038)	0.1116*** (0.0140)
Democrat = 1	0.1196*** (0.0027)	0.0761*** (0.0047)

Note: Robust and clustered standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

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