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Does the 4th Estate Deliver?

Towards a More Direct Measure of Political Media Bias[a]

Ralf Dewenter[b], Uwe Dulleck[c] & Tobias Thomas[d]

November 2016

Abstract

This contribution introduces a new direct measure of political media bias by analyzing articles and newscasts with respect to the tonality on political parties and politicians. On this basis we develop an index sorting the media in the political left to right spectrum. We apply the index to opinion-leading media in Germany, analysing 7,203,351 reports on political parties and politicians in 35 media outlets from 1988 to 2012. With this approach, in contrast to other indexes, we are able to achieve a more direct and reliable measure of media bias. In addition, we apply the index to study whether the media fulfil their role as the fourth estate, i.e. provide another level of control for government, or whether there is evidence of government capture.

Keywords: media bias, governmental capture, index
JEL: C43, D 72, L82

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1 Introduction

In 1787 Edmund Burke claimed in a famous parliamentary debate to provide members of the media access to the parliament. Burke's argument was that the media form the 'fourth estate' of government, another level of control of the government in power. In particular the Public Choice literature is questioning this assumption. Some authors argue that the media are owned by people with political interests and they use their influence to change policy (see Prat, 2014; Anderson & McLaren, 2010). Others argue that, in a model of political agency or voter control (see Barro, 1973; Ferejohn, 1986) government captures the media by policy decisions in their favour, or by access to the news stories (Besley & Prat, 2006). In particular the latter explanation of government capture to bias the media would imply that media outlets tend to be less critical of the government, i.e. fail in their role as the fourth estate. The former explanation would lead us to expect that such failure is at least for part of the media observable, namely for those media outlets that are owned or edited by people more aligned with the political party in power. In this contribution we will introduce a methodology to analyse if the fourth estate delivers or not.

To answer the question we first introduce a new political coverage index based on the tonality of news reports with the aim to measure a political bias of different media outlets. The tonality of the media coverage is analysed by Media Tenor International. The methodology of the swiss-based institute is a structured but human analysis of press articles, radio and TV news programs as well as online content, what leads to a much higher accuracy in comparison to computer linguistic approaches. Hence, till today for a scientific analysis of media content there is no substitute for human reading and coding, especially in the political context (see Grinner and Steward, 2013). Beside other variables Media Tenor analyses if the reporting on persons or institutions has a positive, negative or neutral tone. We distinguish between different political parties and politicians, and aggregate the tonality of news items about this parties and politicians. In particular, we group all articles about parties and their publicly known members and study the tonality of different media outlets whenever they report on this group of actors. Our index of political media bias summarizes the number of positive and negative news reports on the two main political parties – one of them more centre-left and one of them more centre-right in the political spectrum. Thus, this index measures the strength of a political bias in the different media outlets.

Besides introducing the index methodologically, based on the Media Tenor data we apply it to 35 German media outlets, including 3 private and 4 public TV news shows, 11 public TV political magazines, 7 daily newspapers and 10 weekly magazines. The analysis includes all 7,203,351 reports on the centre-right Christian Democratic Union/Christian Social Union (CDU/CSU) and centre-left Social Democratic Party (SPD) between 1998 and 2012.

Based on this analysis we can characterize the German media by the strength of their bias towards the two main political parties. During the period 1998 and 2012 the German political system could still be largely classifies as bi-polar – with the two major parties, CDU/CSU and SPD, representing the moderate right and the moderate left, and two smaller parties, the FDP and the Greens, by and large affiliated with the CDU/CSU and the SPD respectively.[e] Compared to the existing literature our index is derived from independently collected media observations on individual news items. We believe that such judgements of individual news items are less likely to be influenced by existing prejudices and expectations than judgements or media outlets as a whole.

In addition, we then present an application of the index to study a government bias in news reporting. Our index lends itself to exploring the extent to which political parties in government are changing the political orientation of media outlets in Germany between 1998 and 2012. This time period is particularly interesting as it was characterized by governments lead by both major parties as well as a period with grand coalition. Contradictory to the arguments put forward in the existing literature, we observe that, while different media outlets definitely differ in their political orientation, there is evidence that all of them have a government malus, i.e. a party in government is more likely to be seen critical than a party outside of government. We conclude, based on our application that the media in Germany tend to serve its role as the fourth estate in Germany.

In the following we first provide an overview over the related literature, then we introduce our data, the construction of the index and its application to 35 opinion leading media in Germany. We then present our application to study the government bias and the role of the media as the fourth estate for the German data. Finally we conclude.

2 Related Literature

Media play an important role in the perception and decisions of individuals in the economic and political context, as individuals often do not interact with each other through direct communication and informational exchange. Instead, information and communication usually are exchanged in an indirect manner through media channels. This is highly relevant, because media can never depict the complete reality, but only paint a partial picture. In addition, the portrayed reality is prone to various types of distortions, so called media bias (Entman 2007).

From the various types of media bias, the most prominent are: the advertising bias, when media change their news coverage in tone or volume in favour of their advertising clients (see

[e] The FDP in this period entered coalitions with both parties but the probability of a coalition with the CDU was the rule, and coalitions with the SPD the exception on state and federal level. The Greens during this period did not form coalitions with the CDU on state of federal level.

Dewenter & Heimeshoff, 2014, 2015; Gambaro & Puglisi 2015 or Reuter & Zitzewitz 2006); newsworthiness bias, when news on certain issues crowd out coverage on other issues because they are seen as more newsworthy (see Durante & Zhuravskaya, 2015 or Eisensee & Strömberg, 2007); the negativity bias, when media focus more on catastrophes, crime and threatening political and economic developments and events in comparison to more positive news (see Garz, 2013, 2014; Soroka, 2006; Friebel and Heinz, 2014; or Heinz and Swinnen, 2015; or Kholodilin et al 2015); and political bias, when media coverage favours one or another side of the political spectrum (see below).[f] As a consequence, individual's decisions based on information provided by media might deviate from decisions based on a more unbiased information basis.

Consequentially, a growing literature employs media data to explain for instance economic sentiment. For Nadeau et al. (2000), Soroka (2006), and van Raaij (1989) the assessment of the state of the economy and economic expectations depend at least in parts on media reports. Alsem et al. (2008), Goidel and Langley (1995) as well as Doms and Morin (2004) show the impact of media reporting on consumer climate. Garz (2012, 2013a, 2013b, 2014) analyzes the impact of a distorted media coverage on unemployment on job insecurity perceptions. In their comprehensive contribution Lamla and Maag (2012) analyze the role of media reporting for inflation forecasts of households and professional forecasters. Kholodilin et al. (2015) prove that consumers', firms', and economic experts' assessments and expectations follow granger-causal the media coverage on the economy. Dewenter et al. (2016) finds evidence that the number of car sales depends at least in parts on the media coverage on the automotive industry. In their seminal work Eisensee and Strömberg (2007) analyse the effects of media coverage on natural disasters on relief decisions.

