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MEASURING PARTISAN MEDIA BIAS IN US NEWSCASTS FROM 2001-2012

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Zusammenfassung / 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 and how they changed 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 report slightly more critical on the Republicans, and FOX News with the clear tendency to cover the Democrats more critical. Moreover, and even more interesting, two of the newscasts, namely 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 neglected. We interpret these results as some evidence for an anti-government bias of at least part of the newscasts observed. In contrast, FOX News remains Democrat-critical independent of who runs office and can be seen as partisan biased from this perspective. The results are confirmed when we control 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 the economic and political contexts as information is typically gathered indirectly through media channels in addition to direct communication and personal experience. Thereby, media can only provide a partial picture and not a complete coverage of everything t 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 interest it the political media bias is constant or changing for instance when another government gets into 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 on providing media access to the parliament. In this debate, Edmund Burke claimed that media form the 'fourth estate' and with this an additional controlling instance of 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 the 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

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[1] We use the term 'bias' throughout this paper as an expression for the slant of political news coverage.
[2] From Burke's perspective media as form a fourth estate beyond the three traditional ones: The Lords Spiritual, the Lords Temporal, and the House of Commons.

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 amount 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 was 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 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 and second, we extend our analysis by estimating the differences

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

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 ran office. Interesting differences are observed between the newscasts: For *CBS News* and *NBC News,* we find indications for 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 is changing depending on the president running 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, 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 seen 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. 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 examine the coverage of presidential approval polls. In addition, political media biases are measured by Larcinese, Puglisi, and Snyder (2011) and Puglisi (2011) using references to core topics, Qin et al. (2018) count references to political leaders, and Chiang and Knight (2011) as well as 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).[5]

Consequently, individual perceptions and decisions based on biased political media reporting might deviate from perceptions and decisions based on more unbiased

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[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] 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 out 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) by investigating the time difference between states' poll closing times and the times at which CNN projected a winner of the 2000 presidential election.

information.[6,7] 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).[8] 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.[9] 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

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[6] In addition, the effect of media reporting on the political information and knowledge is in the focus of several authors. For instance, Kendall (2010) analyses in a theoretical model framework that the number of media outlets does not necessarily increases the level of information. In contrast, Chang and Stone (2013) also based on a theoretical analysis find out 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 the 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.

[7] 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.

[8] 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).

[9] 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.

times of high news pressure caused by Olympic Games, natural disasters are less likely to be covered, which leads to lower disaster relief.[10]

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 a 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 DellaVinga 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*.[11]

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

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[10] 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 Durante and Zhuravskaya (2018) in the context of the Israeli-Palestinian conflict.

[11] In the European context, Aboura (2005) finds that during the campaign for the May 29th 2005 referendum on the *Treaty Establishing a Constitution for Europe* French media were biased in favour 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.

policy. However, Gentzkow and Shapiro (2010) find that the 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 among others confirmed by 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. Other authors argue 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). 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.

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 by Media Tenor International,[12] 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 New*s, 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*. [13]

The 'Media Bias/Fact check' website, which sees itself as 'the most comprehensive media bias resource'[14], provides the following information on the political positioning of the four newscasts: *ABC, NBC* and *CBS News* having a slight to moderate liberal of left-center bias with a high share of factual reporting, *Fox News* having a moderate to strong conservative or right bias with a mixed share of factual reporting.[15]

Human Coding

Each news program in our dataset was coded by human analysts, based upon 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.),

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[12] For more information, see: www.mediatenor.com (last checked: July, 24th, 2022).
[13] See for instance: https://variety.com/2019/tv/news/network-ratings-top-channels-fox-news-espn-cnn-cbs-nbc-abc-1203440870/ (last checked: July, 06th, 2021)
[14] See: https://mediabiasfactcheck.com/ (last checked: July, 06th, 2021).
[15] See https://mediabiasfactcheck.com/nbc-news/ (last checked: July, 06th, 2021).

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 tone (-1) of coverage. Skipping all items that are not on political topics results in a total of 815,252 observations that are used in our analysis.

Accuracy

The accuracy of the human-coded data used in the current study was checked monthly by Media Tenor using the codebook. In all months, the data used achieved an accuracy of at least 0.85 compared to fully correct coding according to the codebook. Therefore, the accuracy of the hand-coded data in the current analysis 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.

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, in contrast to 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).[16] 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, p. 128).

