AfD parliamentarians on Twitter.
Reiterating the own message or setting media agendas?

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Contents

1 Introduction

Modern technology provides new channels of communication. These channels are used by politicians to broadcast their messages. One of the parties in Germany that seems to successful adapt these kind of technologies is the *Alternative für Deutschland* (AfD). It seems that the party regularly dominates the news because of their radical statements and unusual political communication. The party always underlines their distinctiveness compared to other parties and their strong connection to *the people*. In this paper I will review whether the communication of AfD parliamentarians on Twitter differs from other German politicians. I compare tweets through content analysis.

Additionally, recent literature in political communication shows the reciprocal relationships between newspapers and social media (Conway-Silva et al. 2018; Harder, Sevenans, and Van Aelst 2017; Rogstad 2016; Conway, Kenski, and Wang 2015; Jungherr 2014; Parmelee 2014; Neuman et al. 2014; Groshek and Groshek 2013; Broersma and Graham 2012). Based on the feeling that the AfD regularly dominates the news, I test if tweets by AfD parliamentarians affect the news coverage in newspapers. Thereby, I differentiate between offline and online media since scholars argue that the interconnection between online media and social media follow a much smaller attention cycle (Conway-Silva et al. 2018; Conway, Kenski, and Wang 2015; Groshek and Groshek 2013; Sayre et al. 2010; Lee, Lancendorfer, and Lee 2005).

In the end, I am able to answer the question whether the AfD parliamentarians are reiterating their own message or setting media agendas. I show that the AfD differs in some extend from the other parties. However, the analysis reveals that the AfD differs only throughout one major factor. The analysis also shows, that parliamentarians are rather driven by the newspapers than vice versa. The empirical evidence presented in this paper additionally supports the findings of numerous scholars.

2 Politicians and Twitter

2.1 Politics from One-to-Many

In the 1990s scholars supported the idea that online communication lowers the transaction costs for small parties, candidates and minorities and therefore enables an inclusive democratic discourse, known as equalization theory (cf. Coleman and Blumler 2009; Margolis and Resnick 2000). In contrast, the normalization theory states that proportion, conditions, relations and communication in the offline world are reflected in the internet (cf. Gibson, Lusoli, and Ward 2008; Schweitzer 2008).

Recent literature states that generally 90 percent of the Twitter communication is one way broadcast communication, rather than a dialog (Heil and Piskorski 2009). These findings are

reflected by empirical evidence in political communication research in the USA, UK and Germany (Harder, Sevenans, and Van Aelst 2017; Jungherr 2014; Graham et al. 2013; Jackson and Lilleker 2011; Golbeck, Grimes, and Rogers 2010). The authors agree that although Twitter has the potential for politicians to interact with constituents, that politicians use Twitter in a rather traditional way (Graham et al. 2013, p. 710; Jackson and Lilleker 2011, p. 87; Golbeck, Grimes, and Rogers 2010, pp. 1614, 1621). The authors underline that politicians who mostly tweet about themselves fit into traditional political communication patterns (Graham et al. 2013, p. 710; Jackson and Lilleker 2011, p. 87). Jackson and Lilleker (2011, pp. 100-101) find that Twitter is mostly used as a tool of self-promotion.

Recently, debates in Germany regularly talk about the role of the AfD, a party founded in 2013, within the news. According, to the normalization theory Twitter communication by parliamentarians belonging to the party should reflect the proportion, conditions, relations and communication of the real world. I, therefore, propose:

Hypothesis 1 *Tweets of parliamentarians belonging to the AfD do not differ substantially from other parties' parliamentarians' tweets.*

2.2   Media Agenda-Setting on Twitter

McCombs and Shaw (1972) provide the corner stone of empirical evidence for the agenda-setting function of mass media. The authors conduct interviews with Chapel Hill voters which are matched to the content of mass media (McCombs and Shaw 1972, pp. 177-178). They show that the voters salience corresponds with mass media content during the 1968 presidential campaign (McCombs and Shaw 1972). Since 1968 the public and media sphere has drastically changed due to the rise of *new media*, such as social networks. These changes are also reflected in communication research. According to McCombs (2004, p. 98), in the early 1980s scholars began studying how the media agenda itself is shaped.

