

Topic and tone of political news articles in German online media.

Franziska Löw

March 19, 2018

Abstract

The aim of this paper is to investigate whether the political reporting of different content providers distinguishes itself and whether this reporting has an influence on the opinion-forming process of the voters.

Keywords Structural Topic Model, Sentiment Analysis, Unsupervised Machine Learning, Text Mining

1 Introduction

Pluralism is an essential principle of democratic societies. An important pillar of this principle is an opinion-forming process that incorporates as many different perspectives as possible. For the process of forming opinions, information conveyed by the media, in particular the mass media of journalism, plays a decisive role. They create the preconditions for making the social and cultural diversity of modern societies visible and manageable. Securing the diversity of opinion-forming processes and preventing concentration processes in the media sector is an essential prerequisite for a functioning democracy.

Media outlets (TV, Radio, Newspaper) usually operate in two-sided markets, where they serve two customer groups (content consumer and advertiser) that are connected via indirect network effects. The new developments in digital media provide new opportunities and challenges for media outlets. The costs of providing and disseminating information have been reduced and the speed of information exchange has increased enormously. At first glance, these developments seem to have a positive effect on the provision of information. However, it also means that the incentive for media to produce primary information declines since the Internet has reduced the marginal utility of content. A study of French news websites from 2013 shows that only 38 percent of the online articles contained original content, with the remainder being copies of those originals (Cagé, Hervé, and Viaud, 2017). At the same time, the number of people who find out about current news on the Internet is increasing. According to a study on the media coverage of the German-speaking population, nearly 40% of respondents used the internet at least once a week in 2017 to inform themselves about the current news compared to 34% in 2016 (Medienanalyse), 2017). Recognizing the importance of media pluralism, the European Commission has endorsed several initiatives to discuss and promote media diversity in the European Union¹.

A resulting question is whether the political reporting of different content providers distinguishes itself and whether this reporting has an influence on the opinion-forming process of the voters. The aim of this paper is to investigate these questions with the use of up-to-date text mining methods. For this purpose, German online news articles about domestic politics are analyzed to examine the media pluralism in the market for German-language online news. German federal elections took place on 24th of September 2017 and the formation of the government has taken up a period of about five months. The articles considered here dated from 01.06.2017 to 01.03.2018

¹<https://ec.europa.eu/digital-single-market/en/policies/media-freedom-and-pluralism>

and thus inform their readers both about the election promises of the parties (before the election) and about the coalition talks (after the election). They therefore make an important contribution to the public's opinion-forming process. The empirical strategy follows a novel approach combining "the two Ts": Topic and Tone (Hansen and McMahon, 2016). That is, first the topics covered in the articles are identified, to find out how these topics are discussed (tone). The final step is to check whether the tonality of reporting is reflected in the survey results on voting preferences calculating the cross-correlation coefficients. More precisely, the research strategy is as follows:

1. **Discovering Topics (Section 6.1)** To discover the latent topics in the corpus, the structural topic modeling (STM) developed by M. E. Roberts, B. M. Stewart, and E. M. Airoldi (2016) is applied. The STM is an unsupervised machine learning approach that models topics as multinomial distributions of words and documents (as a synonym for news articles) as multinomial distributions of topics, allowing to incorporate external variables that effect both, topical content and topical prevalence. I estimate a model, where the newswire service is included as a control for both the topical content and the topical prevalence. The result of the generative process of STM are the posterior distributions for topic prevalence in a document and the content of a topic. The latter is used to label the topics according to an event or issue discussed in the media. The probability distribution of topics for each document is used to assign a topic to each news article.
2. **Measuring Tone (Section 6.2)** After assigning a topic to each article (document), a dictionary-based sentiment analysis is conducted to estimate how topics are discussed differently by different news wires.
3. **Comparing with polls** In order to check whether the transmitted content from the online media is reflected in the voting preferences, we compare the values from 2 with the survey values of the Sunday survey ("Sonntagsumfrage").

Approach 1 has been used in M. E. Roberts, B. M. Stewart, and E. M. Airoldi (2016), among others, to examine differences in the content of eastern and western news providers regarding "the rise of China". However, I extend the analysis by comparing the sentiment score for a given topic an news provider, to identify which topics are discussed similar or differently (2). Hansen and McMahon (2016) applied a similar approach to a dataset of 142 FOMC decision statements to measure the effect of those statements on

macroeconomic variables. An additional extension is the comparison with current election poll values (3).

The remaining course of the paper is as follows: In Section 3 the characteristics of the market for online news in Germany are outlined. 2 give a brief overview about political trends in Germany in recent month. The data used to conduct the model is described in Section 4. Section 5 explains the generative process of the structural topic model as well as the selected parameters to run the model. The empirical analysis containing the above mentioned steps is conducted in Section 6.

2 Background on the federal election in Germany (2017)

The articles analyzed in this paper cover a period from June 1, 2017 to March 1, 2018 and thus cover both the most important election campaign topics for the Bundestag elections on September 24, 2017 and the process of forming a government that lasted until February 2018. After four years in a grand coalition with the Social Democrats (SPD), German Chancellor Angela Merkel, member of the Conservative Party (CDU), ran for re-election. The SPD nominated Martin Schulz as candidate for chancellor.

On the right side of the political spectrum, AfD (alternative for Germany) managed to be elected to the German Bundestag for the first time in 2017. The political debate about the high refugee numbers of the past years brought the AfD a political upswing by taking up the dissatisfaction of parts of the population and using it to raise its own profile. Leading party members of the AfD as well as party supporters repeatedly accused the mass media in the course of the reporting on the federal elections to report unilaterally and to present the AfD intentionally badly.

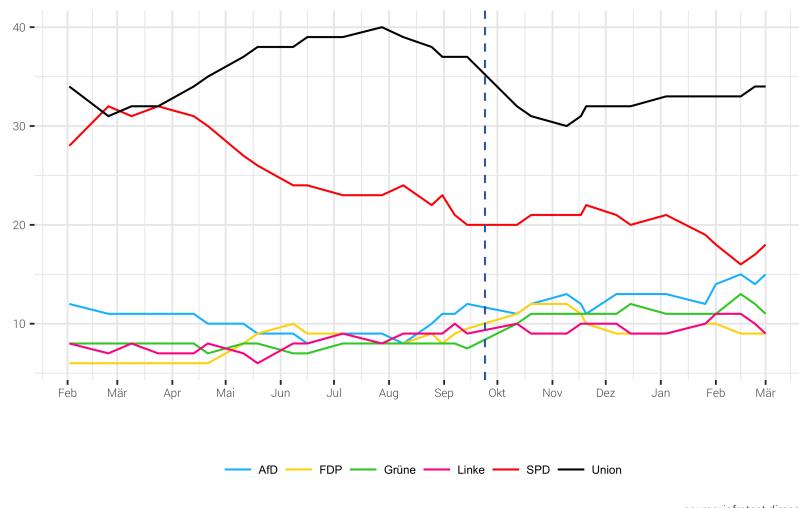
After the election, the formation of a government was difficult due to the large number of parties elected to the Bundestag and the considerable loss of votes by the major parties CDU/CSU and SPD. Since all parties rejected a merger with the AfD, numerically only two coalitions with an absolute parliamentary majority were possible: a grand coalition ("GroKo") of CDU/CSU and SPD, and a Jamaica coalition (coalition of CDU/CSU, FDP (economic liberal party) and B90/Die Grünen (Bündnis 90/Die Grünen, green party)). The grand coalition was initially rejected by the SPD. The four-week exploratory talks on the possible formation of a Jamaica coalition officially failed on 19 November 2017 after the FDP announced its withdrawal from the negotiations. FDP party leader Christian Lindner said that there

had been no trust between the parties during the negotiations. The main points of contention were climate and refugee policy. CDU and CSU regretted this result, while B90/Die Grünen sharply criticized the withdrawal of the Liberals. The then Green leader Cem Özdemir accused the FDP of lacking the will to reach an agreement.

After the failure of the Jamaica coalition, a possible re-election or a minority government as alternatives were discussed in the media before the SPD decided to hold coalition talks with the CDU/CSU. This led to great resistance from the party base, which called for a party-internal vote on a grand coalition. After the party members voted in favor of the grand coalition, a government was formed 171 days after the federal elections.

Figure 1 shows that support for the two major popular parties has been declining in recent months since August 2017, with the CDU again showing positive survey results since November. However, the value of the SPD has been falling since March 2017. At the same time, the AfD in particular has been recording increasingly positive survey results since June 2017. Section 6.3 examines whether there is a correlation between the survey results and the way the parties are reported in the media.

Figure 1: Election Polls



source: infratest dimap

3 The online news market

The market for media content in Germany is characterized by the coexistence of public and private broadcasters. By shifting media content to the Internet, the dual system, which has been shaping the German television and radio landscape since the introduction of private broadcasting in the early 1980s, is facing a radical change. Since 2000, public broadcasting has expanded its range of services, particularly in the digital media sector. In 2017, 22 own websites and 100 apps were operated by public broadcasters on which they offer their content. As a result, public broadcasting no longer only competes with private television and radio stations, but also enters the market for online news. In the following, the characteristics of the market for online news in Germany are briefly described.