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 against 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.[17] In addition, the

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[16] 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 can – among others – be found in Baden et al (2022), Chan et al (2021), Church & Liberman (2021), Hartmann et al (2019), or Munnes et al (2022).

[17] 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).

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 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).

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 reports, on average, less critical on the Republican president G.W. Bush (positive values) or less critical on the Democratic president Obama (negative values). The last row of the table gives a summary of all newscasts.

Our dataset covers all political coverage of the newscast analyzed on 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 administration, respectively,

we can observe differences in the political coverage of the newscasts analyzed (see Figure

1). Media reporting, for most newscasts, seems to be more critical toward Republicans

during their presidency and vice versa for Democrats.

Figure 1. Share of positive and negative News during Bush (left) and Obama (right) administration, respectively.
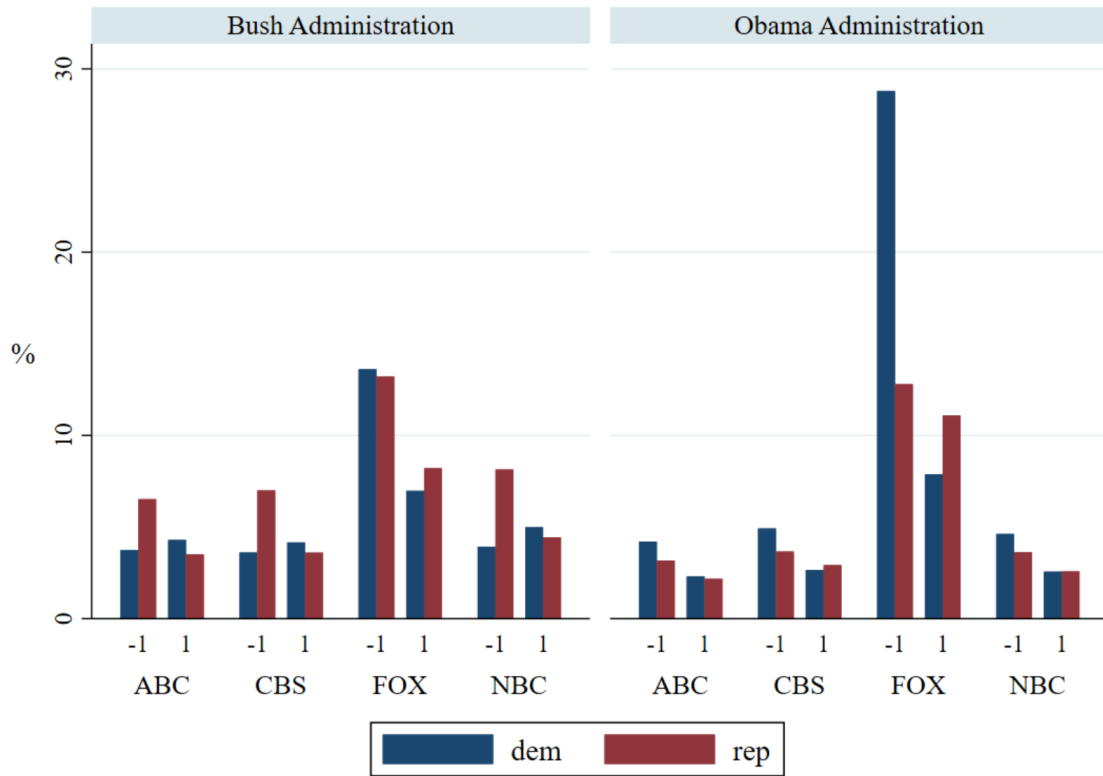
Note: For each network (ABC, CBS, FOX and NBC), the percentage of positive (1) and negative (-1) news items compared to all news within that network are displayed. As discussed above, most items are coded as neutral and are thus excluded in this figure for better presentation of the positive and negative news. News about the Republican president Bush are colored as red bars, news about the Democratic president Obama are colored in blue.

Based on the number of positive, negative, and neutral news items, the tonality s, on a specific person or institution j, extracted from a newscast i, during time t (measured in months), can be defined as:

$$s_{i,t}^{j} = \frac{n_{i,j,t}^{pos} - n_{i,j,t}^{neg}}{N_{i,j,t}}.$$

where $N_{i,j,t}$ is the total of all news items, $n_{i,j,t}^{pos}$ is the number of positively rated reports, and $n_{i,j,t}^{neg}$ 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. Thereby, our contribution addresses the research gap that analyzing media bias by 'measuring the tone of articles and editorials, is relatively underutilized in economics' (Puglisi and Snyder 2015, 664).