Intermedia agenda-setting theory states that news organizations influence each others agenda-setting (McCombs 2004; McCombs and Shaw 1976). The theory states back to Breed (1955, p. 279) who describes the influence of major newspapers on local newspapers in the US as "arterial form". Studies on intermedia agenda-setting traditionally [1] compare the intersection of newspapers, radio and television (Vliegenthart and Walgrave 2008; Golan 2006; Lopez-Escobar et al. 1998; Roberts and McCombs 1994; Reese and Danielian 1989; Gilberg et al. 1980). Reese and Danielian (1989) show that some newspapers strongly influence the agenda of other newspapers in the USA. Roberts and McCombs (1994) find strong correlations between newspaper coverage at time 1 and television coverage at time 2. Confirming the results of Roberts and McCombs (1994), Lopez-Escobar et al. (1998, pp. 233-234) demonstrate that the newspaper

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[1]Every time, I speak of *traditional media* I refer to newspapers, radio and television.

agenda also influenced the television agenda during the 1995 Spanish Elections. Vliegenthart and Walgrave (2008, p. 867) find similar results for Belgium. Golan (2006, pp. 330-331) determines a correlation of international news coverage between the *New York Times* and *ABC*, *CBS* and *NBC*. The scholars agree that the television agenda is shaped more strongly by the newspaper agenda than the other way around (Vliegenthart and Walgrave 2008, pp. 867-868; Golan 2006, p. 329; Lopez-Escobar et al. 1998, pp. 233-234; Roberts and McCombs 1994, p ??).

Since the early 2000s scholars also focus on news sources in the internet (Meraz 2011, 2009; Sweetser, Golan, and Wanta 2008; Reese et al. 2007; Lee, Lancendorfer, and Lee 2005; Roberts, Wanta, and Dzwo 2002). Various scholars show that newspapers coverage influence *internet bulletin boards* content (Lee, Lancendorfer, and Lee 2005, pp. 67-68; Roberts, Wanta, and Dzwo 2002, pp. 459). More recent studies focus on blogs which may be interpreted as an evolution of bulletin boards (Meraz 2011, 2009; Sweetser, Golan, and Wanta 2008; Reese et al. 2007). The scholars find a strong support for the results of Roberts, Wanta, and Dzwo (2002) (Meraz 2011, pp. 184-185; 2009, pp. 701-702; Sweetser, Golan, and Wanta 2008, pp. 210-211; Reese et al. 2007, p. 257). In addition, Meraz (2011, p. 188) also observes a moderate influence of blog networks on traditional media's agenda. This evidence indicates a reciprocal relationship between traditional and social media.

Since Twitter is also called a *micro-blogging* platform, one may assume that Twitter and media agendas are also correlated. Recent empirical studies show that Twitter influences traditional news and vice versa (Conway-Silva et al. 2018; Harder, Sevenans, and Van Aelst 2017; Rogstad 2016; Conway, Kenski, and Wang 2015; Jungherr 2014; Parmelee 2014; Neuman et al. 2014; Groshek and Groshek 2013; Broersma and Graham 2012). The authors emphasize that the causal direction of the effect cannot be determined clearly (Harder, Sevenans, and Van Aelst 2017, p. 288; Rogstad 2016, p. 143; Neuman et al. 2014; Groshek and Groshek 2013, p. 24; Broersma and Graham 2012, p. 417). Additionally, some scholars find strong variations in the effects among different issues (Rogstad 2016, pp. 152-153; Conway, Kenski, and Wang 2015, p. 374; Neuman et al. 2014, p. 210; Groshek and Groshek 2013, p. 21). On top of issue related differences, Broersma and Graham (2012, pp. 417-418) underline regional differences between the UK and the Netherlands. According to the authors, the differences are based on competitive news and broadcast market in the UK (Broersma and Graham 2012, p. 417).

The presented empirical studies show that there is evidence that Twitter influences traditional mass media and the other way around. Although, it seems that the strength of the correlation depends on various factors, such as issue and region. Hence, I state:

Hypothesis 2 *Tweets by German parliamentarians influence and are influenced by offline newspapers.*

Recent studies additionally suggest that online media are more responsive compared to offline media (Conway-Silva et al. 2018; Conway, Kenski, and Wang 2015; Jungherr 2014;

Groshek and Groshek 2013; Sayre et al. 2010; Lee, Lancendorfer, and Lee 2005). Jungherr (2014, p. 254) stresses the possible different temporal dynamics of tweets compared to traditional media. Some scholars argue that relationship between online outlets is time wise much more compressed (Conway-Silva et al. 2018, p. 478; Lee, Lancendorfer, and Lee 2005, p. 69). This goes along with the idea that traditional media, online media and social media are participating in *source cycle* (Conway, Kenski, and Wang 2015, p. 374; Groshek and Groshek 2013, p. 21; Sayre et al. 2010, p. 9). Consequently, I argue:

Hypothesis 3 *Tweets and online media share interactions in a much small time frame compared to traditional media.*