Private media outlets naturally appear as two-sided platforms, that allow interaction between two categories of consumers: audiences and advertisers. As the demand on both consumer-sides are linked via indirect network externalities, the market in which media outlets operate are referred to as two-sided or multi-sided markets. The theoretical literature on two-sided markets originates from the analysis of credit card markets (Rochet and Tirole, 2003) and was later transferred to the concept of other industries, such as dating agencies, real estate agents, and internet “business-to-business” websites (Caillaud and Jullien, 2003). The basic concept of two-sided markets was already discussed decades ago in several economic studies, especially on media markets (Corden, 1952), (Gustafsson, 1978), (Blair and Romano, 1993). However, comprehensive analyses have only been carried out in the last ten years, starting with the works of Rochet and Tirole (2003), Evans (2003) and Armstrong (2006).

Advertising-supported media such as online newspapers are typical examples of two-sided markets where the newspaper can be conceived as platforms that allow interaction between audiences ("eyeballs") and advertisers. The newspaper creates (or buys) content to attract viewers which in turn attract advertisers who pay for readers' attention (Evans and Schmalensee, 2005). The size and characteristics of the audience has a positive effect on the advertisers' willingness to pay, as advertisements are typically sold based on cost per viewer, often expressed in terms of the cost of reaching a thousand viewers (CPM). Advertising can also have an effect on the recipients, which can be either negative or positive, depending on the quality of the advertising. Based on the strength of the indirect network effects, private publishers maximize their revenue by balancing the demand from advertisers and subscribers using different business models (Evans, 2008). Many traditional newspapers follow the subscription/advertising model, where the publisher

charges both market sides: The audience pays a fee to obtain access to the content, and advertisers pay to obtain access to the viewers. Many online news agencies provide part of their editorial content for free and hide another, more exclusive part behind a paywall. However, since the Internet has considerably simplified the possibilities for obtaining information and thus reduced the marginal utility of content, such a business model can only be efficient if the content behind the paywall is very exclusive. As a result, many publishers rely on a free-media model, in which the publishers do not charge viewers for access to the media at all, in order to attract as many eyeballs as possible to their platform, and thus, exploit the indirect network effects on the advertising site. In fact, most advertising-financed online magazines earn a large part of their gross margin from advertising (Evans and Schmalensee, 2005). In order to maximize their profits, these companies have an interest in attracting as many readers as possible. In addition to the quantity of the audience, the demographic characteristics of recipients also have an influence on the willingness to pay on the advertiser site.

The two-sided market structure of the private news market results in news platforms striving to choose their content in such a way that its reach is as large as possible in order to maximize profits from advertising revenues. Steiner (1952) concluded, that profit-maximizing media owners may choose to offer the same content, i.e. content aligned with the tastes of the majority. Gabszewicz, Laussel, and Sonnac (2001) study the problem of diversity of the political content of newspapers. They find that the maximum differentiation only prevails if the readers sufficiently value the political differentiation between the newspapers the advertising market is small enough. On the other hand, advertising may also have a positive impact on the media, as it enables publishers to report independently of political parties. Ellman and Germano (2009) analyze a theoretical framework of a two-sided market for newspaper, where readers value accuracy and advertisers value advert-receptive readers. They found that advertising increases the intensity of competition for readers and therefore raises accuracy of media coverage. However, in the monopolistic case, newspapers under-report news that sufficiently reduces advertiser profits.

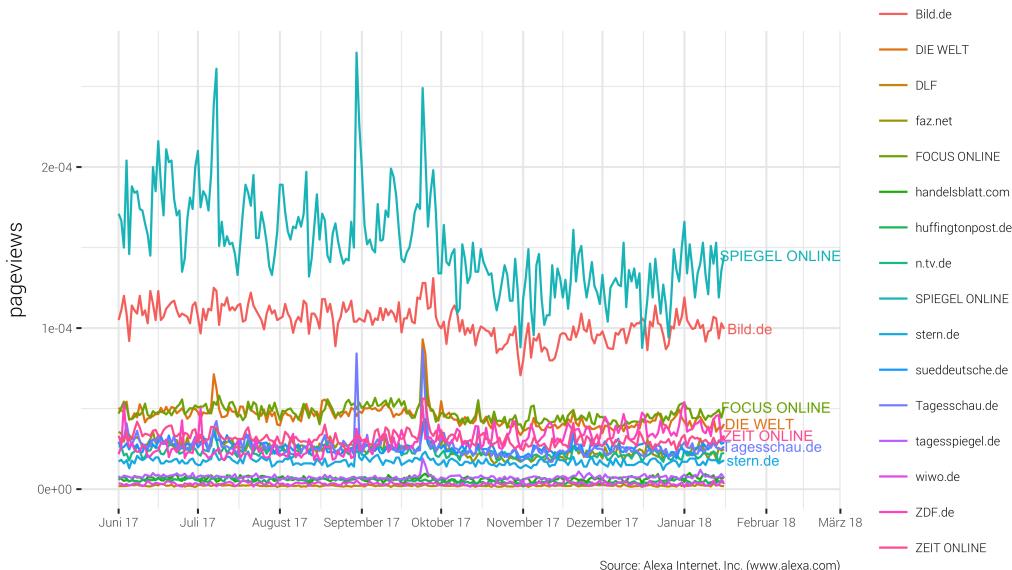
Given the crucial role of the media in shaping opinion and promoting democracy, pluralism of opinion and accuracy of information is a major concern of public authorities. Public broadcasting in Germany originated in the post-war period and has always had the task of providing the entire population with independent media. This media offer is intended to guarantee diversity of opinion within the media landscape and to be economically and politically independent. The former is given by the fact that the public media are financed by compulsory fees. To take into account the distinct nature of

digital media, the Interstate Broadcasting Agreement (Rundfunkstaatsvertrag) also regulates the scope for action of online services offered by public service broadcasting since 2007. Accordingly, public media are not allowed to distribute purchased content and must - depending on the category of content - set a time limit on its accessibility. In addition, there is a strict advertising ban and prohibition of regional reporting.

4 Dataset and data preparation

Figure 2 shows the largest providers of online news in terms of daily pageviews.² It is striking that SPIEGEL ONLINE has the greatest reach over the entire course of time followed by Bild.de. Public websites like Deutschlandfunk.de or Tagesschau.de have a rather small share in that market.

Figure 2: Percentage of daily pageviews



I conduct the estimation on a sample of 14,937 online news articles from seven news provider about domestic politics³, of which only Tagesschau.de belongs to the group of public provider. The reason for this is that the content

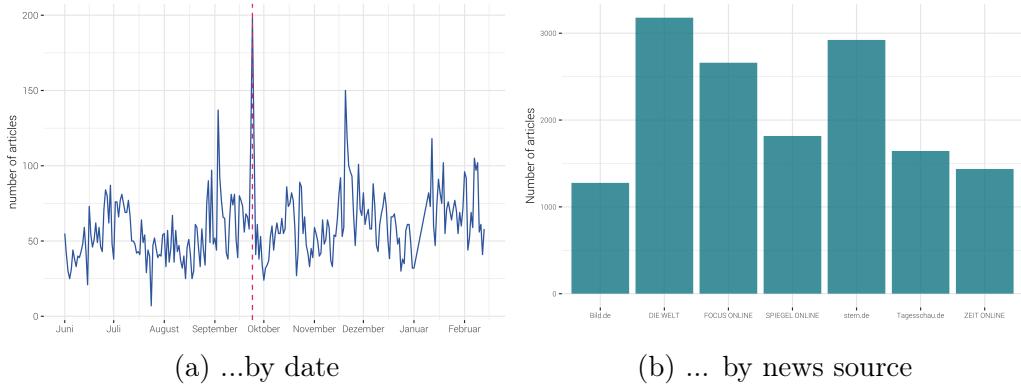
²The figure shows the estimated percentage of daily pageviews on the internet that occurred on a specific website.

³Bild.de, DIE WELT, FOCUS ONLINE, SPIEGEL ONLINE, stern.de, ZEIT ONLINE, Tagesschau.de

structure of Tagesschau.de is most similar to that of the private providers. ZDF.de offers predominantly video content and DLF website mainly offers audio content in the form of interviews, which makes it hard to include it in the model. The articles are dated from 01.06.2017 to 01.03.2018. I first extract all online articles using the the Webhose.io API.⁴ Then all articles from the section "domestic policy" are filtered by checking the URL structure.

Figure 3a shows the distribution of the number of articles from the respective news sources by date. There is a high peak around the federal elections on September, 24th.

Figure 3: Article distribution...



A central task in text mining is to extract low-dimensional information from documents that are high-dimensional by nature (Bholat et al., 2015). This is related to the task of reducing the number of unique language elements in order to reduce the dimensionality of data (to avoid unnecessary computational complexity and overfitting) while at the same time keeping those words that reflect the content of a document. Any useful representation of text will throw away some information, the trick is to include the relevant information for our needs, and exclude the extraneous information. A common strategy to use text as data and reduce the dimensionality, is to pre-process the text by imposing some preliminary restrictions (stop-word removal, tokenization) based on the nature of the data (twitter text, newspaper articles, speeches, etc.) to reduce the number of language elements (Gentzkow, Kelly, and Taddy, 2017). Intuitively the term frequency (tf) of

⁴For more information see <https://docs.webhose.io/v1.0/docs/getting-started>. The scraping code was written in Python and can be made available on request.

a word is a measure of how important that word may be. There are words in a document, however, that occur many times but may not be important like articles, conjunctions, and so on. These terms, often called "stop words", are important to the grammatical structure of a text, but typically don't add any additional meaning and can therefore be neglected. We use a pre-defined stop word list from the Snowball stemmer project⁵ together with a customized list of stop-words that are redundant superfluous or distorting. We also remove punctuation character (e.g. ., , !, ?, etc.) and all numbers from our corpus. After completing this steps we were left with 68.576 unique terms in our vocabulary.