By constructing the index, we are able to identify possible media biases and to analyze how critically media cover specific parties, governments, or presidents. The *PCI* is measured as the difference between the two values, with s_t^{Rep} consisting of the tonality about the Republicans and s_t^{Dem} about the Democrats:

$$PCI_{i,t} = \sum_{j=1}^{n} s_t^{Rep} - \sum_{k=1}^{m} s_t^{Dem}.$$

As per definition of the *PCI*, positive values indicate a more conservative positioning of the media outlet, 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 Figure 2 emerges. The aggregated *PCI* of all four newscasts varies between -0.40 and +0.79 with an average standard deviation of 0.15. 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.

Figure 2. Monthly PCI, aggregated for all media.
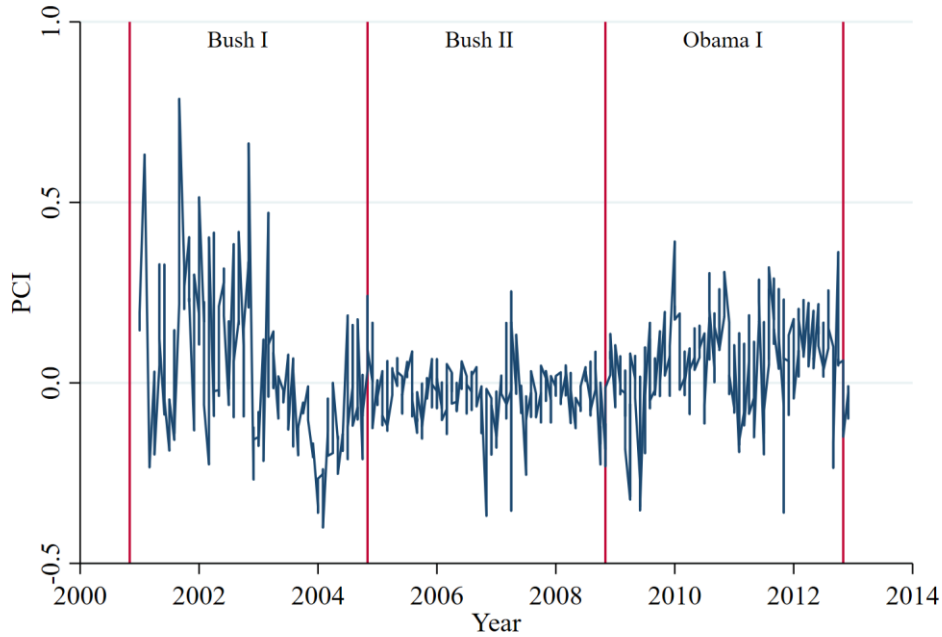
Note: Vertical bars (red) indicate the four presidential election dates in our sample, starting from the first election of G.W. Bush in November 2000 (first line), to his second election in 2004 (second line), up to the first (third line) and second election (fourth line) of Obama in November 2008 and 2012, respectively. For more information and a detailed overview on these election dates, see Table 3.

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 reports, on average, less critical on the Republican president G.W. Bush (positive values) or less critical on the Democratic president Obama (negative values). The last row of the table gives a summary of all newscasts.

By splitting the data between the newscasts, we can see differences in the PCI of certain

newscasts over time (see Figure 4). The vertical lines indicate a new administration.[18]