While the presented studies provide a broader picture on the relationship between Twitter and media it does not provide an idea why and how journalists may use Twitter. Various studies show the extensive Twitter usage of journalists (Rogstad 2016; Parmelee 2014; Broersma and Graham 2012; Hermida 2010; Lewis, Williams, and Franklin 2008). Tweets are a source of "story ideas", "quotes", "alternative viewpoints", "background information" and a possibility to "double-check information in existing stories" (Parmelee 2014, p. 441). Some journalists compare the information value of tweets to official press releases (Parmelee 2014, p. 441). To understand why journalists heavily use Twitter, scholars mainly name the economic pressure of publishers (Parmelee 2014, p. 438; Broersma and Graham 2012, p. 417; Lewis, Williams, and Franklin 2008, p. 43). As a result, political tweets can be seen as direct information subsidies according to the definition of Gandy (1982, p. 62). Tweets differentiate strongly from traditional subsidies, such as press releases, since they are not only targeted to journalist, but also to the general public (cf. Parmelee 2014, p. 446). Hence, tweets may affect the public agenda directly and indirectly through there function as subsidies (cf. Parmelee 2014, p. 446).

The AfD are regularly featured in news due to extreme statements and positions. Following the logic that offline attributes are reflected online and that journalists seem to increasingly use Twitter, I forward:

Hypothesis 4 *AfD tweets will have greater success at setting the traditional and online media agenda than those by other parties.*

3   Method

To test whether the communication of the different parties differ tweets are collected using Twitter's stream application programming interface (API). Hypothesis 1 is tested using different descriptive measures. Additionally, I collect newspaper articles of major German newspapers from different archive services to test hypothesis 2 to 4. The hypotheses are tested using cross-correlations.

3.1   Case Selection

Revising the initial question about which issues German politicians are twittering it is difficult to decide which time period I should review. Recent literature indicates that the behaviour of politicians on Twitter during exceptional situations, such as elections, differs from their day-to-day social media behaviour (Graham et al. 2013, pp. 709-710). Based on this limitation I decide to review posts between March, 15th and May, 08th. The begin is marked by the election of Merkel as new chancellor. The time before Merkel's election should be perceived as irregular in the sense of Graham et al. (2013) since many Tweets are about collation forming and the probable failure of the government. Most empirical studies in Germany are conducted during election campaigns (cf. Jungherr 2016, 2014). I decide to choose a setup outside the election *hullabaloo* to analyze a baseline. This allows me to avoid influence by campaign media (cf. Conway, Kenski, and Wang 2015, p. 375).

3.2   Tweet Collection

The population includes all members of the *German Bundestag* (MdBs), the major German legislative chamber. Currently, the Bundestag is composed of 709 members. The MdBs are elected by a mixed system of constituency voting and list voting. I review all members with a Twitter account. Contemporary, 509 out of 709 representatives maintain a Twitter account.

Twitter offers different APIs which allow to query the Twitter database in a standardized way using the users programming language of ones choice. Twitter distinguished between two APIs – REST and stream API. The REST API enables to query the archive to access historical data. The stream API allows to access tweets in real time. I will use the filter functionality of the stream API to access all tweets that are tweeted by a MdBs. Retweets and replies are excluded.

I use the *twitterresearch* package by Jürgens and Jungherr (2016). The package provides an easy to use framework to access the stream API. Additionally, it can be easily extended with functionalities to save tweets in a relational-type database. The tweets are collected between March, 15th and May, 08th and directly saved in the database including all meta information for the analysis. The relational database eases the access throughout all applications included in the data generating process. In total, I collected 19,468 tweets in the relevant period.

3.3   Categories, Labelling and Reliability

The categories are derived from the *Comparative Agendas Project*.[2] Since the German coding schema is not public available to the date of study, I will use the coding schema developed

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[2]https://www.comparativeagendas.net/

for the European Union (Alexandrova et al. 2014). The codebook contains 21 general policy categories and over 250 subcategories (Alexandrova et al. 2014, p. 158). All categories are adopted except the category *[20] EU Governance and Government Operations*. The category is adjusted such as it includes all issues regarding the European Union. Additionally, I added a category called *None* including all tweets that cannot be categorized according to the original schema. The tweets are only labeled regarding the major category.

The tweets are labeled by a team of seven Master students all with a Bachelor degree in Political Science and deep knowledge of the German political landscape.[3] We use a self-written web application to categorize the tweets. A random sample of 100 Tweets is coded by all six coders to test inconsistencies. The reliability score for Fleiss' kappa (cf. Fleiss 1971, pp. 379-380; Conger 1980, pp. 324-326) is 0.64 which is "substantial" according to Landis and Koch (1977, p. 165).[4] In total, we categorized 10,735 out of 19,468 tweets which equals 55.14% of the total number of tweets.