After pre-processing, each document d is a finite list of terms. Each unique term in the corpus is indexed by some $v \in \{1, \dots, V\}$ where V is the number of unique terms. For each document $d \in \{1, \dots, D\}$ we compute the number of occurrences of term v in document d to obtain the count $x_{d,v}$. The $D \times V$ matrix \mathbf{X} of all such counts is called the document-term matrix. This representation is often referred to as the bag of words model, since the order in which words are used within a document is completely disregarded.

5 The structural topic model

The structural topic model (STM) developed by M. E. Roberts, B. M. Stewart, and E. M. Airoldi (2016) allows to incorporate document specific covariates (e.g. the author or date of a document). STM is a recent extension of the standard topic modeling technique, labeled as "latent Dirichlet allocation" (LDA), which refers to the Bayesian model in Blei, Ng, and Jordan (2003) that treats each word in a topic and each topic in a document as generated from a Dirichlet - distributed prior.⁶ Topic models formalize the idea that documents are formed by hidden variables (topics) that generate correlations among observed terms. Since its introduction into text analysis, LDA has become hugely popular and especially useful in political science.⁷ Wiedmann (2016) uses topic model methods on large amounts of news articles from two german newspapers published between 1959 and 2011, to reveal how democratic demarcation was performed in Germany over the past six decades. Paul (2017) compares editorial differences between media sources,

⁵http://svn.tartarus.org/snowball/trunk/website/algorithms/*/stop.txt

⁶See also Griffiths and Steyvers (2002), Griffiths and Steyvers (2004) and Hofmann (1999). Pritchard, Stephens, and Donnelly (2000) introduced the same model in genetics for factorizing gene expression as a function of latent populations.

⁷see Blei (2012), Grimmer and B. Stewart (2013) and Wiedmann (2016) for an overview in social science and Gentzkow, Kelly, and Taddy (2017) give an overview of text mining applications in economics.

using cross-collection latent Dirichlet allocation (ccLDA), an LDA-based approach that incorporates differences in document metadata. They use a dataset of 623 news articles from August 2008 from two American media outlets - msnbc.com and foxnews.com - to compare how they discuss topics. Reviewing the top words of the word-topic distribution, they find some content differences between the two.

STM has been applied to multiple academic fields: M. E. Roberts, B. M. Stewart, Tingley, et al. (2014) uses STM to analyse open-ended responses from surveys and experiments, Farrell (2016) applies the model to scientific texts on climate change, revealing links between corporate funding and the framing of scientific studies. Mishler et al. (2015) show that "STM can be used to detect significant events such as the downing of Malaysia Air Flight 17" when applied to twitter data. Another study shows how STM can be used to explore the main international development topics of countries' annual statements in the UN General Debate and examine the country-specific drivers of international development rhetoric (Bature, Dasandi, and Mikhaylov, 2017). Mueller and Rauh (2016) use newspaper text to predict armed conflicts in different regions. They use the estimated topic shares in linear fixed effects regression to forecast conflict out-of-sample. M. Roberts, B. Stewart, and Tingley (2016a) use STM to examine the role of partisanship in topical coverage using a corpus of 13,246 posts that were written for 6 political blogs during the course of the 2008 U.S. presidential election. With the aim of revealing the effect of partisan membership on topic prevalence, each blog is assigned to be either liberal or conservative. To explore the differences between the two, they look at the expected proportion of topic and examine the posts most associated with a respective topic. This approach is similar to M. E. Roberts, B. M. Stewart, and E. M. Airoldi (2016). They also use different measures of distance between the topic-word distributions of the same topic within different models.

5.1 Generative Process of STM

As mentioned above, the STM allows to incorporate observed document metadata which is able to affect both topical prevalence and topical content. The following description of the generative model - the process of filling a word-position in a document - of the STM is based on M. Roberts, B. Stewart, Tingley, and E. Airoldi (2013) and M. Roberts, B. Stewart, and Tingley (2016b). For each document d and a given number of topics K , a document-specific topic-prevalence vector $d(\boldsymbol{\theta}_d)$ is drawn from a logistic-normal distribution, where the parameters are a function of the covariate

values:

$$\boldsymbol{\theta}_d | \mathbf{x}_{d\gamma}, \boldsymbol{\Sigma} \sim \text{LogisticNormal}(\mu = \mathbf{x}_{d\gamma} \boldsymbol{\Sigma}). \quad (1)$$

$\mathbf{x}_{d\gamma}$ lists the values of all metadata covariates for document d , where γ relates these covariate values to the topic-prevalence. The structure of $\boldsymbol{\Sigma}$ implies the possibility of correlations across documents in the topic-prevalence vector.

According to θ , a specific topic z_{dn} is assigned for the n^{th} word-position in the document through the process:

$$z_{dn} | \boldsymbol{\theta}_d \sim \text{Multinomial}(\boldsymbol{\theta}_d). \quad (2)$$

Conditional in the topic chosen, a specific word, w_{dn} , is chosen from the overall corpus vocabulary V , using the following process:

$$w_{dn} | z_{dn}, \beta_{dkv} \sim \text{Multinomial}(\beta_{dk1}, \dots, \beta_{dkV}), \quad (3)$$

where the word probability β_{dkv} is parameterized in terms of log-transformed rate deviations from the rates of a corpus-wide background distribution m_v . The log-transformed rate deviations can then be specified by a collection of parameters $\{\kappa\}$, where $\kappa^{(t)}$ is a K -by- V matrix containing the log-transformed rate deviations for each topic k and term v , over the baseline log-transformed rate for term v . This matrix is the same for all A levels of covariates. To put it differently, $\kappa^{(t)}$ indicates the importance of the term v given topic k regardless of the covariates. Similarly, $\kappa^{(c)}$ is a A -by- V matrix, indicating the importance of the term v given the covariate level c regardless of the topic. Finally, $\kappa^{(i)}$ is a A -by- K -by- V matrix, collecting the covariate-topic effects:

$$\beta_{dkv} | z_{dn} = \frac{\exp(m_v + \kappa_{kv}^{(t)}, \kappa_{y_d v}^{(c)} + \kappa_{y_d k v}^{(i)})}{\sum_v \exp(m_v + \kappa_{kv}^{(t)}, \kappa_{y_d v}^{(c)} + \kappa_{y_d k v}^{(i)})}. \quad (4)$$

The STM maximizes the posterior likelihood that the observed data were generated by the above data-generating process using an iterative approximation-based variational expectation-maximization algorithm⁸ available in R's `stm` package (M. Roberts, B. Stewart, and Tingley, 2016b). The process gives us two posterior distribution parameter: (1) β is a K -by- V matrix (where K = number of topics and V = vocabulary), where the entry β_{kvc} can be interpreted as the probability of observing the v -th word in topic k for the

⁸A technical description of this maximization process can be found in M. E. Roberts, B. M. Stewart, and E. M. Airoldi (2016)

covariate level c . (2) θ is a D -by- V matrix of the document-topic distributions, where the entry θ_{dk} can be interpreted as the proportion of words in document d which arise from topic k , or rather as the probability that document d deals about topic k . These probability distributions are used to compare the content of public and private news providers in section 6.

5.2 Model and parameter selection

Inference of mixed-membership models, such as the one applied in this paper, has been a thread of research in applied statistics in the past few years (Blei, Ng, and Jordan, 2003) (Erosheva, Fienberg, and Lafferty, 2004) (Braun and McAuliffe, 2010). Topic models are usually imprecise as the function to be optimized has multiple modes, such that the model results can be sensitive to the starting values. Since an ex ante valuation of a model is hardly possible, I compute a variety of different models and compare their posterior probability. This enables me to check how results vary for different model solution (M. Roberts, B. Stewart, and Tingley, 2016a). I then cross-checked some subset of assigned topic distributions to evaluate whether the estimates align with the concept of interest (Gentzkow, Kelly, and Taddy, 2017). These manual audits are applied together with numeric optimization based on the topic coherence measure suggested by Mimno et al. (2011).

This process revealed that a model with 50 topics best reflects the structure in the corpus. Furthermore, the media outlet of the article is used as covariates in the topic prevalence and topical content. In other words, the corresponding newswire of an article influences the probability distribution of topics and how the topics are discussed. To address problems due to non-convexity, we rely on the spectral initialization approach advocated by M. Roberts, B. Stewart, and Tingley (2016a).