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

Figure 3. Monthly PCI per medium and presidencies.
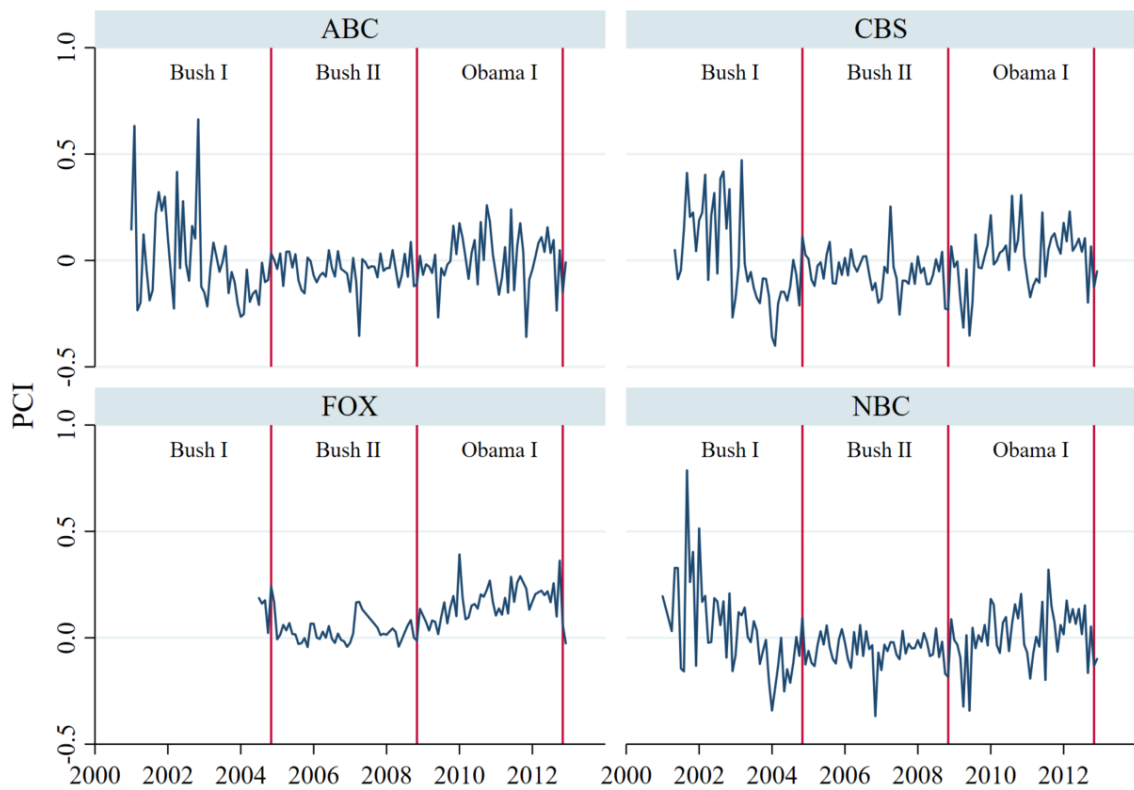
Note: Observations for ABC, CBS and NBC start in January 2001 and end in December 2012, in contrast to FOX News where coded data is available only from July 2004 to the end of 2012. PCI values range from -0.5 up to 1.0. Red lines indicate election dates: The second election of G.W. Bush in November 2004 (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*.

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 (Figure 4).[19]

During the Obama administration, the *PCI* shows positive values for all newscasts, thus indicating that media reporting was more critical to the Democrats in power than to the former president Bush. 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,*

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[19] For the aggregated *PCI* for each medium over the whole timespan see Figure A1 in the Appendix.

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.

Figure 4. PCI per medium during Bush and Obama administration, respectively.
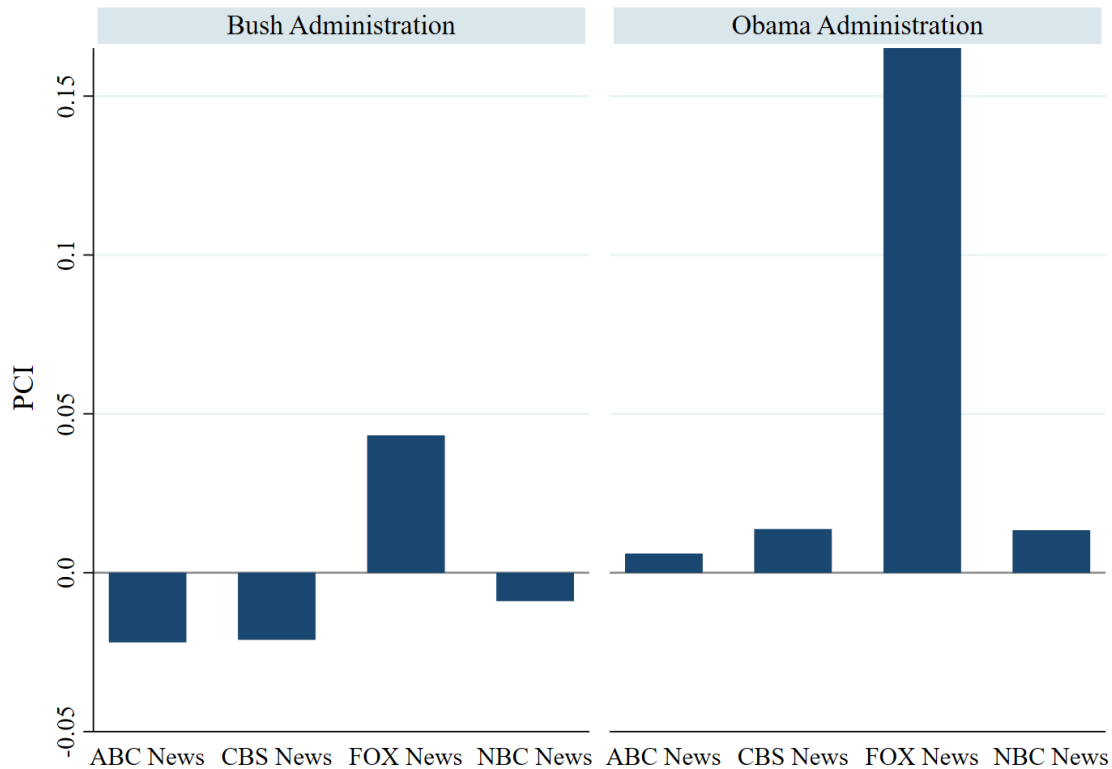
Note: Average monthly PCI values for ABC, CBS, FOX and NBC News (from left to right), aggregated from 2001 to 2012 (2004 to 2012 in case of FOX). The horizontal grey line indicates a PCI value of zero. Bars below this line hint at a more liberal media coverage whereas observations above zero indicate 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 report more conservative.