3.4 Newspapers in Germany

Newspapers used in this paper are: *Bild*, *Frankfurter Allgemeine Zeitung* and *Die Welt*. The newspapers were chosen based on their circulation in the second quarter 2018 (Statista 2018) and their accessibility in various archives. The articles were collected using Nexis and Frankfurter Allgemeine Archiv. All archives included offline and online articles. I consider different analysis for offline and online sources. The articles were queried based on the combination of different queries. The queries are constructed by manually going through 100 tweets for each topic and selecting keywords.[5] Future research may take into account semi-automatic methods as introduced by King, Lam, and Roberts (2017).

Newspaper	Source	Circulation	# of observations
Bild	Nexis	1,643,510	302
Frankfurter Allgemeine Zeitung	Frankfurter Allgemeine Archiv	237,780	1,614
Die Welt	Nexis	164,441	2,380

Table 1: Newspapers used in this paper and their respective source and circulation. Additionally, the table includes the number of articles found offline and online overall topics.

In order to determine relations between tweets and newspaper mentions I use cross-correlation estimations (cf. Conway-Silva et al. 2018; Conway, Kenski, and Wang 2015). All time-series are corrected for trends and seasonal effects. Thereafter, the correlations between tweets by parliamentarians, separated by AfD and non-AfD, and offline and online newspaper mentions

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[3]Special thanks to Philipp Behrendt, Philipp Bien, Kilian Hampel, Moritz Junginger, Hanna Koepff, Tim Ostheimer and Johanna Washington who generously helped me to label all the tweets.

[4]A detailed overview of the single scores and an interpretation can be found in the appendix.

[5]The query for each category can be found in the appendix.

are calculated. As already stated by Conway, Kenski, and Wang (2015, p. 369), correlation does not imply causality but indicates a nonrandom relationship between the variables of interest.

4   Analysis

The analysis of the collected trace data is divided into two halves. First, I provide a short overview about the Twitter usage of the MdBs. The section shows how many members of the parliament tweet regularly and about which topics they talk. Second, I compare the interconnection between offline and online newspapers and politicians' tweets. I review how the offline and online outlets are related. Afterwards, I compare the difference of connection between offline and online newspapers and Twitter.

4.1   Twittering Parliamentarians

The German Bundestag consist currently of seven parties – *Alternative für Deutschland* (AfD)(2013), *B90/Die Grünen* (1979/1993), *Christlich Demokratische Union* (CDU)(1945), *Christlich-Soziale Union* (CSU)(1945), *Die Linke* (1989/2007), *Freie Demokratische Partei* (FDP)(1948) and *Sozialdemokratische Partei Deutschlands* (SPD)(1863).[6] Based on the year of founding I will refer to CDU, CSU, FDP and SPD as traditional parties and to AfD, B90/Die Grünen and Die Linke as younger parties. Independent parliamentarians are excluded due to a mistake in the data collection process. The missing politicians are: Frauke Petry and Mario Mieruch.

During the rise of social networks, such as Twitter, more and more politicians are using those for communication. Table 2 shows how many seats each party has in the *Deutsche Bundestag*, how many parliamentarians curate a Twitter account and how many of those accounts appear in the sample used in this paper.

Totally, 509 out of 709 parliamentarians have a Twitter account. This equals approximately 73% of the whole population. Approximately 90% of the members of the AfD and B90/Die Grünen and approximately 80% of the members of Die Linke, FDP and SPD possess a Twitter account. It should be noted, that approximately only 50% of the members of the CDU and CSU, who are known to be conservative, have an account. Table 2 shows that 407 accounts are included in the paper's sample which equals approximately 80%. The relatively small sample size of the AfD (68%) and CSU (70%) is maybe a result of the inactivity of some members who have an account but do not use the account regularly.

Table 3 shows the number of tweets included in the sample by party and the mean and median of tweets for each parliament of the party. Most tweets included are written by members of the SPD (2154) and B90/Die Grünen (2152). Very few tweets are authored by the CSU (143).

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[6]The first date indicates the founding of the party whereas the second date indicates the final formation of the party as today.