In the political context Bernhardt et al (2008), D'Alessio and Allen (2000), DellaVigna and Kaplan (2007), Druckman and Parkin (2005), Entman (2007), Gentzkow et al (2011), Morris, (2007), as well as Snyder and Strömberg (2010) focus on the impact of media coverage on the political attitudes, voter's decisions, and political accountability. The political bias of media outlets plays a central role in the work of Groseclose and Milyo (2005). With focus on the US twoparty system the authors provide a index of media outlets by comparing the number of advocatic think tanks and interest groups cited by Democratic and Republican members of US congress with the same groups quoted by the media. In contrast, Gentzkow and Shapiro, (2010) as well as Greenstein and Zhu (2012) compare characteristic phrases frequently used in different media outlets. However, a direct measure of the political bias based on the tonality of political coverage in different media outlets in not provided there.

[f] In addition in communication and media science exits a board literature on the existence of media biases and their foundations. Some examples are Ball-Rokeach (1985) as well as Ball-Rokeach and DeFleur (1976) on the dependency of the media-system and Dunham (2013) on the measurement of media biases.

With focus on Germany Kepplinger (1985) classifies media outlets with respect to their editorial bias by analysing statements in the media on certain political issues and approaches a measurement of the political slant in an indirect way. An example for analysis of the political orientation of journalists is presented by Lünenborg and Berghofer (2010). They run a survey of political journalists deriving measures of their political orientation and how it has changed with the change over time. However, beside problems in the survey-based evaluation of political attitudes Lünenborg and Berghofer do not provides a differentiation by media but only present the overall results.

3 A direct measure of political media bias

2.1 Data

Our contribution is based on the media content analysis by Media Tenor International. The Swiss-based institute evaluates all types of media (print, TV, radio or online) and shows how the media reflect reality. Over 100 analysts analyse each report based upon over 700 pre-defined characteristics. Each report is coded and categorized by media type (TV, print, general and specialized press, etc.), evaluated theme (such as unemployment, inflation, etc.), participating persons (such as politicians, entrepreneurs, managers, celebrities) and institutions (such as political parties, companies, football clubs), region of reference (such as Germany, EU, USA, UK, world), time reference (future, present and past), and the source of information (such as journalist, politician, expert, etc.). In addition, the analysts capture if the relevant protagonists and institutions receive positive, negative or neutral coverage. This enables the Media Tenor to measure the tonality of media coverage on persons and institutions. To keep the data on a high quality level, the reliability of the coding is checked on an ongoing monthly basis both with quarterly standard tests and random spot checks. Only coders that achieved a minimum reliability of 0.85 are cleared for coding. That means that the coding of these coders deviate at most by 0.15 from the trainers' master-versions. For each month and coder, three analyzed reports are selected randomly and checked. Coders scoring lower than 0.80 are removed from the coding process. In none of the months the mean deviation among all coders was above 0.15. As a result Media Tenor's data achieve an accuracy of minimum 0.85. The results are published quarterly. In comparison, today computer linguistic approaches achieve accuracy not more than 0.60-0.70, especially when it comes to topical context and tonality. As a consequence, Grinner and Steward (2013, 1) conclude, that in political text analysis there is no substitute for human reading.

Our sample of media outlets consists of 35 different opinion-leading media outlets from Germany, such as private TV news shows (3), public service TV news shows (4), public service TV political magazines (11), daily newspapers (7), as well as weeklies and magazines (10), (see

Table 1 in the appendix). News items were analyzed over the period February 1998 to December 2012. As media outlets were analyzed for different periods the panel is unbalanced. Overall 10,105,165 news items are included in the analysis. Skipping all items that were not on either CDU/CSU or SPD resulted in a total of 7,203,351.

Out of the set of all variables provided by Media Tenor for the development of the index we use in particular the name and type of media outlet, publication date, tonality (score) and protagonist, respectively. The tonality score s ∈ (-1,0,1) reflects a positive, neutral or negative tone. On average, tonality of the media coverage is negative for all media (see Table 1). Also all media outlets show negative average scores for both parties, except Super Illu, an eastern German magazine, which has a slightly positive score for CDU. Media are therefore identified to be rather critical. However, comparing scores with respect to both parties political "preferences" of the outlets can be identified.

2.2 An Index of Political Coverage (PCI)

Unweighted PCI

To derive an adequate index of media coverage we use media reporting on the two biggest German Parties, the so-called Union Parties (i.e., the CDU and its "sister party" CSU) as well as the SPD by simply measuring the difference in tonality of both parties. The score $S_{i,t}$ for media outlet i in month t is then defined as an unweighted PCI

$$S_{i,t} = \sum_{j=1}^{n} s_t^{CDU/CSU} - \sum_{k=1}^{m} s_t^{SPD},$$

where $\sum_{j=1}^{n} s_t^{CDU/CSU}$ is the average score of all reports in outlet i dealing with either the Christian Social Union of Bavaria (CSU) or the Christian Democratic Union of Germany (CDU) in month t, in any possible way. Similarly, $\sum_{k=1}^{m} s_t^{SPD}$ is the respective score for reports dealing with Social Democrats, i.e. the Social Democratic Party (SPD). As s ∈ (-1,0,1), reflecting a negative, neutral or positive tone, the range of the score is defined by S = [-2,2]. In case that a media outlet's coverage is always reporting negatively on SPD (s = -1) and at the same time reporting positively on CDU/CSU (s = 1), which yield the total score of $S_{i,t}$ = 1-(-1)=2. In case that a media outlet shows always a negative reporting on CDU/CSU (s = -1) and at the same time reporting positively on SPD (s = 1) the total score would be Si,t=(-1)-1=-2. In the first case one can argue that the respective media outlet is completely biased towards Social Democratic Party. However, the latter case the outlet would show a complete bias towards the Christian Democrats.

At first, calculating the media coverage index over all observations from 1998/2 to 2012/12 leads to an overall distribution of the media outlets in our sample. As can be seen from Figure 1 (in the appendix), media outlets cover values from about -0.07 to 0.14 indicating that some of

the outlets reporting in favor of the CDU/CSU are more pronounced than those reporting for the SPD. Overall, the distribution is somewhat right-skewed. However, keeping in mind that the index is defined from -2 to 2 this seems to be a rather moderate skew. While the political TV magazine Monitor, which is produced as public broadcasting, is the most leftish outlet, the Report BR, again a public broadcasting TV magazine, is the most conservative one.

Overall, the PCI varies moderately around zero, which can be interpreted as some kind of outer pluralism between the different media outlets, and is slightly right skewed.

Next, allowing the PCI to vary over outlets and over time, monthly, weekly and daily indexes can be derived (see Figure 2 for monthly values). Interestingly, the variation in the tonality of coverage is considerable large (see Table 2 for summary statistics of the monthly index). The newspaper Die Welt for example, which can on average be described as conservative (mean PCI=0.05), varies in its PCI from a minimum of -0.10 to a maximum of 0.30. A more leftish newspaper, Tageszeitung (taz), varies from -.24 to 0.22 (mean PCI=-.030). Interestingly, public service broadcasting outlets can be placed over the whole political spectrum, which can be interpreted as some kind of inner pluralism ensured by a number of different programs. However, public service broadcasting also shows a relatively large variance of PCI. The latter indicates a different kind of inner pluralism, which is ensured by a certain degree of diversity of opinion that is given within a program.