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 to the Republican president Bush than on the Democratic president Obama. Again, this can be seen as a hint of a 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* are negative. Of course, this simple chart inspection can only provide first hints on 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 the reporting for both Democrats and Republicans during the Bush and Obama administrations, respectively.

4.1. Empirical Strategy

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 a 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.

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 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 president in office. For instance, DellaVinga 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 which 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 which 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 DellaVinga 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 in this period, but any underperformance of the government or any party are probably more exploited than usually. 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 from Figure 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 Figure 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 which 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 2000), the last months before an election are of certain 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. The obtained results support our assumptions further, as shown in Table 7 and Table 8.

Figure 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).

Table 3. Overview of all election dates, ranging from 2000 until 2017.

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

4.2. Empirical Evidence

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.

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***	0.232***	0.254***	0.221***	0.265***	0.288***
	(0.0515)	(0.0638)	(0.0663)	(0.0528)	(0.0624)	(0.0643)
Consumer Price Index (CPI)	0.0154***	0.0167**	0.0162**	0.0198***	0.0215**	0.0262**
	(0.00576)	(0.00697)	(0.00704)	(0.00752)	(0.00986)	(0.0109)
Unemployment	-0.00796	-0.0154	-0.0277**	-0.00786	-0.0171	-0.0275**
	(0.00947)	(0.0123)	(0.0127)	(0.00882)	(0.0110)	(0.0118)
Business	-0.0103	-0.0115	-0.0140*	-0.00959	-0.00874	-0.0106
	(0.00640)	(0.00741)	(0.00746)	(0.00612)	(0.00725)	(0.00748)
GPR	0.000444***	0.000471***	0.000455***	0.000491***	0.000510***	0.000497***
	(0.000152)	(0.000154)	(0.000166)	(0.000153)	(0.000155)	(0.000170)
Trend	-0.0457***	-0.0477***	-0.0447***	-0.0601***	-0.0638**	-0.0729***
	(0.0144)	(0.0165)	(0.0167)	(0.0198)	(0.0251)	(0.0276)
Constant	91.31***	95.51***	89.86***	119.8***	127.0**	145.2***
	(28.52)	(32.48)	(32.75)	(38.99)	(49.31)	(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.

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

multicollinearity, 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 the *PCI*, 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 line with the intuition.

The variable *Trend* captures a linear time trend which 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.

Robustness Checks and Extensions

Now, we check if our results are robust to different variations in model settings and throughout 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 running 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 a 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 therefore not we do not use them as ordinary controls. However, a close inspecting these variables dies not show any indication of a more "conservative political climate", on the contrary, the 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 an negative trend.[20]

Third, we also test the inclusion of dummies for the parties holding the majority in the House of Representatives. One hypothesis is that if one party controls the majority of Congress (consisting of both bodies, together with 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, positive but smaller compared to the coefficients in Table 4.