Party	# of candidates	# of twitter accounts	# of candidates in sample
AfD	92	84 (91.30%)	57 (67.86%)
B90/Die Grünen	67	62 (92.54%)	59 (95.16%)
CDU	200	101 (50.50%)	77 (76.24%)
CSU	46	23 (50.00%)	16 (69.57%)
Die Linke	69	55 (79.71%)	51 (92.73%)
FDP	80	65 (81.25%)	52 (80.00%)
SPD	153	119 (77.78%)	95 (79.83%)
Total	707	509 (72.99%)	407 (79.96%)

Table 2: Twittering candidates by party membership. The numbers in brackets indicate the percentages corresponding to the population in the column to the left.

Party	# of tweets	Cumulative percentages	Mean per candidate	Median
AfD	1,885	17.56	33.07	18
B90/Die Grünen	2,152	37.62	36.47	30
CDU	1,456	51.17	18.91	10
CSU	143	52.50	8.94	3
Die Linke	1,834	69.58	35.96	28
FDP	1,111	79.93	21.37	13
SPD	2,154	100.00	22.67	12
Total	10,735		26.38	16

Table 3: Frequency of tweets by party.

This is maybe caused by the small number of accounts owned by CSU parliamentarians, as seen in table 2. All other parties range between 1111 (FDP) and 1885 (AfD). The means range from 8.94 (CSU) to 36.47 (B90/Die Grünen). The medians range from 3 (CSU) to 30 (B90/Die Grünen). The old, traditional parties have continuously lower values compared to the younger parties. Hence, the younger parties seem to be more active on Twitter. Of particular note is the difference between mean and median of the AfD. CDU, CSU, FDP and SPD show lower discrepancies. B90/Die Grünen and Die Linke have a very small inconsistency. Generally, high differences indicate that very few people are responsible for many tweets. Whereas, a low difference implies that the ratio of people tweeting is really balanced.

Table 4 reinforces this impression. The table shows that approximately 13% of the parliaments are responsible for 46% of the total tweets in the sample. Whereas, 64% of the parliamentarians only wrote 1 to 24 tweets summing up to approximately 24% of all tweets. Hence, the sample reflects the results of other studies. Summarizing a small group of people are responsible for the major amount of communication on Twitter.

Table 5 shows the topic mentions for each party. Overall it should be noted that the number of tweets that could not be assigned to any topic equals 53.83%. The number of *None* varies

Tweets	# of parliamentarians	Cumulative per cent	# of postings	Cumulative per cent
1	21	5.16	21	0.20
2-9	120	34.64	681	6.54
10-24	120	64.12	1,909	24.32
25-49	91	86.48	3,141	53.58
50-99	38	95.82	2,552	77.35
100-199	15	99.51	1,932	95.35
>199	2	100.00	499	100.00
Total	407		10,735	

Table 4: Rate and distribution of tweets.

along all parties. The SPD accounts relatively for the most *None*s with 64.95%. 40 tweets can be refereed to Johannes Kars who tweets "moin"[7] nearly every morning. B90/Die Grünen accounts relatively for the lowest number of *None* tweets with 42.84%.

- Sau stark, Mädelz! Klasse gespielt, den Meister mit 28:18 geschlagen und den Aufstieg in die 3. Liga geschafft. Herzlichen Glückwunsch! (Frank Junge, SPD, 05-05-2018)

- Mit dem @europa_park Flieger von #Eurowings geht es von Berlin wieder nach Hause. Und dann zum Abschluss heute Abend nach #Beuron im #Donautal (Thomas Bareiß, CDU, 04-05-2018)

- Ist die Queen mit dem Propheten Mohammed verwandt? Historiker "glauben", dass sie eine Nachfahrin des Begründers des Islams ist, nachdem sie ihren Stammbaum 43 Generationen zurückverfolgten. Ob Frau Merkel...? https://t.co/xMG9SX1FP6 (Frank Pasemann, AfD, 08-04-2018)

The examples above show that most of the tweets deal with events in the electoral district, the time table of the parliamentarians and news that the parliamentarians want to share. Often these tweets come with links to additional websites and news outlets. Hence, more than half of all tweets do not have a direct link to political issues.

Table 6 displays the mean and median number of tweets per topic by party. *None* is excluded because it does not allow any classification and hence distorts the distributions. The table indicates the distribution of tweets between different topics. A low discrepancy between mean and median shows that the number of mentions across the different topics are equally distributed. Whereas, a high discrepancy between mean and median shows that there are a few topics with many mentions and more topics with a low number of mentions. The CSU was excluded from this analysis due to the small number of total tweets and accounts.

AfD, Die Linke and SPD show a high discrepancy. This indicates that they emphasize some topics and neglect many other topics. As expected, the AfD focuses on *Immigration*, *Civil*

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[7]*Moin* is a greeting typically used in northern Germany.