Weighted PCI

As the unweighted PCI does not account for the number of items or reports, it may be biased in case that media either neglect to report on a specific party or show an unbalanced coverage in terms of the frequency of mentioning (independently of tonality). For this reason, we calculate a weighted PCI

$$S_{i,t}^{w} = w_n \sum_{j=1}^{n} s_t^{CDU/CSU} - w_m \sum_{k=1}^{m} s_t^{SPD},$$

where w_n (w_m) is the share of the number reports on CDU/CSU (SPD) within a specific period. For a monthly version of the PCI, w_m is the share of reports on SPD in relation to all reports (on CDU/CSU and SPD) by month. Again, S^w = [-2,2]. In case that, e.g., coverage is only on SPD and entirely positive, S would be equal to 2. However, in case that coverage is more or less balanced $w_n = w_m \approx 0.5$, S^w should be smaller than S.

Again, calculating the media coverage index over all observations from 1998/2 to 2012/12 leads to the overall distribution of the media outlets (see Figure 1 in the appendix). Results are similar to the unweighted index, though the political spectrum of the media outlets shifted slightly to the left. While most numbers of PCI are now smaller in comparison to the unweighted index, some

became bigger in absolute values. As the weights add up to one it is not surprising that the variance is lower in the weighted case.

Turning to a monthly index, again, weights are derived from the number of reports on a party. As can be seen from Table 3 in the appendix, the overall weights for CDU/CSU and SPD vary between media outlets. While most of the outlets show a more or less pronounced bigger share for CDU/CSU, few which are especially known as leftish media products such as taz or Die Zeit have very slightly more reports on SPD. For this reason, a weighted index could be an adequate measure against a biased unweighted PCI.

2.3 *Properties of PCI*

Taking a closer look at the distributions of the unweighted PCI over media and month reveals that almost every distribution is leptokurtic (see Table 2). Moreover, in 24 out of 35 cases distributions have at least a slightly positive skew. For 20 media outlets, means are positive indicating a conservative reporting.

The weighted index shows 20 instead of 15 negative means (i.e. a rather leftish coverage) and a higher Kurtosis for most of the outlets (see Table 2a). The distribution of the weighted index is therefore steeper than the distribution of the unweighted PCI. 17 outlets show a negative skew instead of 11 in case of the unweighted index. And altogether, the weighted PCI is less skewed than the unweighted.

However, calculating Spearman's rank order coefficient leads to a value of 0.9351, indicating a high correlation between both indexes. The null of independence can be rejected. We therefore expect both indexes to be substitutable.

3 An Application: Government Bias in the German Media

In order to test the validity of our media coverage index, we present a simple analysis of a possible Government bias in German Media. We therefore apply simple OLS and fixed effects regressions to determine the impact of different legislatures on a monthly PCI. Again, we use the whole sample of February 1998 to December 2012.

Graphical inspection of the data (see Figures 3 to 6) shows that media coverage of different outlets varies over time. While vertical lines represent the launch of a new coalition, horizontal lines represent the average values. At first appearance, a more conservative coalition seems to be accompanied with a rather leftish coverage and vice versa. However, a more accurate analysis can be conducted by a deeper inspection of the data.

As a first step, we use simple least squares to regress the PCI (media coverage index) on three time dummies indicating the government coalitions of SPD and the Green Party (SPD/GREEN I: 27 October 1998 to 22 October 2002 and SPD/GREEN II: 22 Oct 2002 to 18 Oct 2005), the CDU and the FDP (CDU/FDP I: 17 Nov 1994 to 26 Oct 1998 and CDU/FDP II: 28 October 2009 to 22 Oct 2013) as well as the grand coalition of CDU and SPD (22 Nov 2005 to 28 Oct 2009).

While coefficients for both SPD/GREEN as well as for CDU/SPD are positive (see OLS I regression in Table 4 in the appendix), the remaining coefficient for CDU/FDP is negative. The negative coefficient indicates a rather leftish reporting during the CDU/FDP coalition period which can be seen as evidence for a critical reporting on government parties. Given that a negative (positive) PCI is connected with a rather leftish (conservative) reporting, this result suggests an (from the coalition's perspective) opposing media coverage. Moreover, as SPD/GREEN > CDU/SPD this result is also in line with an anti government bias. A coalition of social democrats and the Green Party is expectedly more to left that the grand coalition.

Splitting the coalition period of SPD and Green Party into period I and II (OLS II) leads to similar results. However, while SPD/GREEN I is statistically significant and about 0.014, SPD/GREEN II is even larger (about 0.052). During the second legislative session, media reporting is even more "conservative" than during the first term. This result appears to be somewhat surprising, as during the second term of the SPD/GREEN coalition the so-called "Agenda 2010" has been implemented. The Agenda 2010, however, was a bunch of rather conservative policies such as measures to foster labor market flexibility. Our PCI though is a measure of how media reporting is biased toward parties. Therefore, a larger PCI indicates a reporting in favor CDU/CSU and, in this case, against the government. Again, the coefficient for CDU/FDP is negative suggesting coverage, which is in favor of the social democrats during the conservative-liberal coalition.

Regressions using fixed effects techniques included media products as well as time fixed effects, the Ifo business climate index, the unemployment rate as well as the consumer price index (all of which representing macroeconomic effects) show similar results. Using the CDU/FDP coalition as the base case coefficients describe the difference in coverage in comparison to the coverage during the conservative-liberal coalition. Referring FE I, again, reporting during the SPD/GREEN coalition is connected with a higher PCI than during the grand coalition. Both coalitions are associated with higher PCIs than base case, that is, the CDU/FDP coalition. Turning to FE II the results are partially reversed as accounting for macroeconomic factors such as CPI and unemployment rates the coefficient of CDU/SPD is now slightly higher than that of SPD/GREEN. Coefficients change slightly in FE III when discriminating between SPD/GREEN I and II. Again, SPD/GREEN II is associated with a bigger PCI, indicating that coverage is more conservative during this period.

Turning to the weighted PCI, results stay remarkable stable (see Table 5) independently of specifications. Using either simple fixed effects regressions with government coalitions or including also macroeconomic factors show very similar results. Dummy variables indicating different governments are statistically significant and are qualitatively comparable to former results. However, as the weighted index is smaller than the unweighted PCI regression coefficients are considerably smaller.

On the whole, in terms of our measure of media coverage, reporting is found to be rather critical and opposing against respective coalitions. We interpret this result as some kind of an anti-government bias or, put in a more positive way, as an indication that the "fourth estate of democracy" is alive.

4 Conclusions

This paper develops a political coverage index classifying media outlets with respect to the tonality of their respective coverage on the two biggest parties – one more left and one more right in the political spectrum. The Political Coverage Index (PCI) takes negative values in case that reporting is rather leftish and positive values in the opposite case. By these means, we are able to calculate a one-dimensional number reflecting the positioning of a media outlet in the political spectrum. In contrast to other procedures our index is a direct measure of tonality that can be calculated for any frequency from daily to a yearly basis. The PCI is therefore easy to derive as well as extremely flexible.

Its application on 35 opinion-leading media outlets on the basis of all 7,203,351 reports on the centre-right Christian Democratic/Social Party CDU/CSU and centre-left Social Democratic Party SPD between 1998 and 2012 show robust results on the political tendencies of the media.