6 Empirical Evaluation

This section summarizes the results of the STM. Subsequently "the two T's" (Topic and Tone) of the corpus are analyzed according to the following approaches: (1) The document-topic probability θ is used, to estimate the conditional expectation of topic prevalence for given document characteristics (See section 6.1). A set of topics is selected, that most distinctly discuss a particular party or a topic related to the federal elections. (2) Articles that are assigned to the selected topics with the highest probability are then used to conduct a dictionary-based analysis (see section 6.2). In order to check whether the sentiment value of certain topics are correlated with the

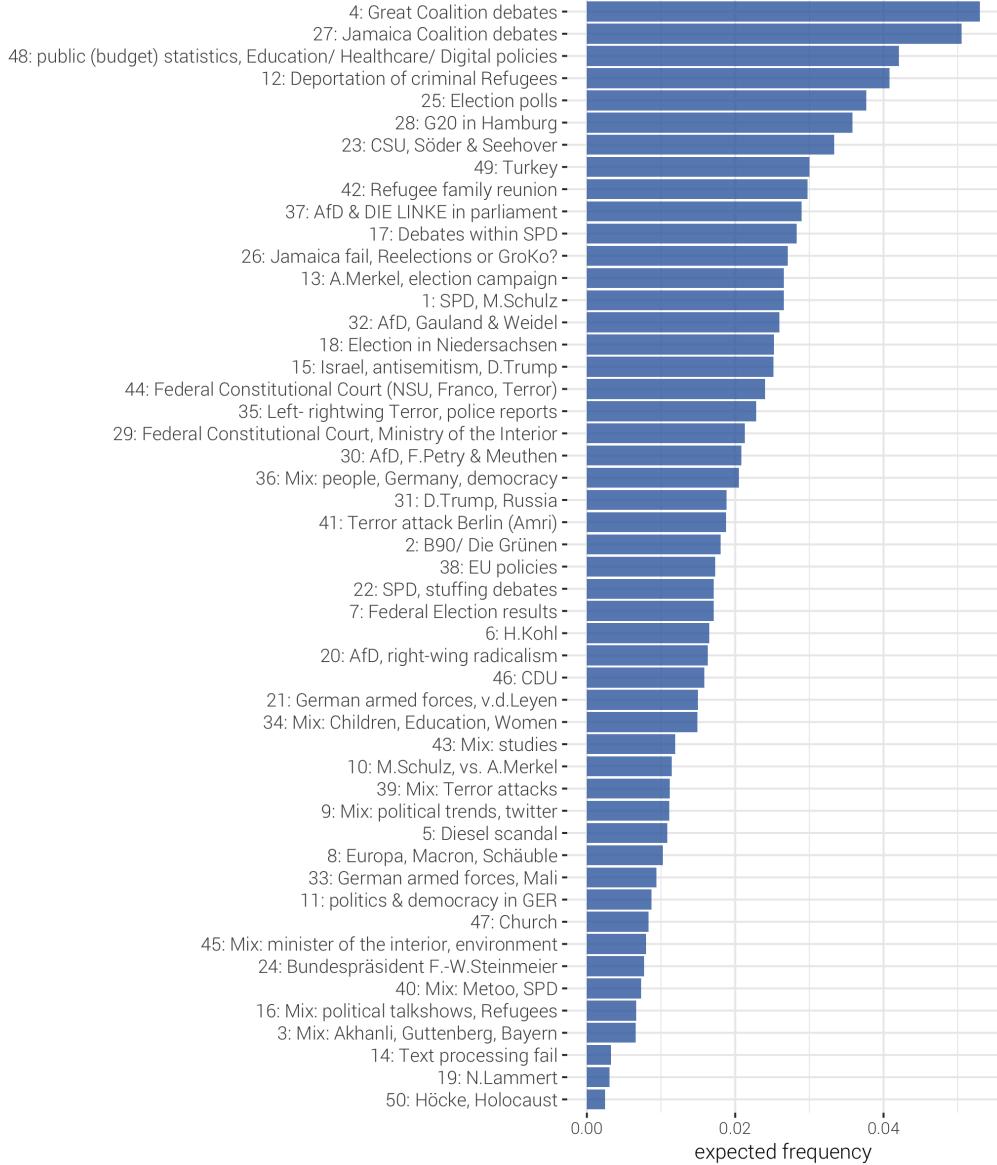
results of voting preferences, the cross-correlation function between these two concepts is calculated in 6.3.

6.1 Topic

In order to get an initial overview of the results, Figure 4 displays the topics ordered by their expected frequency across the corpus. To assign a label to each topic, I looked at the most frequent words in that topic and the most representative articles (M. E. Roberts, B. M. Stewart, and E. M. Airoldi, 2016).

It becomes apparent that the topic (topic 4) about the coalition talks between CDU/CSU and SPD - the "Grand coalition" or "GroKo" (from the German word Große Koalition) - is the topic with the highest expected frequency in the whole corpus, followed by the topic about the so-called Jamaica parties (CDU/CSU, FDP and B90/Die Grünen), which was the first alternative to be negotiated directly after the elections. The Figure also shows, that topics related to refugees in Germany (topics 12 and 42) are quite frequent within the corpus.

Figure 4: Expected topic proportion



We will select the following topics from the whole set (topics are ordered regarding their overall corpus frequency). The most frequent words of these topics can be seen in the appendix ??:

1. Topic 4: Covering the debates about the great coalition talks, mainly after the failure of the Jamaica coalition talks.

2. Topic 27: Covering the Jamaica coalition talks, mainly focusing on the smaller players Bündnis B90/Die Grünen and FDP.
3. Topic 23: About issues regarding the CSU, mainly about the competition between Horst Seehofer and Markus Söder and the negotiations with the CDU.
4. Topic 37: Covering debates of AfD and DIE LINKE in the parliament (Deutscher Bundestag).
5. Topic 17: Covering votes within the SPD, mainly regarding the vote about a possible coalition with CDU/CSU ("GroKo")
6. Topic 26: Discussing the failure of the Jamaica coalition talks and the two possible alternatives: Reelections or a great coalition.
7. Topic 13: About Angela Merkel, mainly right before the election.
8. Topic 1: About the SPD, mainly about the election campaign and Martin Schulz as candidate for the chancellor.
9. Topic 32: About the AfD, mainly about Alice Weidel and Alexander Gauland, voted as parliamentary party leaders after the resignation of Frauke Petry.
10. Topic 30: About the AfD, mainly about the resignation of Frauke Petry and Jörg Meuthen.
11. Topic 2: About B90/Die Grünen, mainly covering issues regarding the party's personell debates.
12. Topic 22: About SPD, mainly covering issues regarding the party's personell debates
13. Topic 20: About the AfD, mainly about their relation to right-wing extremist groups.
14. Topic 46: Covering issues regarding the CDU.

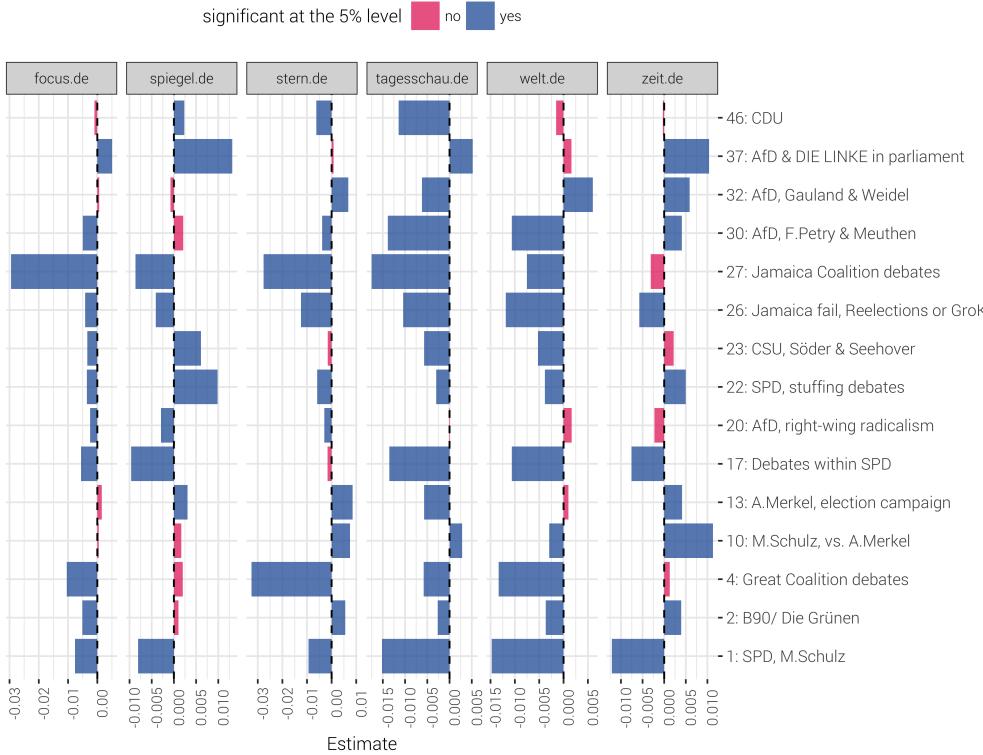
Next, the differences of topic prevalence for given document characteristics can be estimated (M. E. Roberts, B. M. Stewart, and E. M. Aioldi, 2016). More specifically, I estimate a linear model, where the documents are observations, the dependent variable is the posterior probability of a topic

and the covariates are the metadata of documents (see equation 5). The stm-package provides a function that uses the method of composition to incorporate uncertainty in the dependent variable, drawing a set of topic proportions from the variational posterior repeated times and compute the coefficients as the average over all results (M. Roberts, B. Stewart, and Tingley, 2016b).

$$\theta_d = \alpha + \beta x_{newswire} + \epsilon \quad (5)$$

Figure 5 shows the regression results for the above selected topics. The coefficients indicate the deviation from the base value of Bild.de. Starting from above it becomes apparent that the topic prevalence of topic 46 (regarding the CDU) is significantly less for Tagesschau.de and Stern.de. The other media do not show any significant difference to Bild.de for this topic. The opposite is true for topic 37: With the exception of Stern.de and DIE WELT, topic prevalence for this topic is significantly higher for all media than for Bild.de. With the following two topics on AfD it is striking that the topic prevalence at Tagesschau.de is significantly lower compared to Bild.de. The topics concerning the Jamaican coalition (topic 27) and the failure (topic 26) seem to be discussed most likely at Bild.de. The case is different for the CSU issue (Topic 23), where SPIEGEL ONLINE has the highest probability. The same applies to the topic related to the personnel debates of the SPD (22). However, Bild.de has the highest topic prevalence for the topic related to votes within the SPD, especially the vote on the grand coalition. The same applies to the topic regarding the SPD in general and Martin Schulz in particular (1). Overall, topics concerning the SPD seem to be more frequent at Bild.de than in the other media. Moreover, the distribution of topics at FOCUS ONLINE seems to be the most similar to that of Bild.de, while the biggest differences exist between Bild.de and Tagesschau.de.