	AfD	B90/Die Grünen	CDU	CSU	Die Linke	FDP	SPD	Total
[0] None	1,049	922	903	89	807	610	1,399	5,779
[1] Macroeconomics	18	29	31	**8**	16	30	25	157
[2] Civil Rights, Minority Issues and Civil Liberties	116	**228**	**70**	7	167	60	**149**	797
[3] Health	7	73	31	1	33	22	53	220
[4] Agriculture and Fisheries	0	57	8	0	5	5	9	84
[5] Labour and Employment	16	53	29	3	64	21	52	238
[6] Education	20	26	19	2	17	12	23	119
[7] Environment	9	120	19	0	25	18	26	217
[8] Energy	8	61	9	0	22	8	16	124
[9] Immigration	**216**	47	22	1	56	12	15	369
[10] Transportation	22	88	27	0	12	**73**	37	259
[12] Law and Crime	119	46	57	3	98	31	35	389
[13] Social Policy	22	68	27	2	79	19	54	271
[14] Regional and Urban Policy and Planning	3	25	42	0	35	13	36	154
[15] Banking, Finance and Internal Trade	0	18	6	1	5	8	9	47
[16] Defence	40	24	19	4	96	28	23	234
[17] Space, Science, Technology and Communications	6	56	16	1	19	22	13	133
[18] Foreign Trade	3	24	18	5	3	14	5	72
[19] International Affairs and Foreign Aid	109	91	43	6	**213**	45	75	582
[20] EU related issues	46	54	31	**8**	20	38	52	249
[21] Public Lands, Water Management and Territorial Issues	2	1	6	0	5	2	0	16
[23] Culture and Media	54	41	23	2	37	20	48	225
Total	1,885	2,152	1,456	143	1,834	1,111	2,154	10,735

Table 5: Tweet topics by party. The tweets are labeled according to European Union coding schema of the *Comparative Agendas Project* (Alexandrova et al. 2014). The bold numbers indicate the highest number of mentions.

Party	# of tweets	Mean # of articles per topic	Median # of articles per topic
AfD	836	39.81	18
B90/Die Grünen	1,230	58.57	53
CDU	553	26.33	23
CSU	54	2.57	2
Die Linke	1,027	48.90	25
FDP	501	23.86	20
SPD	755	35.95	26

Table 6: Mean and median number of articles per topic by party. Tweets categorized as *None* are excluded.

Rights, *International Affairs and Foreign Aid* and *Law and Crime*. This is not surprising since a major focus of the AfD is immigration interconnected with causes of migration, laws on immigration and crimes by immigrants. The major topics of Die Linke are *Civil Rights*, *Defence* and *International Affairs and Foreign Aid*. This is also not surprising since Die Linke regularly criticizes international interventions and the stationing of the German military in foreign countries. The SPD seems mainly to focus on *Civil Rights*. This is surprising because the party was known to be a people's party along with the CDU. Hence, one would expect that the topics are wide spread. Table 5 shows that the SPD has also high mentions in their core topics *Health*, *Labour and Employment* and *Social Policy* but also in *Foreign Affairs*. Additionally, they have regular mentions throughout all other topics.

B90/Die Grünen, CDU and FDP show less difference between mean and median. The number of mentions are more regularly along the different topics. B90/Die Grünen tweets feature mainly *Civil Rights* and *Environment* but we can see high mentions among the other topics, too. B90/Die Grünen is the only party regularly tweeting about *Environment*. This is not surprising because the party was founded to encounter environmental issues. The CDU tweets mainly about *Civil Rights* and *Law and Crime*. Table 5 shows also a high number of tweets among the other topics. The FDP tweets often about *Transportation* and *Civil Rights*. This is not surprising since it is the Germans liberal party.

Summing up, the overall results support the findings support that parties use Twitter to reiterate their messages. The high number *None* tweets can mostly be seen as a proof of work than rather a dialog with citizens (cf. Jackson and Lilleker 2011, pp. 100-101; Golbeck, Grimes, and Rogers 2010, p. 1614, 1621). The analysis shows also that the size of German parties online do not reflect their actual offline capacity (Jungherr 2014, cf.). The Twitter behavior of AfD parliamentarians seems to be very similar compared to other parliamentarians. But there is one major difference between AfD and the other parties. Unlike the other parties, the AfD focuses strongly on one topic – immigration. While mostly all other tweets seem to be related throughout immigration. While we also find the core topics of each party reflected in Table 5 the other parties talk about other issues too without the recurring inference of their core topic.

This again supports the idea of reiteration. Therefore, hypothesis 1 can be verified.