However, the results show as well that beside the general political orientation of the media analysed this orientation changes in time. By applying simple OLS and fixed effects regressions to determine the impact of different legislatures we observe that, while different media outlets definitely differ in their political orientation, there is evidence that all of them have a government malus, i.e. a party in government is more likely to be seen critical than a party outside of government. We interpret this result as some kind of an anti-government bias or, put in a more positive way, as an indication that in Germany the "fourth estate of democracy" is alive.

Future research could focus in a multidimensional index on the whole spectrum of political parties and different policy issues (foreign policy, domestic policy, economic policies etc). We also aim at applying our index approach to other, non-political themes.

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Appendix

Table 1: Analyzed media set

Media	Observations	Mean score	Mean score CDU/CSU	Mean score SPD	Difference (overall PCI)
TV news shows (private)					
RTL aktuell	99,301	-.0688	-.0725	-.0639	-0.0086
Sat.1 News	61,587	-.0605	-.0386	-.0849	0.0463
ProSieben News	33,380	-.0741	-.0675	-.0810	0.0135
TV news shows (PSB)					
Tagesthemen	274,998	-.0778	-.0845	-.0688	-0.0157
Tagesschau	190,870	-.0723	-.0845	-.0548	-0.0297
heute	176,707	-.0693	-.0743	-.0623	-0.012
heute journal	266,372	-.0739	-.0814	-.0630	-0.0184
TV magazines (PSB)					
Fakt	3,535	-.1889	-.1346	-.2304	0.0958
Frontal 21	18,537	-.2230	-.2371	-.1975	-0.0396
Kontraste	4,086	-.2028	-.2112	-.1940	-0.0172
Monitor	4,740	-.2371	-.2666	-.1991	-0.0675
Panorama	6,656	-.2143	-.2127	-.2166	0.0039
Plusminus	2,021	-.1331	-.1115	-.1543	0.0428
Report BR	6,366	-.1907	-.1250	-.2654	0.1404
Report SWR	5,990	-.2085	-.2365	-.1705	-0.066
WISO	3,618	-.0815	-.0647	-.1017	0.037
Bericht aus Berlin	48,970	-.0752	-.0829	-.0618	-0.0211
Berlin direkt	70,607	-.0626	-.0595	-.0677	0.0082
Daily newspaper					
Bild	270,945	-.0603	-.0372	-.0914	0.0542
Berliner Zeitung	305,272	-.0756	-.0742	-.0769	0.0027
Die Welt	1,021,579	-.0689	-.0465	-.0963	0.0498
Die Tageszeitung (taz)	323,432	-.1027	-.1171	-.0886	-0.0285
Frankfurter Allgemeine Zeitung (F.A.Z.)	977,975	-.0526	-.0395	-.0680	0.0285
Frankfurter Rundschau	670,668	-.0812	-.0898	-.0729	-0.0169
Süddeutsche Zeitung (SZ)	863,964	-.0797	-.0861	-.0722	-0.0139
Magazines and weeklies					
Bild am Sonntag (BamS)	104,073	-.0299	-.0096	-.0636	0.054
Die Zeit	150,302	-.0831	-.0783	-.0874	0.0091
Frankfurter Allgemeine Sonntagszeitung (FAS)	157,067	-.0519	-.0340	-.0733	0.0393
Focus	273,338	-.0729	-.0494	-.1066	0.0572
Spiegel	394,870	-.0718	-.0827	-.0591	-0.0236
Stern	86,524	-.0670	-.0562	-.0788	0.0226
Super Illu	25,497	-.0281	.0099	-.0781	0.088
Die Woche	50,272	-.0885	-.1138	-.0607	-0.0531
Rheinischer Merkur	112,389	-.0647	-.0294	-.1099	0.0805
Welt am Sonntag (WamS)	136,843	-.0715	-.0354	-.1179	0.0825

Table 2: Summary statistics of monthly unweighted PCI

Outlet	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Die Welt	115	.0522	0692	-.1006	.3027	.5932	3.9126
FAZ	116	.0320	.0569	-.0769	.2213	.7769	3.5416
SZ	116	-.0122	.0649	-.1560	.2083	.7412	4.0863
Fr. Rundschau	106	-.0174	.0743	-.1744	.1769	-.0504	2.8514
taz	85	-.0302	.0893	-.2420	.2233	.3049	3.2327
Bild	172	.0387	.1188	-.3818	.3321	-.3477	3.8536
Berliner Zeitung	67	.0003	.0675	-.1065	.2351	.8166	3.9285
Tagesthemen	178	-.0050	.1134	-.3426	.3021	-.0748	3.6200
heute journal	178	-.0080	.1132	-.3834	.3500	-.2991	4.5496
RTL aktuell	178	-.0092	.1623	-.5185	.6616	.0858	5.7067
Sat.1 News	124	.0521	.1871	-.6074	.7945	.7635	6.3142
Tagesschau	178	-.0213	.1014	-.3256	.3478	-.0298	4.6922
heute	178	-.0087	.1197	-.4003	.4420	.0948	5.1679
Pro Sieben Nachr.	108	.0199	.1912	-.4823	.5785	.0365	3.8845
Focus	176	.0532	.1029	-.2129	.3532	.5563	3.5150
Der Spiegel	176	-.0284	.0749	-.2798	.1836	-.2036	3.5080
Die Zeit	105	.0006	.1277	-.3451	.4127	.1286	3.8966
Die Woche	50	-.0532	.1428	-.4484	.2899	-.0261	3.2976
Rh. Merkur	106	.0784	.1220	-.2170	.3718	.0567	2.9997
Stern	83	-.0026	.1530	-.4664	.3153	-.2388	3.1314
FAS	73	.0354	.0731	-.1424	.2438	.0642	3.5598
WamS	71	.0886	.1113	-.1601	.4130	.3593	3.1343
BamS	117	.0533	.1047	-.2017	.4118	.4663	3.4404
Super Illu	60	.0877	.1190	-.2480	.3330	.0387	2.9516
Fakt	57	.0966	.3860	-1	1.282	.1789	4.9478
Frontal 21	100	-.027	.1589	-.3916	.6153	.4303	4.8652
Kontraste	63	.0006	.3022	-.8	.7222	-.0856	3.2116
Monitor	65	-.0733	.2931	-.8421	.5373	-.1909	2.9176
Panorama	65	.0295	.3591	-.9571	1.045	.1453	4.5696
Plusminus	58	.0236	.2803	-.75	1	.7856	6.1673
Report BR	62	.1161	.3965	-1.366	1.108	-.1600	5.6170
Report SWR	73	-.0323	.2699	-.8888	.7643	.1452	4.6905
Wiso	63	.0167	.1863	-.4117	.75	.7645	6.1454
Bericht aus Berlin	80	-.0060	.1509	-.3361	.6167	1.1892	6.0490
Berlin direkt	114	.0174	.1474	-.26888	.9423	2.5386	15.88