Figure 5: Regression results



6.2 Tone

The sentiment analysis is conducted with those documents that are assigned to one of the above selected topics with the highest probability. A dictionary-based method is then applied on the remaining 5611 documents with the aim to measure the tone (or sentiment) of a document. The idea of a sentiment analysis is to determine the attitude of a writer toward the overall tonality of a document. To conduct such an analysis, a lists of words (dictionary) associated with a given emotion, such as negativity is pre-defined by the analyst. The document is then deconstructed into individual words and the frequencies of words contained in a given dictionary are then calculated.

Such lexical or “bag-of-words” approaches are widely presented in the finance literature to determine the effect of central banks’ monetary policy communications on asset prices and real variables (Nyman et al. (2018) (Tetlock, 2007), (Tetlock, Saar-Tsechansky, and Macskassy, 2008)). Hansen and McMahon (2016) use a similar approach to measure "the two Ts" (Topic and

tone). They explore the effects of FOMC statements on both market and real economic variables. To understand the multi-dimensional information a statement is transmitting, they apply LDA on a corpus of 142 FOMC decision statements split into sentences (topic). They then measure how the central bank is talking about that topic, using a dictionary approach (tone). To calculate their score, they subtract the negative words from the positive words und divide this by the number of total words of the statement. A similar score is used by Nyman et al. (2018), who measure the effect of narratives and sentiment of financial market text-based data on developments in the financial system. They count the number of occurrences of excitement words and anxiety words and then scale these numbers by the total text size as measured by the number of characters.

The present paper uses a dictionary that lists words associated with positive and negative polarity weighted within the interval of $[-1; 1]$. SentiWortschatz⁹, is a publicly available German-language resource for sentiment analysis, opinion mining etc. The current version of SentiWS (v1.8b) contains 1,650 positive and 1,818 negative words, which sum up to 15,649 positive and 15,632 negative word forms incl. their inflections, respectively. The sentiment score for each document d is calculated based on the weighted polarity values for a word, defined on an interval between -1 and 1. The score is then calculated from the sum of the words in a document (which can be assigned to a word from the dictionary) divided by the total number of words in that document:

$$\text{SentScore}_d = \frac{|\text{positive polarity score}_d| - |\text{negative polarity score}_d|}{|\text{TotalWords}_d|} \quad (6)$$

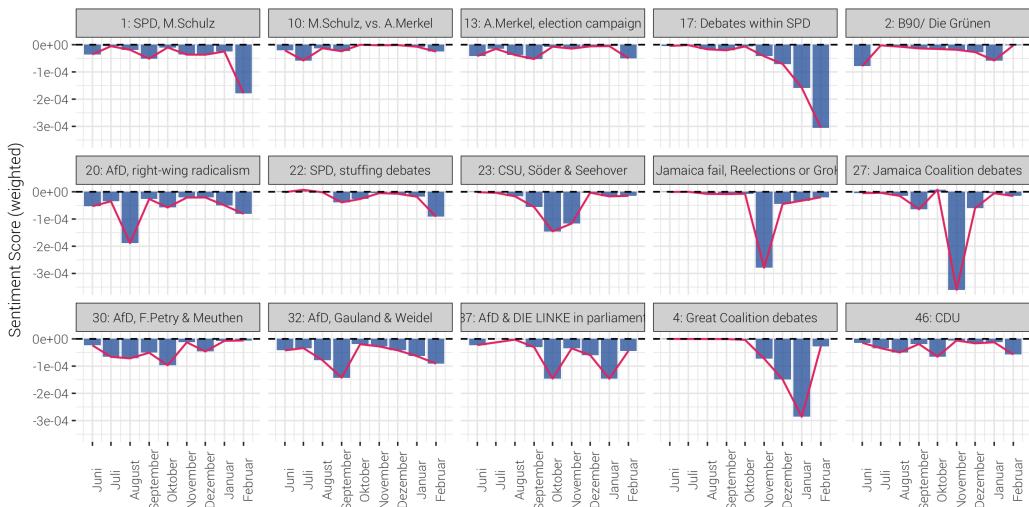
The following figure shows the results of the analysis for each topic on a monthly basis, aggregated on all newspaper. Each sentiment value is weighted by the relative share of the topic in the overall reporting of that month.

Some conclusions can be drawn from this illustration. First of all, it can be seen that, on average, all topics are discussed almost exclusively negatively. An exception is topic 27 concerning the Jamaica coalition negotiations, which shows a positive sentiment value for a short period of time (October 2017). In the following month (November 2017), after it became clear that there would be no coalition between the CDU/CSU, FDP and Die Grünen, the value of this topic as well as that of topic 26 drops rapidly, but then rises again in February. Concerning the issues that discuss the great coalition

⁹SentiWS for short. available here: <http://wortschatz.uni-leipzig.de/de/download>

between CDU/CSU and SPD, it is evident that the overall tone is in which this topic is discussed is generally decreasing from November 2017 to January 2018, but in the following February, the sentiment value of this topic rises. However, the sentiment score of topics that deal with the SPD (1, 17, 22) is diminishing in the course of time, with topic 17 recording the largest decline. For the other parties the process is rather zigzag-like.

Figure 6: Monthly Sentiment Score



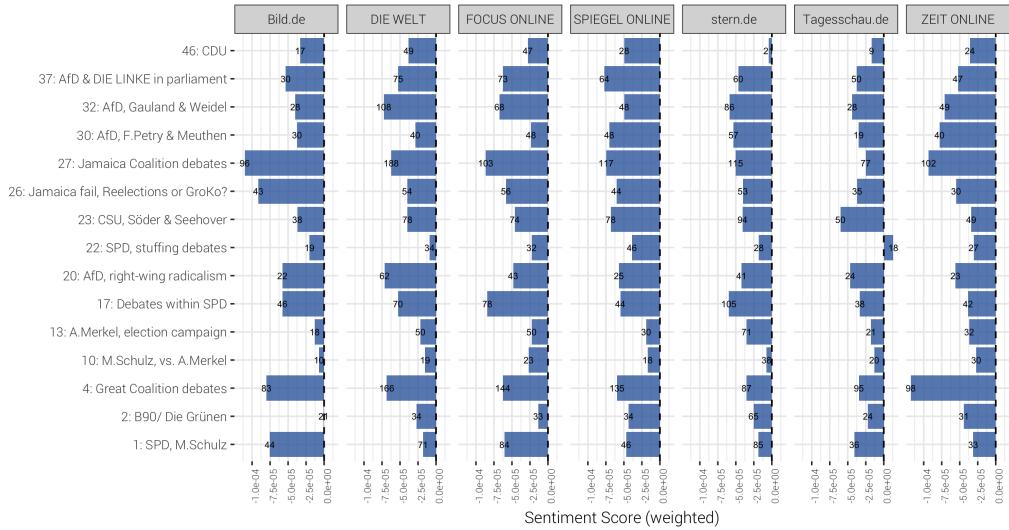
If aggregated by news provider, some differences between the sites are discernible (Figure 7¹⁰). To begin with, it can be noted that on average all topics are discussed negatively by all news providers, except topic 22, which mainly covers the personnel debates of the SPD and has a positive value at Tagesschau.de. One striking feature is the way in which the Jamaica negotiations and their failure are reported (topics 27 and 26). Although all providers discuss this topics in a negative light, Bild.de reports them particularly negative. The same applies to the reports on the grand coalition, where the value of ZEIT ONLINE is the most negative.

We use two different Figures to analyze the differences between the media outlets graphically: We use the bar plot to examine the polarity tendencies of the individual topics within a medium (7) and the radar plot to observe the differences between the media (8).

¹⁰The numbers reflect the number of observations.