4.2 Newspapers and Tweets

While the last section provided insights of the differences between the parties this section reviews the relation between the parties and newspapers. The main analysis will focus on the following topics: *[3] Health*, *[8] Energy*, *[9] Immigration* and *[18] Foreign Trade*.[8] The topics were chosen based on their number of subtopics. I compare the mentions on Twitter with the number of mentions in Bild, the Frankfurter Allgemeine Zeitung and Die Welt and their online outlets using cross-correlations shown in table 7. I differentiate between tweets by the AfD and those by other parties. Positive lags (> 0), also called leads, indicate that newspaper mentions correlate with parliamentarian's tweets when the tweet frequencies are shifted forward by a given number of days. Negative lags (< 0) indicate that newspaper mentions correlate with parliamentarian's tweets when the tweet frequencies are shifted backward by a given number of days. For example, a 1-day lead on *health* by AfD tweets shows that today's FAZ frequencies are correlated with the AfD tweets tomorrow. Furthermore, a lag of 0 indicates there are present-day correlations between newspapers mentions and tweets.

Health

The topic includes tweets about the health system, health insurance, diet and nursing care. As table 7 indicates there are several significant correlations between tweets and newspapers. The correlations are ambiguous. The table does not clearly indicate whether newspaper articles about health lead tweet mentions or vice versa. The direction of the correlation is also unassuming. Noticeable are the the moderate correlations at day-1 in FAZ ($\rho = 0.43$) and FAZ Online ($\rho = 0.31$). The values point out that today's tweets by non-AfD politicians about health lead to an increased number of articles about health in these outlets tomorrow. These findings are contradictory compared to day-1 in Die Welt ($\rho = -0.48$). The correlations between newspapers and AfD tweets are more unambiguous. Table 7 displays three weak to moderate correlations in leading days. I interpret Die Welt at day-0 as lead because the newspaper is edited the night before. The leads range between $\rho = 0.29$ and $\rho = 0.45$. This means that newspaper yesterday's and today's mentions about health increase the number of AfD Twitter mentions tomorrow. The findings contradict H4. It seems that the AfD does not set the media agenda in health issues. On the contrary, the correlations indicate that FAZ Online and Welt Online lead AfD tweets. A distinct difference between online and offline media is not evident. Hence, H2 is confirmed but H3 cannot be confirmed for health issues.

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[8]Example tweets for all four topics can be found in the appendix.