Table 2a: Summary statistics of monthly weighted PCI

Outlet	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Die Welt	115	.0011	.0044	-.0087	.0158	.3291	3.5317
FAZ	116	.0005	.0032	-.0084	.0101	.2017	3.6399
SZ	116	-.0020	.0047	-.0206	.0088	-.6662	5.0715
Fr. Rundschau	106	-.0005	.0054	-.0179	.0122	-.4990	4.2502
taz	85	-.0021	.0100	-.0477	.0227	-1.420	8.7067
Bild	172	.0006	.0053	-.0217	.0249	-.1351	7.5297
Berliner Zeitung	67	-.0007	.0097	-.0404	.0252	-1.004	7.1063
Tagesthemen	178	-.0021	.0058	-.0276	.0124	-.9951	5.654
heute journal	178	-.0024	.0060	-.0286	.0119	-1.599	6.984
RTL aktuell	178	-.0016	.0070	-.0356	.0186	-1.462	8.649
Sat.1 News	124	.0013	.0104	-.041282	.0378	-.0349	6.004
Tagesschau	178	-.0026	.0048	-.0263	.0075	-1.469	6.7243
heute	178	-.0019	.0050	-.0280	.0116	-.9883	7.185
Pro Sieben Nachr.	108	.0003	.0166	-.1009	.0528	-2.010	15.51
Focus	176	.0001	.0041	-.0164	.0129	.1138	5.1355
Der Spiegel	176	-.0015	.0032	-.0143	.0084	-.7671	5.0507
Die Zeit	105	.0008	.0112	-.0726	.0430	-2.250	20.930
Die Woche	50	-.0063	.0249	-.0750	.0642	.3515	4.2994
Rh. Merkur	106	.0027	.0073	-.0207	.0396	1.0393	8.7103
Stern	83	.0011	.0135	-.035	.0550	1.0283	6.7182
FAS	73	.0015	.0058	-.0116	.0178	.1752	2.9460
WamS	71	.0036	.0100	-.0291	.0300	-.0681	3.8513
BamS	117	.0010	.0049	-.0145	.0182	-.0200	4.5183
Super Illu	60	.0061	.0164	-.0221	.1032	3.3538	21.39
Fakt	57	.0127	.0484	-.1542	.1518	.2037	5.6356
Frontal 21	100	-.0152	.0257	-.1190	.0206	-1.7475	6.4920
Kontraste	63	-.0019	.0497	-.1675	.2532	1.346	14.18
Monitor	65	-.0103	.0451	-.1633	.1467	-.2497	6.2903
Panorama	65	-.0063	.0479	-.1826	.2171	.9053	11.75
Plusminus	58	.0022	.0343	-.1072	.1332	1.3049	9.2956
Report BR	62	.0128	.0470	-.0810	.2189	1.6180	8.1551
Report SWR	73	-.0126	.0316	-.1124	.0830	-.3607	4.490
Wiso	63	.0014	.0202	-.0580	.0786	.7591	7.6130
Bericht aus Berlin	80	-.0071	.0098	-.0345	.0221	-.3882	4.0980
Berlin direkt	114	-.0026	.0063	-.0289	.0207	-.4775	6.221

Table 3: Average number of monthly reports on parties

	CDU/CSU	SPD	% CDU/CSU	% SPD
Die Welt	46796.18	38372.29	0.55	0.45
FAZ	44036.00	37490.03	0.54	0.46
SZ	38749.51	33286.24	0.54	0.46
Fr. Rundschau	27253.99	28578.42	0.49	0.51
taz	13357.66	13798.39	0.49	0.51
Bild	12931.42	9671.86	0.57	0.43
Berliner Zeitung	13129.54	12619.10	0.51	0.49
Tagesthemen	13258.74	9676.16	0.58	0.42
heute journal	13118.78	9094.78	0.59	0.41
RTL aktuell	4727.75	3555.30	0.57	0.43
Sat.1 News	2700.82	2438.05	0.53	0.47
Tagesschau	9386.83	6522.14	0.59	0.41
heute	8629.67	6107.74	0.59	0.41
ProSieben	1422.67	1359.00	0.51	0.49
Focus	13458.64	9393.67	0.59	0.41
Spiegel	17722.40	15239.97	0.54	0.46
Die Zeit	6009.71	6560.73	0.48	0.52
Die Woche	2225.00	2006.86	0.53	0.47
Rh. Merkur	5291.06	4193.65	0.56	0.44
Stern	3805.57	3458.54	0.52	0.48
FAS	7198.92	6026.06	0.54	0.46
WamS	6443.85	5042.96	0.56	0.44
BamS	5411.90	3283.54	0.62	0.38
Super Illu	1215.23	937.33	0.56	0.44
Fakt	150.62	170.36	0.47	0.53
Frontal 21	1008.54	557.23	0.64	0.36
Kontraste	176.18	173.01	0.50	0.50
Monitor	226.06	192.96	0.54	0.46
Panorama	351.08	253.84	0.58	0.42
Plusminus	89.33	90.14	0.50	0.50
Report BR	302.75	255.21	0.54	0.46
Report SRW	292.82	216.66	0.57	0.43
WISO	154.00	132.14	0.54	0.46
Bericht aus Berlin	2587.98	1493.06	0.63	0.37
Berlin direkt	3681.57	2230.44	0.62	0.38

Table 4: OLS and Fixed Effects Regressions of unweighted PCI

PCI	**OLS I**	**OLS II**	**FE I**	**FE II**	**FE III**
SPD/GREEN	0.0344 (0.00)	-	0.0905 (0.00)	0.0457 (0.00)	-
SPD/GREEN I	-	0.0143 (0.01)	-	-	0.0317 (0.00)
SPD/GREEN II	-	0.0523 (0.00)	-	-	0.0506 (0.00)
CDU/FDP	-0.0554 (0.00)	-0.0554 (0.00)	-	-	-
CDU/SPD	0.0209 (0.00)	0.0209 (0.00)	0.0702 (0.00)	0.0538 (0.00)	0.0555 (0.00)
Constant	-	-	-0.0539 (0.00)	0.1295 (0.24)	0.2773 (0.02)
Time Dummies	No	No	YES	YES	YES
Fixed effects	No	No	YES	YES	YES
ifo	-	-	-	-0.0028 (0.00)	-0.0027 (0.00)
CPI	-	-	-	-0.0001 (0.00)	-0.0012 (0.00)
Unempl. Rate	-	-	-	0.0152 (0.00)	0.0104 (0.00)
R^2	0.05	0.06	0.04	0.06	0.08
Nobs	3716	3716	3716	3716	3716
Groups	-	-	35	35	35
F-Test	60.18 (0.00)	49.19 (0.00)	27.60 (0.00)	34.67 (0.00)	35.10 (0.00)