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[20]See, for example, https://news.gallup.com/poll/388781/political-party-preferences-shifted-greatly-during-2021.aspx (last checked on 28.06.2022).

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 to be 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 for endogeneity problems, 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 terroristic attacks on September 11 2011 had a remarkable impact on the approval rates of President Bush (see also Footnote 20), the days after this event could be associated with an 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 follow 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 Democratic presidency of

Obama, the coverage of the four newscasts is generally more conservative than 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 government and serve as an additional control for governmental activities.

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 the 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 Figure 4).

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

Dependent variable: **PCI**	FE I CBS News	FE II CBS News	FE III CBS News	FE IV NBC News	FE V NBC News	FE VI NBC News
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	0.0260	0.0276	0.0360	0.0311*	0.0404*	0.0364
	(0.0160)	(0.0189)	(0.0218)	(0.0168)	(0.0225)	(0.0230)
Unemployment	-0.0159	-0.0291	-0.0415	-0.0152	-0.0226	-0.0371
	(0.0190)	(0.0243)	(0.0266)	(0.0190)	(0.0251)	(0.0260)
Business	-0.00439	-0.00233	-0.00529	-0.0165	-0.0113	-0.0156
	(0.0144)	(0.0179)	(0.0188)	(0.0142)	(0.0169)	(0.0174)
GPR	0.000718***	0.000749***	0.000656**	0.000493**	0.000520**	0.000602**
	(0.000261)	(0.000269)	(0.000288)	(0.000207)	(0.000211)	(0.000256)
Trend	-0.0717*	-0.0756	-0.0934*	-0.0904**	-0.111**	-0.100*
	(0.0394)	(0.0462)	(0.0537)	(0.0422)	(0.0547)	(0.0557)
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.

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, regardless of who is the Oval Office (see Figure 4). However, the varying political positioning of *ABC News* dependent on presidential party affiliation is not statistically significant.

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

Dependent variable: **PCI**	FE I FOX News	FE II FOX News	FE III FOX News	FE IV ABC News	FE V ABC News	FE VI ABC News
Sample	Full sample	Presidential elections periods excluded	Presidential & midterm elections periods excluded	Full sample	Presidential elections Periods excluded	Presidential & midterm elections periods excluded
Obama	-0.0690 (0.0597)	-0.0284 (0.0535)	-0.0106 (0.0604)	0.148 (0.0973)	0.149 (0.115)	0.153 (0.113)
Consumer Price Index	-0.0230** (0.00932)	-0.0231* (0.0119)	-0.0284* (0.0157)	0.0177 (0.0145)	0.00600 (0.0197)	0.0189 (0.0226)
Unemploy-ment	0.0190 (0.0125)	0.00192 (0.0100)	-0.00635 (0.0111)	0.00291 (0.0179)	-0.00343 (0.0224)	-0.00340 (0.0240)
Business	0.0192*** (0.00602)	0.0134** (0.00581)	0.0101 (0.00623)	-0.0146 (0.00994)	-0.0197* (0.0115)	-0.0180 (0.0116)
GPR	0.000311 (0.000474)	-4.99e-05 (0.000453)	0.000192 (0.000747)	0.000223 (0.000267)	0.000210 (0.000263)	0.000144 (0.000275)
Trend	0.0702*** (0.0256)	0.0817** (0.0316)	0.0942** (0.0416)	0.0702*** (0.0256)	0.0817** (0.0316)	0.0942** (0.0416)
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.

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.

To focus on news items that exclusively deal with coverage on 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. Differences that are only due to the temporal variation in reporting are thus filtered out, as are general differences between the reporting on Democrats and Republicans.[21]

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

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[21] 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 time, we do not end up with a standard DiD analysis.

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 the table below, indicate a lower likelihood for a 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 are therefore 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.