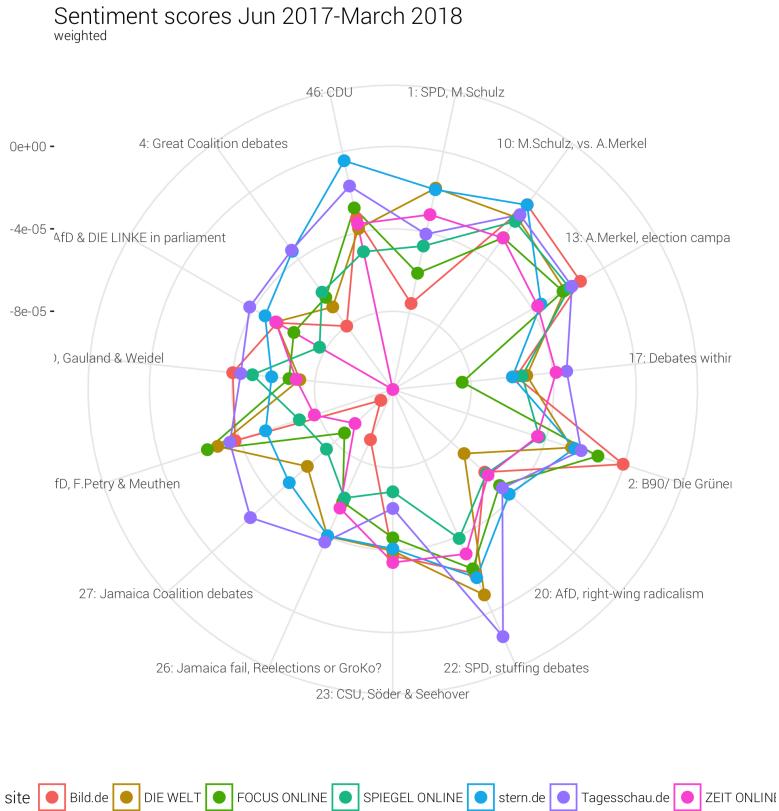
Starting with the bar plot it becomes apparent that all topics are discussed negatively, except topic 23 at Tagesschau.de. At Bild.de, the topics that include the coalition negotiations (26,27,4) and the SPD (1,17) are the most negative. The topics relating to AfD (20,30,32,37) are also discussed more negatively. Looking at the values of WELT ONLINE, two of the AfD topics have the most negative value (32.20). Topic 27 concerning the Jamaica Coalition (27) and the Grand Coalition (4) also score relatively negatively. Concerning FOCUS ONLINE, it is mainly topics that relate to the SPD (27, 17, 4, 1) that have a strong negative sentiment value, together with topic 32 and 37. Turning to SPIEGEL ONLINE, it is noticeable that the difference in sentiment value between the individual topics is less pronounced. Topics 13 and 10 stand out as comparatively less negative. However, these issues are also the least negatively discussed in the other media. Also at stern.de the difference in sentiment value is less significant and overall less negative. The topics regarding CDU (46) and Martin Schulz (10) score the most positively (or least negatively). Tagesschau.de is the least negative on most topics, or even once positive. However, this does not apply to topic 23 (CSU), where tagesschau.de is most negative in comparison to the other media. As with Bild.de, the issues relating to the coalition negotiations (27 and 4) also come off rather badly with ZEIT ONLINE. However, the issues surrounding AfD (30, 32, 37 and 20) are even more negative than at Bild.de.

Figure 7: Sentiment Score by news wire



A good overview of how differently the topics are discussed by the providers is shown in Figure 8. It gets evident that the sentiment value of the media differs most notably with regard to topic 27 and topic 4, i. e. the topics on which the coalition negotiations are reported. With regard to the Jamaica coalition, Bild.de reports the most and tagesschau.de the least negative. The reporting of ZEIT ONLINE concerning the grand coalition is the one with the most negative sentiment value and again Tagesschau.de, together with stern.de, the one with the value which is least negative. Furthermore, it becomes evident that the negative sentiment value of FOCUS ONLINE regarding topic 17 is high in relation to the other media. FOCUS ONLINE thus reports comparatively more negatively on the debates within the SPD. This includes in particular the vote on a possible coalition with CDU/CSU. For topic 1, which also deals with the SPD, the value of FOCUS ONLINE is rather negative, only undercut by Bild.de. Topics related to AfD do not show striking differences.

Figure 8: Sentiment Score by news wire



After the above figures have been analyzed, the following points can be summarized: (a) The sentiment value of the SPD is decreasing over time, especially in regard to internal votes. (b) The topics relating to the coalition talks on Jamaica (26, 27) and the grand coalition (4) are discussed rather critically, but they also show the greatest differences within the media. In contrast, the tonality of the topics in relation to the AfD shows rather small differences. (c) Overall, the sentiment value at Tagesschau.de is the least negative and only shows a comparatively strong negative value at topic 23, concerning the CSU.

6.3 News sentiment and poll data

This section seeks to examine the temporal association between sentiment reflected in online news content and phone survey poll results in Germany. Specifically, it aims to find the extent to which online sentiment and phone

survey results correlate. I use the data from the "Sonntagsumfrage" (Sunday survey) from infratest dimap¹¹. The institution regularly asks at least 1000 German citizens the question: "Which party would you choose if federal elections take place next Sunday?" The survey thus measures the current election tendencies and therefore reflects an intermediate state in the opinion-forming process of the electoral population.

Much of the research on online content and political trends have focused on traditional weblogs and social media websites, such as Twitter, Facebook, MySpace, and YouTube. These studies have shown that social media is used to spread political opinions and that these considerations reflect the political landscape of the offline world. Tumasjan et al. (2010) investigate Tweets between August 13th and September 19th, 2009, prior to the German national elections to examine whether Twitter messages reflect the current offline political sentiment and whether it can be used to predict the popularity of parties or coalitions in the real world. With regard to the later question, they compare the share of attention the political parties receive on Twitter with the election result to examine whether the activity on Twitter can serve as a predictor of the election outcome. They found that the number of tweets reflects the election result and even comes close to traditional election polls.

Fu and Chan (2013) use a corpus of online posts from discussion forums and blogs to examine the extent to which online sentiment reflected in social media content can predict phone survey results in Hong Kong. They build a sentiment classifier conducting a support vector machine analysis on a training set of 2,000 manually labeled posts. In order to evaluate the temporal relationship between the time series of the online sentiment score and the results of the telephone survey, a cross correlation analysis was conducted, using the Box and Jenkins autoregressive integrated moving average (ARIMA) method (Box, Jenkins, and Reinsel, 2008). Estimating the cross-correlation functions of the residuals, they find that online sentiment scores can lead phone survey results by about 8–15 days.

In a more recent conference paper, Padmaja, Fatima, and Bandu (2014) identify the scope of negation in news articles for two political parties in India (BJP and UPA) to analyze how the choice of certain words used in these texts influence the sentiments of public in polls. Comparing three different sentiment analysis methods (two machine learning and one dictionary method), they observe that the choice of certain words used in political text was influencing the Sentiments in favor of BJP. They conclude that this sentiment bias might be one of the causes for the election results in 2014.

In the present paper, the comparison between monthly average of both

¹¹<https://www.infratest-dimap.de/umfragen-analysen/bundesweit/sonntagsfrage/>

the sentiment value of individual topics and the survey value of the parties is calculated using the cross-correlation function. It is important to notice, that the results from this analysis will give an indication whether correlation between the two time series exist, but it does not give any evidence about the causal relationship. None of the following interpretation of the cross-correlation coefficients is intended to describe a causal relationship.

Based on the contemporary coefficients of the cross-correlation estimation shown in Figure 9, the most noticeable topics for each party are evaluated below. The AfD's survey results correlate negatively with topics relating to the SPD. The strongest positive correlation with regard to AfD-related topics can be found for topic 30. Since there are no isolated topics about the FDP, the issues surrounding the Jamaica negotiations are examined, which show a negative correlation. It is also striking that the poll results of the FDP correlate strongly negatively with the CSU topic (23). With regard to B90/Die Grünen, there is also a negative correlation to the Jamaica topics, however, it is slightly above the correlation-coefficient of the FDP. It is striking that there seems to be a strong negative correlation between the SPD issues and the poll results of the Left Party. Conversely, the survey results of the SPD correlate very positively with the SPD topics. The CDU's survey results correlate most positively with topics relating to coalition negotiations.

Figure 9: Cross-Correlation at lag 0



These results suggest that there is a link between the way parties are reported and the political trends within the population. It is obvious to assume that media reporting influences the electorate in its opinion-forming, even if this cannot be proven in this analysis.

7 Conclusion

The purpose of this paper was to examine (1) whether the political reporting of different content providers distinguishes itself and (2) whether this reporting has an influence on the opinion-forming process of the voters. Regarding (1) the analysis revealed that there are differences between the media considered, both in terms of topic prevalence and the way in which these topics are discussed. Although the issues are discussed negatively overall, there are still differences, especially regarding to the coalition negotiations. The smallest

differences can be found for topic concerning the AfD. With regard to (2), the analysis has shown that the tonality of topics discussed by the SPD shows a strong positive correlation to current survey results. For CDU/CSU, issues relating to the various coalition negotiations tend to correlate positively with the survey results. Overall, there seems to be a link between reporting on political issues and electoral preferences. Further research should focus on the exact causal relationships between these two concepts.