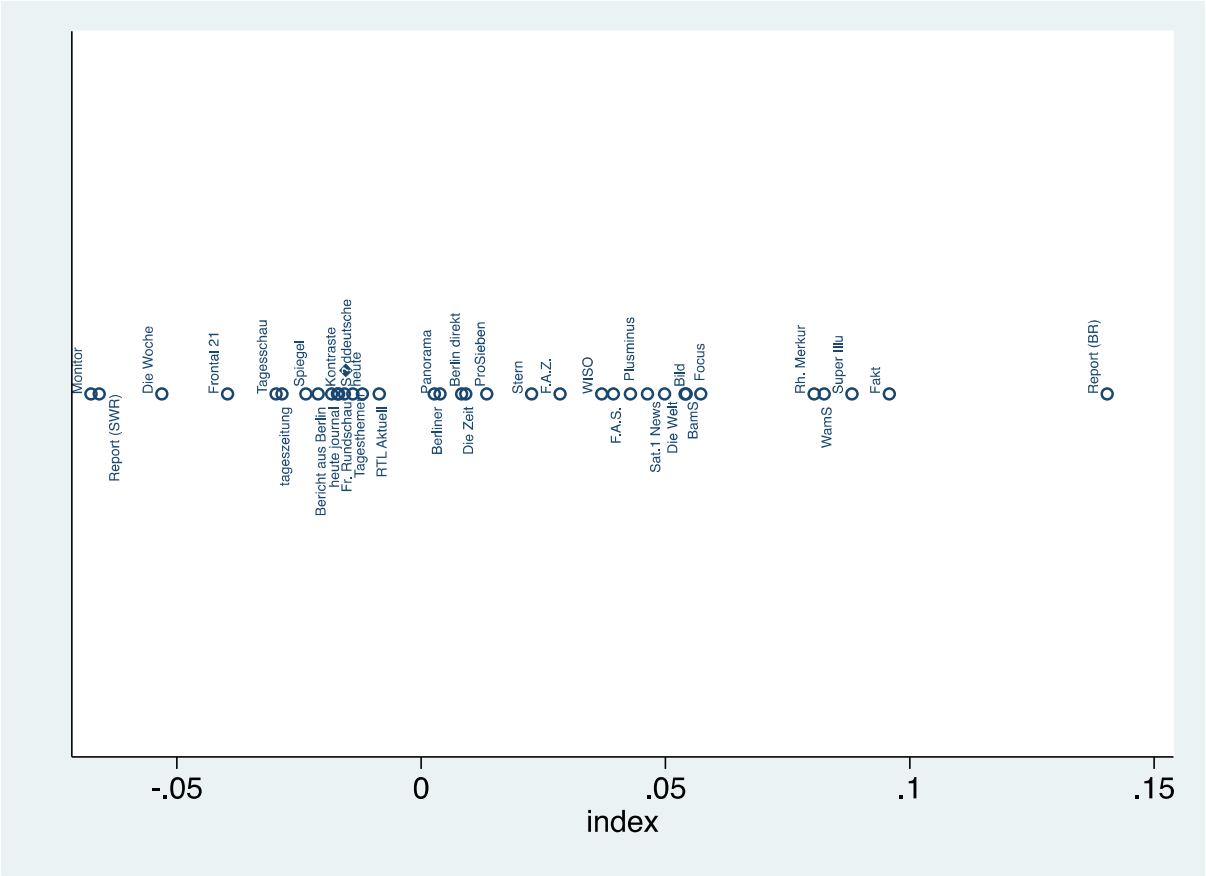
Note: Robust standard errors used to calculate p-values in parenthesis.

Table 5: Fixed Effects Regressions of weighted PCI

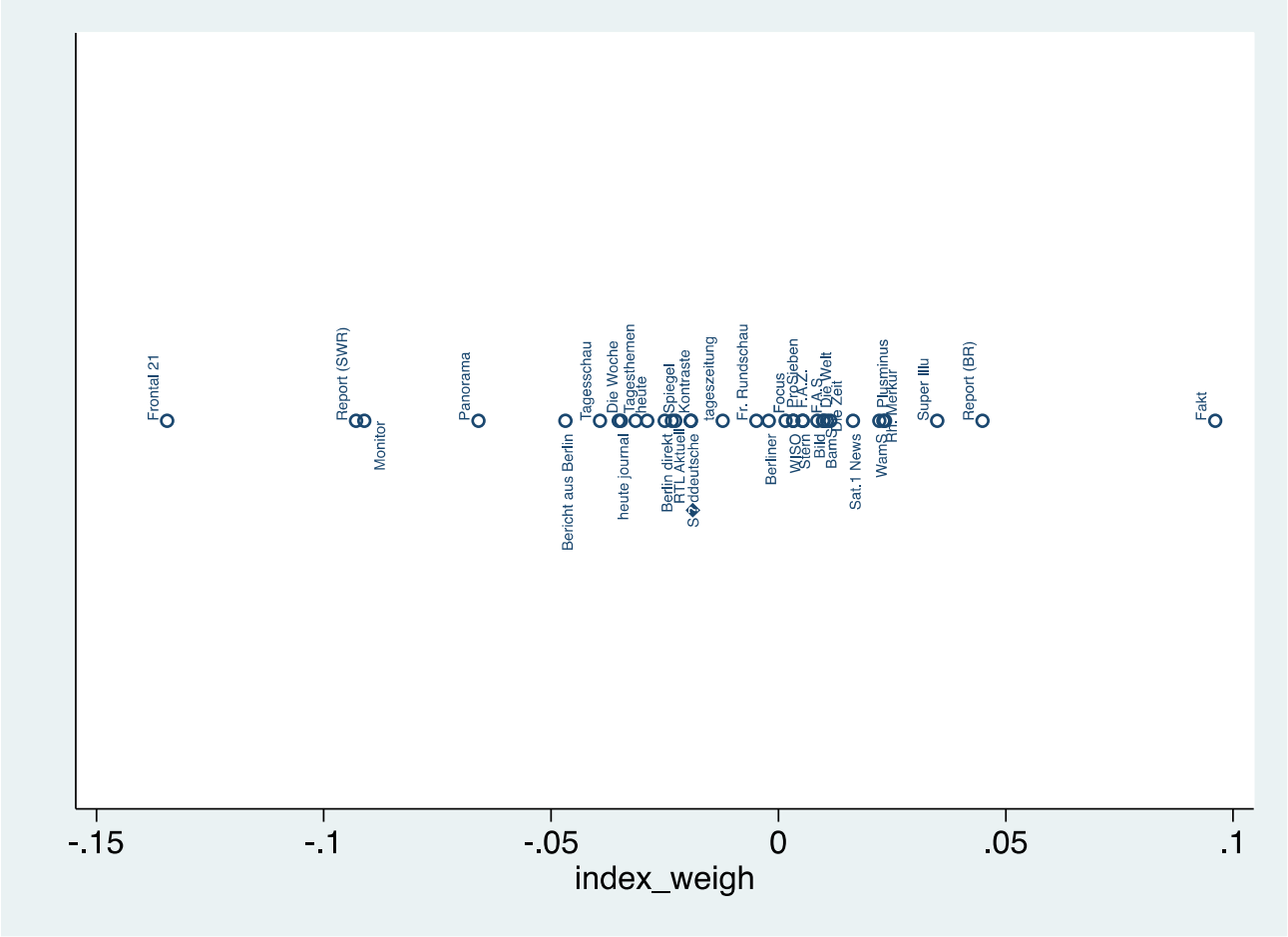
PCI	**FE I**	**FE II**	**FE III**
SPD/GREEN	0.0058 (0.00)	0.0029 (0.00)	-
SPD/GREEN I	-	-	0.0017 (0.00)
SPD/GREEN II	-	-	0.0033 (0.00)
CDU/SPD	0.0045 (0.00)	0. 0035 (0.00)	0.0036 (0.00)
Constant	-0.0072 (0.00)	0.0067 (0.39)	0.01937 (0.05)
Time Dummies	YES	YES	YES
Fixed effects	YES	YES	YES
Ifo	-	-0.00017 (0.00)	-.0001 (0.00)
CPI	-	-0.00002 (0.66)	-0.0012 (0.10)
Unempl. Rate	-	0.0008 (0.00)	0.0004 (0.07)
R^2	0.04	0.05	0.05
Nobs	3716	3716	3716
Groups	35	35	35
F-Test	7.79 (0.00)	11.07 (0.00)	11.35 (0.00)

Note: Robust standard errors used to calculate p-values in parenthesis.