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***
	(0.0499)	(0.00105)	(0.0524)	(0.0539)
Democrat	0.151***	0.230***	0.122***	0.170***
	(0.00394)	(0.00265)	(0.00732)	(0.0101)
Journalist	-0.126***	-0.107***	-0.0923**	-0.120***
	(0.0187)	(0.0268)	(0.0414)	(0.0206)
Obama I	-0.0308	0.125***	-0.0486	-0.0316
	(0.129)	(0.0171)	(0.168)	(0.138)
Bush II	-0.201***	-0.385***	-0.196***	-0.200***
	(0.0504)	(0.0261)	(0.0274)	(0.0520)
Iran	-0.708***	-0.808***	-0.539*	
	(0.192)	(0.223)	(0.280)	
Iraq	-0.455***	-0.563***	-0.436***	
	(0.101)	(0.0677)	(0.0796)	
Afghanistan	-0.375***	-0.332***	-0.329***	
	(0.0359)	(0.116)	(0.0230)	
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, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

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

Dependent variable: **Pos**	(1) FOX News	(2) ABC News	(3) NBC News	(4) CBS News
ObamaDem	-0.318***	-0.389***	-0.469***	-0.523***
	(0.0354)	(0.0394)	(0.0547)	(0.0642)
Democrat	-0.0656***	0.257***	0.247***	0.306***
	(0.00453)	(0.0134)	(0.0127)	(0.00498)
Journalist	-0.103	-0.173***	-0.173***	-0.114***
	(0.100)	(0.0112)	(0.0434)	(0.0114)
Obama I	-0.0142	0.0930	-0.270**	0.0701
	(0.188)	(0.210)	(0.111)	(0.219)
Bush II	-0.133	-0.153	-0.475***	-0.0724
	(0.102)	(0.113)	(0.00725)	(0.0889)
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***
	(0.0723)	(0.0947)	(0.0824)	(0.146)
Afghanistan	-0.526**	-0.276***	-0.266***	-0.524**
	(0.218)	(0.0698)	(0.0504)	(0.213)
North Korea	-0.783***	-0.311**	-0.175	-0.305
	(0.000171)	(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.

Table A3 in the appendix includes the predicted probabilities for the big four news outlets, matching the 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, for the Democrats it is less likely to receive positive coverage compared to 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.

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 difference in the political coverage of *ABC News, CBS News, FOX News,* and *NBC News*: During the Democratic presidency of Barack Obama, the so called 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 the Republican president Bush ran 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 which are consistent with an anti-

government bias or: When the Republican Bush is in office, political coverage tends to be more liberal but it reverses to be more conservative if the Democratic Obama is president.

As partisan newscasts are expected to be more likely to slant their campaigns 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 an even more critical coverage during non-election campaign periods. Omitting observations from mid-term campaigns strengthens this effect further. Coverage on 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 for an anti-government-bias. Starting from a moderate liberal positioning, the political coverage of *CBS News* and *NBC News* becomes more conservative under the Democratic president Obama and more liberal under the Republican Bush administration. 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 presidency of Bush and the presidency of Obama, respectively. The overall results are in line with our previous findings, indicating

a lower likelihood for a 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 on Republicans, regardless of the governing party.

Although our findings are empirically robust, we point to some limitations to the explanatory power of our models which implies 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 the years 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 on 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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Appendix: Figures