Appendix

1: SPD

Bild.de : schulz spd martin gabriel
partei merkel chef kanzlerkandidat
wahlkampf bundestagswahl wahl sigmar
angela politik andrea parteitag genossen
scholz berlin kanzlerin

focus.de : schulz spd martin partei
wahlkampf merkel kanzlerkandidat
schröder politik bundestagswahl
wahl chef scholz tv angela kanzler
sozialdemokraten chanc parteitag wochen

spiegel.de : schulz spd martin
kanzlerkandidat duell wahlkampf partei
tv bundestagswahl merkel politik
wahl sozialdemokraten umfragen chef
kanzlerkandidaten wochen herausforder
auftritt kanzler

stern.de : schulz spd martin duell tv
merkel kanzlerkandidat wahlkampf angela
septemb bundestagswahl berlin partei
herausforder wahl kanzlerin strunz
politik zdf sonntag

tagesschau.de : schulz spd partei martin
chef parteitag parteichef merkel scholz
kanzlerkandidat genossen opposit groko
juso müsse bundestagswahl brandt wahl
wahlkampf jahr

welt.de : schulz spd martin gabriel
kanzlerkandidat wahlkampf partei
merkel welt bundestagswahl wahl
sozialdemokraten berlin außenminist
duell chef heil wochen schröder
kanzlerkandidaten

zeit.de : schulz spd martin partei
wahlkampf kanzlerkandidat genossen
merkel berlin marcu chef glahn scholz
bundestagswahl sozialdemokraten
parteitag angela parteichef wahl gabriel

Figure 10

2: B90/ Die Grüne & DIE LINKE

Bild.de : grünen özdemir göring eckardt partei habeck wagenknecht cem wahlkampf parteitag lilli linken katrin grüne link chef wahl blome politik talk

focus.de : grünen özdemir grüne partei habeck göring eckardt cem parteitag linken robert flügel berlin realo katrin baerbock schleswig wahl trittin parteichef

spiegel.de : grünen özdemir habeck göring eckardt partei grüne parteitag katrin cem baerbock robert linken link flügel politik hofreit realo wahl koalit

stern.de : grünen özdemir grüne göring link eckardt partei cem parteitag linken rot habeck bundestagswahl wagenknecht katrin berlin koalit fdp grün spitzenkandidatin

tagesschau.de : grünen habeck partei özdemir top göring grüne wagenknecht eckardt parteitag baerbock linken flop cem linkspartei peter katrin parteichef robert rot

welt.de : grünen özdemir habeck partei linken göring eckardt rot grüne robert cem link parteitag grün katrin peter welt baerbock schleswig wagenknecht

zeit.de : grünen özdemir partei linken link göring habeck eckardt parteitag grüne cem hofreit katrin realo baerbock rot politik wagenknecht koalit peter

Figure 11

4: Great Coalition debates

Bild.de : spd union groko cdu csu koalit schulz koalitionsverhandlungen chef parteitag gespräch verhandlungen große großen martin sondierungen regierung berlin ergebnis partei

focus.de : spd union groko cdu koalit csu koalitionsverhandlungen schulz parteitag große verhandlungen chef großen sondierungen koalitionsvertrag gespräch sozialdemokraten partei martin stegner

spiegel.de : spd union cdu csu koalit groko koalitionsverhandlungen schulz parteitag verhandlungen politik großen sondierungen chef sozialdemokraten berlin große gespräch martin koalitionsvertrag

stern.de : spd union cdu csu verhandlungen koalit koalitionsverhandlungen schulz sondierungen groko berlin großen martin gespräch chef press merkel parteien große einigung

tagesschau.de : spd union cdu csu koalitionsverhandlungen koalit groko schulz verhandlungen chef sondierungen parteitag gespräch großen großen sozialdemokraten martin koalitionsvertrag partei parteien

welt.de : spd union koalit cdu csu groko koalitionsverhandlungen große schulz welt großen gespräch sondierungen verhandlungen chef parteitag martin sozialdemokraten berlin bürgerversicherung

zeit.de : spd union koalit cdu csu große koalitionsverhandlungen schulz großen parteitag verhandlungen chef koalitionsvertrag sondierungen gespräch partei juso sozialdemokraten martin kompromiss

Figure 12

10: Merkel vs. Schulz

Bild.de : schulz spd merkel martin duell kanzlerin deutschland tv thema flüchtling kanzlerkandidat angela rent wahlkampf zitat cdu eu cichowicz pflege union

focus.de : schulz spd thema duell merkel tv martin wahlkampf deutschland kanzlerkandidat kanzlerin herausforder flüchtling angriff frage union menschen cdu rent themen

spiegel.de : schulz spd martin merkel eu kanzlerkandidat deutschland europa duell thema italien kanzlerin tv flüchtlingskris maut flüchtling angela wahlkampf politik union

stern.de : schulz spd merkel martin kanzlerkandidat deutschland flüchtlingskris italien kanzlerin europa bildung union thema eu angela flüchtling cdu bundestagswahl berlin geld

tagesschau.de : schulz duell tv spd merkel thema siemen martin deutschland rent kanzlerkandidat herausforder maut menschen flüchtling chef konzern kanzlerin kaeser union

welt.de : schulz spd merkel martin duell deutschland thema tv flüchtling kanzlerkandidat cdu land welt stimmt kanzlerin türkei beitrittsverhandlungen italien angela union

zeit.de : schulz spd duell merkel martin tv kanzlerkandidat deutschland angela kanzlerin thema wahlkampf flüchtling eu themen union rent cdu bundestagswahl europa

Figure 13

13: A.Merkel

Bild.de : merkel kanzlerin angela cdu bundeskanzlerin union wahlkampf deutschland rede auftritt jahr politik bundestagswahl kanzleramt frage chefin tv zdf kurz spd

focus.de : merkel kanzlerin angela cdu bundeskanzlerin union deutschland thema frage wahlkampf menschen wahl jahr bundestagswahl abstimmung kurz jahren müsse politik spd

spiegel.de : merkel kanzlerin angela cdu bundeskanzlerin wahlkampf union chefin auftritt deutschland sebastian frage kanzleramt jahr zdf jahren thema berlin spd kurz

stern.de : merkel angela kanzlerin cdu bundeskanzlerin union wahlkampf deutschland abstimmung bundestagswahl menschen thema frage jahr september berlin spd wahlkampfauftritt rede politik

tagesschau.de : merkel kanzlerin angela cdu bundeskanzlerin thema chefin wahlkampf union abstimmung jahr deutschland kanzleramt brigitt forderung frage paar menschen stand bundestagswahl

welt.de : merkel angela kanzlerin cdu bundeskanzlerin deutschland union zdf duell wahlkampf tv welt regierung jahr frage sendung menschen peter jahren chefin

zeit.de : merkel angela kanzlerin cdu bundeskanzlerin wahlkampf union deutschland thema kritik frage menschen jahr jahren bundestagswahl spd kurz flüchtlingspolitik politik könne

Figure 14

Intra-party vote (SPD) about the coalition w C

Bild.de : spd schulz nahl groko gabriel partei chef koalit juso kühnert mitglied martin außenminist Kevin große andrea koalitionsvertrag sigmar parteitag union

focus.de : spd gabriel schulz außenminist partei sigmar juso koalit groko kühnert chef großen groß union martin mitglied amt nahl parteitag sozialdemokraten

spiegel.de : spd gabriel schulz partei mitglied außenminist koalit sigmar politik groko chef juso martin koalitionsvertrag sozialdemokraten große union großen parteitag regierung

stern.de : spd schulz gabriel koalit partei groko martin union chef großen juso parteitag sigmar großen außenminist koalitionsvertrag koalitionsverhandlungen kühnert sozialdemokraten mitglied

tagesschau.de : spd gabriel schulz partei koalit außenminist groko koalitionsvertrag chef großen martin große sigmar europa union nahl sozialdemokraten mitglied parteichef politik

welt.de : spd schulz gabriel partei welt koalit nahl mitglied groko juso koalitionsvertrag sigmar außenminist martin kühnert andrea chef großen große cdu

zeit.de : spd gabriel partei schulz sigmar koalit außenminist klingbeil martin union große großen parteitag juso sozialdemokrati mitglied chef bundestagswahl politik sozialdemokraten

Figure 15

20: AfD, Right-wing extremist tendencies

Bild.de : afd storch twitter facebook account plakat tweet partei politik beatrix maier schrieb amann wahlbetrug post weißig jahr wahlplak deutschland show

focus.de : afd tweet twitter facebook partei politik vw aktion schrieb storch montag gruppen jahr arpp vorwurf rechten erklärt volkswagen terror account

spiegel.de : afd vw hampel politik partei staatsanwaltschaft storch arpp rede volkswagen regierungserklärung konzern berlin vorwurf tweet affär strafanzeig landesvorstand bundesvorstand jahr

stern.de : afd vw facebook partei gruppen post hampel nrw storch antifa land berlin september landesverband niedersächsischen beatrix wahlkampf tweet vorwurf spd

tagesschau.de : afd account vw ndr twitter hampel fake arpp roth zitat partei suhren falsch ministerpräsid tweet informationen bystron becker regierungserklärung pörksen

welt.de : afd hampel pegida politik welt partei landesverband plakat landesvorstand parteitag niedersachsen niedersächsischen storch mecklenburg vorpommern bundesvorstand npd brief landeslist list

zeit.de : afd jahr beruf funktion früher mitgli partei unbekannt arpp orientierung nationalkonservativ berlin sachsen landesverband identitären höcke nordrhein cdu björn bayern