Figure 1: Overall PCI 1998/2 to 2012/12 (unweighted and weighted PCI)

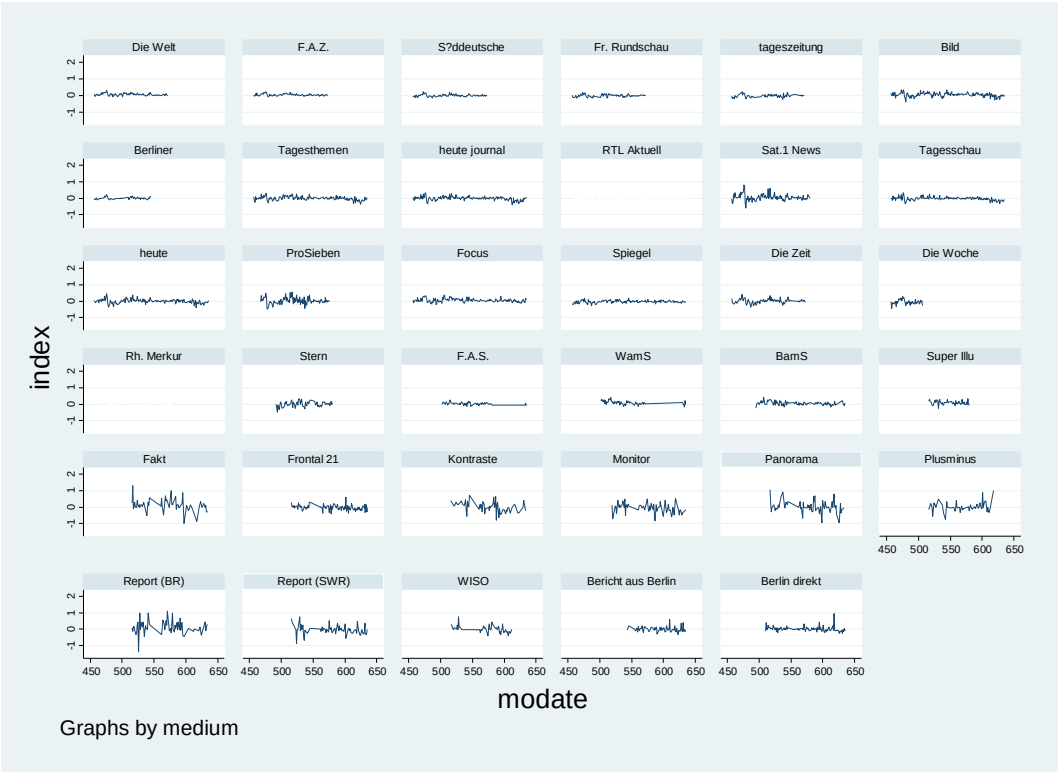


An index value below 0 indicates the media outlet has a positive bias towards the SPD (left), a value above 0 indicates a bias towards the CDU (right).



An index value below 0 indicates the media outlet has a positive bias towards the SPD (left), a value above 0 indicates a bias towards the CDU (right).

Figure 2: Monthly unweighted PCI



Change of the political index over time. An index value below 0, in this figure on the y-axis, indicates the media outlet has a positive bias towards the SPD (left).

Figure 3: PCI of selected media outlets (newspapers)

Index value over time for different newspapers. An index value below 0 indicates the media outlet has a positive bias towards the SPD (left), a value above 0 indicates a bias towards the CDU (right). The index is shown on the y-axis.

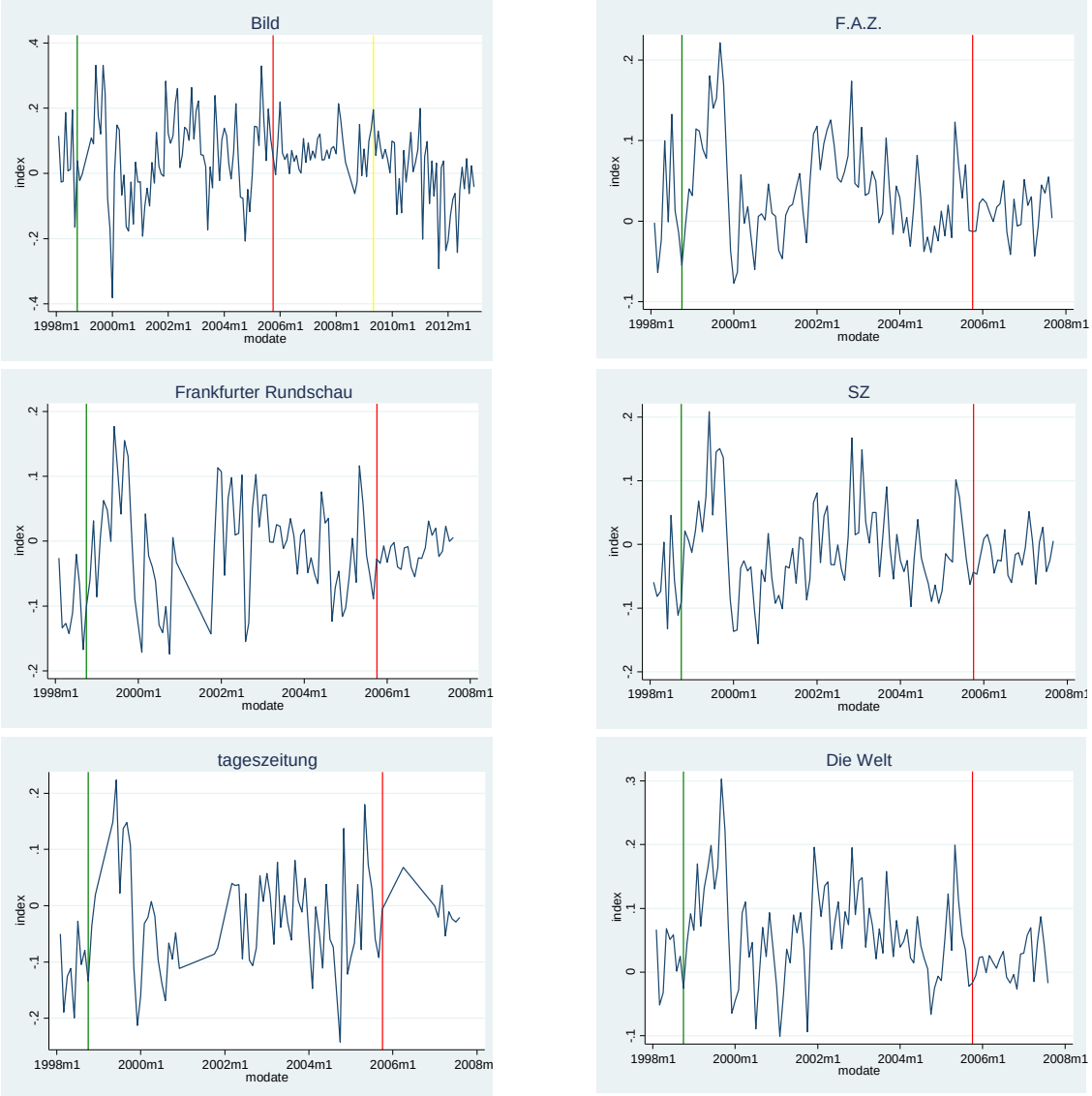


Figure 4: PCI of selected media outlets (TV news programs)