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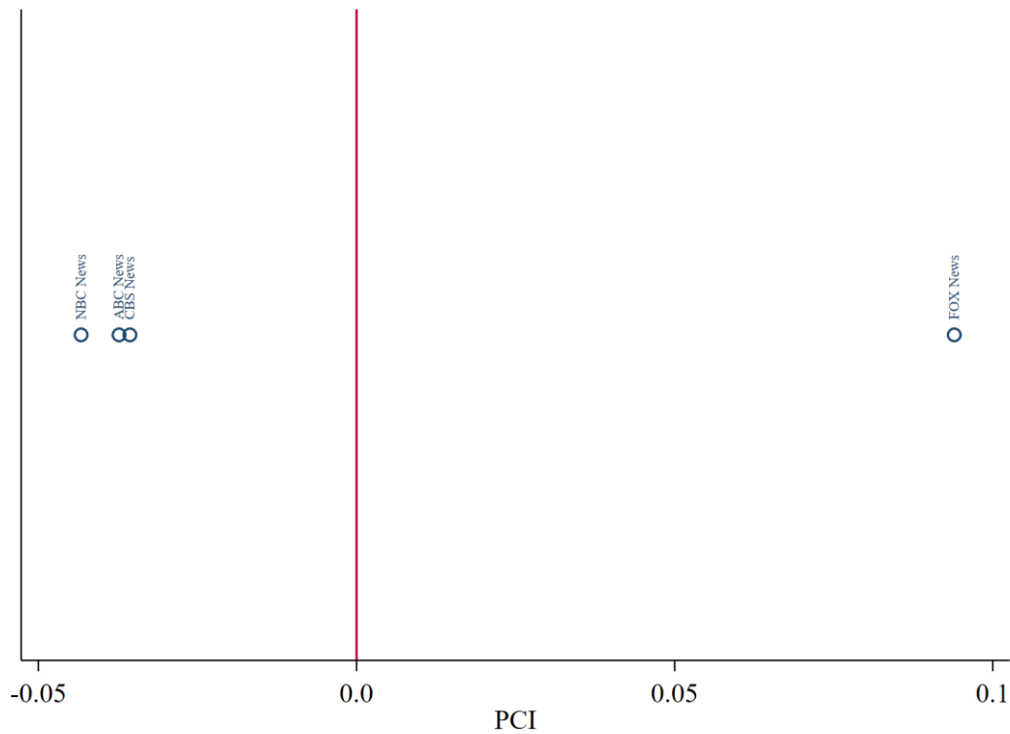
Figure A2. Residuals compared: The residuals of the whole sample (blue), the residuals in the setting with presidential elections (red) and the ones with both presidential and midterm elections (green).
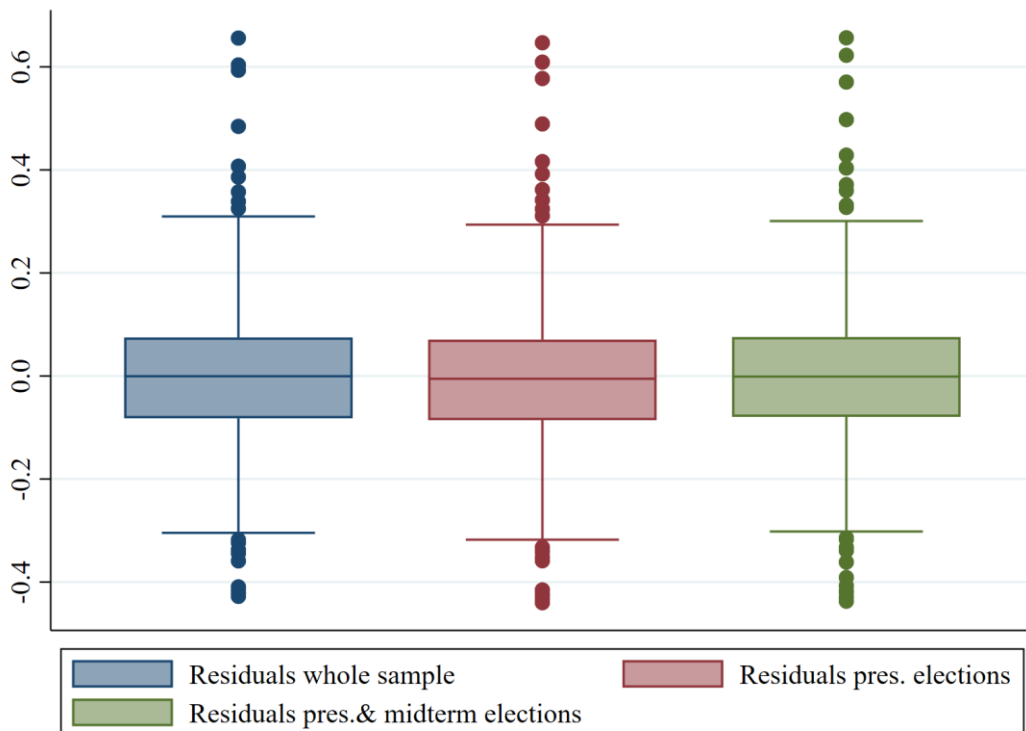
Appendix: Tables

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: **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 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)
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***	0.1176***
	(0.009)	(0.0223)
Democrat = 1	0.1138***	0.0714***
	(0.0108)	(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***	0.1186***
	(0.227)	(0.0297)
Democrat = 1	0.0870***	0.0603***
	(0.0218)	(0.0124)
ABC		
Democrat = 0	0.0764***	0.1165***
	(0.0038)	(0.0132)
Democrat = 1	0.1184***	0.0935***
	(0.0027)	(0.0071)
CBS		
Democrat = 0	0.0980***	0.1236***
	(0.0064)	(0.0181)
Democrat = 1	0.1583***	0.0861***
	(0.0073)	(0.0048)
NBC		
Democrat = 0	0.0786***	0.1116***
	(0.0038)	(0.0140)
Democrat = 1	0.1196***	0.0761***
	(0.0027)	(0.0047)

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

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2016

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