Figure 16

23: CSU, Söder vs. Seehover, refugee ca|

Bild.de : csu seehof söder horst bayern cdu chef union herrmann marku parteichef partei berlin ministerpräsid obergrenz bundestagswahl parteitag landtagswahl bayerisch jahr

focus.de : csu seehof söder horst obergrenz union cdu partei bayern chef berlin ministerpräsid bundestagswahl marku parteichef parteitag jahr landtagswahl bayerisch montag

spiegel.de : csu seehof söder horst cdu obergrenz union bayern partei berlin chef bundestagswahl ministerpräsid marku politik jahr bayerisch parteichef parteitag dobrindt

stern.de : csu seehof horst union cdu bundestagswahl obergrenz söder berlin chef bayern jamaika dobrindt partei ministerpräsid koalit grünen marku bayerisch alexand

tagesschau.de : csu seehof söder obergrenz horst union partei cdu berlin bundestagswahl chef bayern ministerpräsid marku bayerisch parteichef herrmann dobrindt offen parteitag

welt.de : csu seehof söder bayern horst cdu union obergrenz herrmann partei chef marku berlin bundestagswahl ministerpräsid bayerisch welt landtagswahl jahr parteichef

zeit.de : csu seehof obergrenz söder horst cdu union bayern chef partie ministerpräsid bundestagswahl bayerisch herrmann dobrindt berlin marku parteichef jahr landtagswahl

Figure 17

Reelections vs. Great Coalition after Jamaic

Bild.de : spd merkel jamaika neuwahlen
koalit grok minderheitsregierung
regierung bundestag schulz kanzlerin
angela union scheitern parteien große
chef cdu gespräch steinmeier

focus.de : koalit spd neuwahlen jamaika
merkel große minderheitsregierung
steinmeier union regierung grok
schulz scheitern bунdespräsid großen
verantwortung kanzlerin parteien partei
frank

spiegel.de : koalit spd jamaika merkel
neuwahlen minderheitsregierung große
gespräch steinmeier union regierung
schulz scheitern sozialdemokraten
bунdespräsid großen kanzlerin angela cdu
regierungsbildung

stern.de : spd koalit merkel
minderheitsregierung jamaika neuwahlen
steinmeier große regierungsbildung union
regierung großen schulz gespräch angela
bунdespräsid cdu grok kanzlerin chef

tagesschau.de : koalit spd jamaika
merkel minderheitsregierung
neuwahlen gespräch große steinmeier
regierungsbildung großen union scheitern
bунdespräsid schulz regierung parteien
chef parti gesprächen

welt.de : spd koalit jamaika neuwahlen
merkel minderheitsregierung scheitern
große gespräch steinmeier regierung
union schulz sondierungen neuwahl angela
chef großen cdu bунdespräsid

zeit.de : koalit spd merkel
minderheitsregierung jamaika große
scheitern regierung neuwahlen union
gespräch großen schulz neuwahl
regierungsbildung partei steinmeier
opposit cdu angela

Figure 18

27: Jamaica coalition talks

Bild.de : fdp grünen jamaika lindner
csu cdu union grüne chef koalit
parteien christian verhandlungen kubicki
sondierungen gespräch trittin liberalen
thema dobrindt

focus.de : fdp jamaika grünen lindner
csu union cdu christian chef parteien
grüne kubicki sondierungen verhandlungen
liberalen koalit gespräch partei bündni
deutschland

spiegel.de : fdp grünen lindner jamaika
csu cdu union sondierungen grüne chef
parteien christian politik koalit
kubicki gespräch liberalen trittin
partei thema

stern.de : fdp jamaika grünen lindner
csu cdu sondierungen scheitern koalit
union parteien gespräch christian
grüne chef deutschland neuwahlen berlin
abbruch partei

tagesschau.de : fdp grünen jamaika csu
lindner union cdu parteien sondierungen
grüne koalit chef verhandlungen gespräch
themen christian partei kubicki müsse
thema

welt.de : fdp grünen jamaika lindner
csu cdu welt sondierungen union grüne
christian gespräch parteien kubicki
chef koalit verhandlungen trittin thema
liberalen

zeit.de : fdp grünen jamaika lindner
csu union cdu grüne parteien koalit
christian sondierungen chef gespräch
kubicki sondierungsgespräch liberalen
verhandlungen partei thema

Figure 19

30: F.Petri, AfD

Bild.de : afd petri partei meuthen frau
gauland fraktion weidel höcke bundestag
bundesvorstand abgeordnet jörg parteitag
co pazderski sachsen landtag alexand
pretzel

focus.de : afd petri partei frau
fraktion meuthen höcke landtag immunität
sachsen gauland bundestag pretzel
austritt flügel bundestagswahl jörg
parteitag björn verlassen

spiegel.de : afd petri partei frau
meuthen fraktion gauland pretzel
bundestag sachsen landtag politik
bundestagswahl höcke weidel parteitag
poggenburg sächsischen bundestagsfrakt
fraktionschef

stern.de : afd petri frau partei
fraktion gauland meuthen bundestag
pretzel weidel bundestagswahl landtag
höcke alexand dresden austritt
vorsitzend chefin jörg alic

tagesschau.de : afd petri partei landtag
frau sachsen fraktion meuthen gauland
bundestag höcke staatsanwaltschaft
pegida dresden weidel sächsischen
poggenburg angekündigt alexand antrag

welt.de : afd petri partei
bundestagswahl bundestag berlin cdu
frau wahl fraktion meuthen ergebnis
gauland direktmandat parlament sachsen
deutschland kraft politik alexand

zeit.de : afd petri partei frau
fraktion gauland meuthen landtag
bundestag parteitag höcke sachsen weidel
septemb maier abgeordnet bundestagswahl
luck wahl immunität

Figure 20

32: Gauland, Weidel, AfD

Bild.de : afd gauland weidel alic parti
alexand deutschland spitzenkandidatin
politik sayn özoguz pazderski
spitzenkandidat zeitung land spd
wittgenstein demokrati bundestag zdf

focus.de : afd weidel gauland partei
politik alexand alic deutschland sendung
zdf moderatorin islam studio illner
parteien zeitung spitzenkandidatin
bundestag talkshow deutsch

spiegel.de : afd gauland weidel partei
özoguz politik alexand deutsch alic
deutschland rechtspopulisten stiftung
land rede höcke entsorgen aydan berlin
spitzenkandidat rechten

stern.de : afd gauland weidel partei
alic alexand deutschland özoguz höcke
deutschen spitzenkandidat deutsch
septem spieltkandidatin politikerin
entsorgen politik zdf äußerungen spd

tagesschau.de : afd gauland weidel
partei stiftung meuthen alic deutschland
alexand parteitag flügel höcke politik
facebook kandidaten pazderski gniffk
menschen stiftungen bundestag

welt.de : afd gauland weidel partei alic
welt höcke alexand deutschland politik
özoguz meuthen parteitag bundestag
stiftung wagner pazderski björn deutsch
rechten

zeit.de : afd gauland weidel partei
höcke alexand deutschland özoguz alic
altern politik äußerungen deutschen nazi
stiftung pazderski entsorgen deutsch
spitzenkandidatin meuthen

Figure 21

37: AfD in parliament

Bild.de : afd bundestag fraktion
abgeordneten wagenknecht abgeordnet
glaser fraktionen link parlament spd
fdp partei linken politik wahl sitzung
diäten gewählt cdu

focus.de : afd bundestag fraktion
abgeordneten abgeordnet linken link
schäUBL wagenknecht sitzung partei
parlament bartsch spd wahl politik
fraktionen glaser parteien antrag

spiegel.de : bundestag afd link
wagenknecht linken fraktion partei
politik abgeordnet parlament
abgeordneten kir glaser spd fraktionen
sahra sitzung fraktionschef wahl fdp

stern.de : bundestag afd fraktion
abgeordneten parlament abgeordnet
fraktionschef link spd fdp linken
fraktionen wagenknecht sitzung politik
schäUBL cdu bartsch wahl stimmen

tagesschau.de : bundestag afd fraktion
abgeordneten parlament sitzung
abgeordnet fraktionen glaser linkspartei
partei wahl gewählt kandidaten stimmen
wagenknecht fdp spd amt schäUBL

welt.de : afd bundestag fraktion
abgeordneten abgeordnet parlament link
fraktionen welt fdp spd partei antrag
cdu gewählt wahl politik sitzung stimmen
schäUBL

zeit.de : afd bundestag abgeordneten
abgeordnet fraktion link linken
partei glaser spd politik fdp sitzung
fraktionen wahl schäUBL parlamentarisch
cdu kip linkspartei

Figure 22

46: CDU, Spahn

Bild.de : cdu spahn maiziér politik
altmairer peter thoma jen innenminist
tillich geißler generalsekretär ziemian
sachsen kretschmer ministerpräsid
oppermann tauber minist partei

focus.de : cdu spahn tauber politik
jen peter generalsekretär altmairer
kretschmer tillich bosbach sachsen
difuhrth partei jahren schäubl wolfgang
union maiziér amt

spiegel.de : cdu spahn politik altmairer
sachsen partei jen generalsekretär
tillich peter kretschmer geißler
ministerpräsid kritik jahren tauber paul
günther union klöckner

stern.de : cdu spahn geißler
generalsekretär politik jen peter tauber
heiner twitter jahren altmairer partei
gysi berlin tot rheinland alter union
kretschmer

tagesschau.de : cdu spahn jen kabineett
tillich kretschmer politik tauber
sachsen berlin präsidiumsmigli peter
generalsekretär günther partei michael
jahren ministerpräsid staatssekretär
wahlkampf

welt.de : cdu spahn altmairer jen peter
politik welt tauber generalsekretär
kretschmer geißler partei laschet
kanzleramt sachsen ministerpräsid
sonntag maiziér amt politisch

zeit.de : cdu spahn sachsen tillich
politik geißler generalsekretär jen
kretschmer altmairer partei heiner
michael peter jahren ministerpräsid
finanzministerium politisch stanislaw
union

Figure 23