Index value over time for different TV news programs. An index value below 0 indicates the media outlet has a positive bias towards the SPD (left), a value above 0 indicates a bias towards the CDU (right). The index is shown on the y-axis.

Figure 5: PCI of selected media outlets (weeklies)

Index value over time for different weekly political and current affairs magazines. An index value below 0 indicates the media outlet has a positive bias towards the SPD (left), a value above 0 indicates a bias towards the CDU (right). The index is shown on the y-axis.

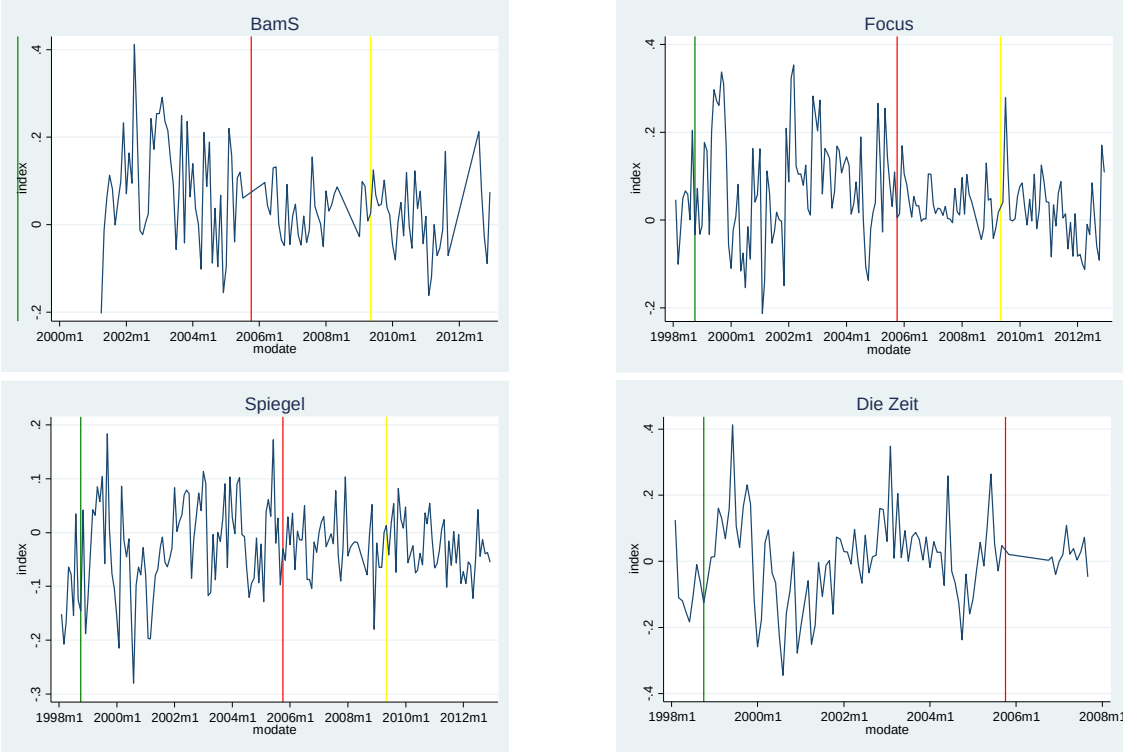
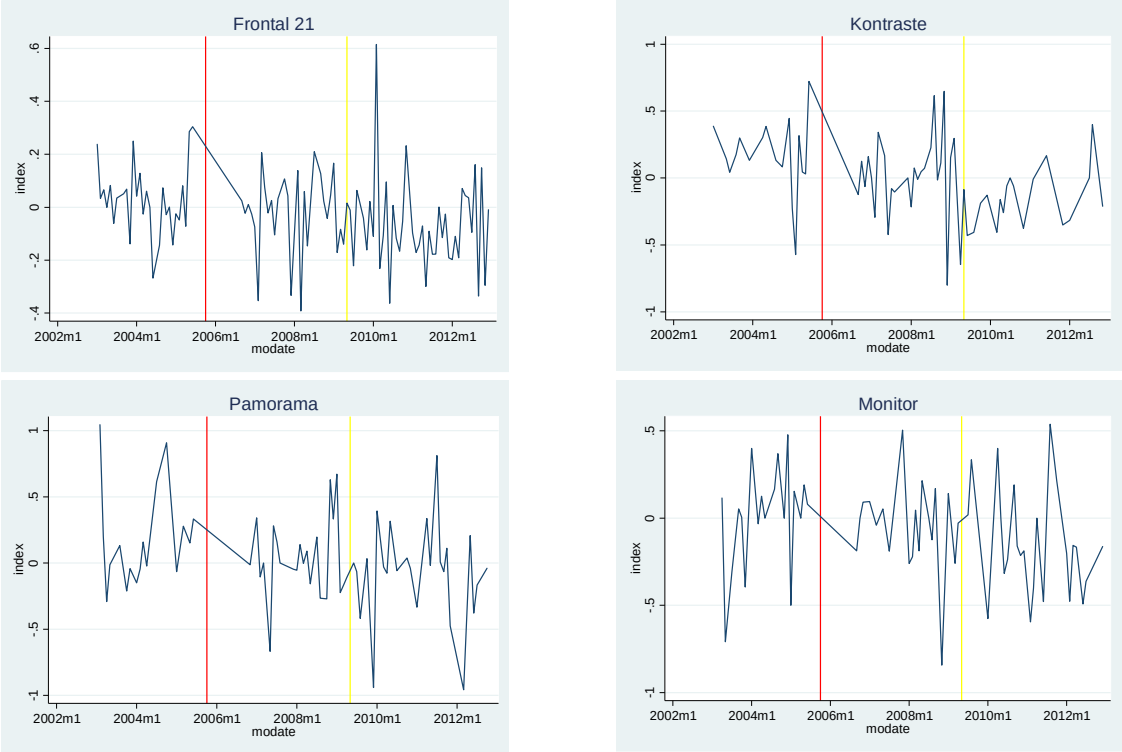


Figure 6: PCI of selected media outlets (TV programs)

Index value over time for different current affairs TV programs. An index value below 0 indicates the media outlet has a positive bias towards the SPD (left), a value above 0 indicates a bias towards the CDU (right). The index is shown on the y-axis.



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