Newspaper	Lag/Lead	Health		Energy		Immigration		Foreign Trade	
		Twitter w/o AfD	Twitter AfD	Twitter w/o AfD	Twitter AfD	Twitter w/o AfD	Twitter AfD	Twitter w/o AfD	Twitter AfD
Bild.de	-3	-0.24	-0.12	-0.18	0.05	0.00	-0.10	-0.15	-0.01
	-2	-0.07	0.25	-0.24	0.05	-0.11	-0.10	-0.21	**-0.34**
	-1	-0.01	-0.01	-0.05	0.03	-0.22	-0.03	0.26	-0.04
	0	0.14	-0.19	**0.41**	-0.07	-0.02	0.16	0.23	0.19
	1	-0.04	-0.05	0.02	-0.19	0.26	0.19	-0.09	0.13
	2	-0.19	0.21	-0.03	0.05	0.11	-0.24	-0.16	0.17
	3	0.03	0.06	-0.09	-0.01	0.12	-0.04	0.07	-0.26
Bild	-3	0.00	0.20	**-0.31**	0.02	0.16	0.00	**0.38**	0.22
	-2	-0.10	-0.03	-0.11	0.22	0.19	0.03	-0.12	-0.07
	-1	0.15	0.22	0.05	0.07	**-0.28**	-0.15	0.26	0.11
	0	-0.05	**-0.29**	0.11	-0.26	-0.07	0.10	-0.24	-0.11
	1	**0.34**	0.16	-0.08	-0.14	0.14	-0.09	0.05	0.26
	2	-0.16	-0.18	-0.03	0.06	0.14	0.14	-0.04	-0.08
	3	-0.09	-0.14	0.05	0.12	-0.10	0.03	0.05	-0.08
FAZ Online	-3	-0.19	0.03	**0.32**	-0.24	-0.06	-0.09	-0.11	0.20
	-2	-0.01	-0.12	-0.15	-0.07	-0.05	-0.07	-0.26	-0.25
	-1	**0.43**	0.11	-0.17	0.16	0.04	0.21	-0.11	-0.21
	0	0.03	-0.09	0.07	0.24	**0.29**	-0.02	0.25	0.25
	1	**-0.33**	-0.06	**0.29**	-0.17	-0.16	0.02	0.23	0.13
	2	0.11	**0.40**	-0.03	-0.21	-0.18	-0.11	-0.09	-0.07
	3	-0.09	-0.07	-0.17	0.11	-0.15	-0.06	**-0.33**	-0.12
FAZ	-3	-0.04	0.25	-0.01	0.11	0.23	-0.09	0.21	0.03
	-2	**-0.42**	-0.08	0.25	0.07	0.08	-0.10	0.03	**0.30**
	-1	**0.31**	-0.05	0.13	-0.03	**-0.33**	0.05	0.05	0.02
	0	0.11	0.11	-0.05	-0.05	-0.01	0.19	**-0.31**	-0.21
	1	0.13	-0.28	-0.12	-0.20	0.28	0.04	-0.01	0.11
	2	**-0.35**	0.26	-0.09	-0.07	0.15	-0.02	0.05	-0.26
	3	0.17	0.08	-0.13	0.20	-0.26	-0.22	0.24	0.14
Welt Online	-3	0.06	0.05	0.12	-0.19	0.10	-0.18	0.23	0.24
	-2	-0.07	**-0.38**	-0.05	-0.03	**-0.37**	-0.19	0.07	0.02
	-1	-0.20	-0.01	0.18	-0.11	-0.12	0.16	-0.25	-0.07
	0	-0.07	0.11	-0.06	0.13	0.23	0.20	0.03	0.19
	1	-0.05	**0.45**	0.05	-0.02	**0.53**	0.19	0.05	0.02
	2	0.13	-0.13	-0.03	**0.30**	-0.20	**-0.32**	0.11	-0.10
	3	0.05	0.00	0.02	-0.14	-0.17	0.00	-0.05	-0.15
Die Welt	-3	0.00	**-0.34**	-0.22	0.10	0.20	-0.14	0.16	0.07
	-2	0.09	0.13	0.17	**-0.30**	-0.02	0.08	-0.11	-0.20
	-1	**-0.48**	-0.15	0.03	**-0.30**	**-0.33**	0.13	**0.28**	0.07
	0	-0.02	**0.29**	0.08	**0.43**	0.26	0.21	-0.23	-0.09
	1	0.18	0.14	0.10	0.02	0.10	0.19	0.00	**0.32**
	2	-0.06	0.00	-0.05	-0.15	0.05	-0.01	0.07	0.08
	3	0.19	-0.01	-0.19	-0.26	**-0.39**	-0.23	0.11	-0.06

Table 7: Cross-correlations between newspapers and party tweets. Significant estimates are bold.

Energy

The topic includes mainly tweets about energy transition, grid development, sustainable energy supply and nuclear power. Table 7 shows only a few correlations between newspaper mentions and parliamentarians' tweets. Bild.de shows a moderate same-day correlation ($\rho = 0.41$) with non-AfD tweets. FAZ Online shows a ambivalent relation. There are significant correlations on day-3 ($\rho = 0.32$) and day+1 ($\rho = 0.29$). The findings from Bild.de and FAZ Online slightly support H3. It seems that online media are responsive to energy tweets posted by non-AfD parliamentarians to a certain extend. AfD tweets about energy only significantly correlate with Die Welt. The Welt Online correlation ($\rho = 0.30$) at day+2 indicates that yesterdays articles influence tomorrows tweets by the AfD. This contradicts H3. Die Welt correlations are ambiguous. The negative lags show a negative relationship between newspaper articles and tweets. This means that yesterdays tweets decreases today's and tomorrow's number of mentions in Die Welt. The positive lag ($\rho = 0.43$) at the same-day indicates that articles about energy published in Die Welt increases the number of tweets about energy. Overall, a significant difference between online and offline media is again not clearly evident. Hence, H2 is confirmed but H3 cannot be confirmed for energy issues.

Immigration

The topic contains mostly tweets about refugee and migration policies, crimes related to immigration and government actions in relation to immigration. There are two positive correlation between tweets by non-AfD parliamentarians and newspapers. FAZ Online has a moderate same-day correlation ($\rho = 0.29$). This support H3. This is contradicted by the day-1 lead of Welt Online ($\rho = 0.53$). This relationship indicates that a higher frequencies of newspaper articles lead to a increased number of tweets about immigration. Furthermore, table 7 shows several negative correlations at day-1. These values indicate a that a higher number of tweets about immigration yesterday lead to a decreased number of articles in Bild, FAZ and die Welt. Only one correlation between tweets by the AfD and newspaper articles is significant. Welt Online shows a negative, day+2 correlation ($\rho = -0.32$) which demonstrates that yesterday's number of articles decrease the number of tweets tomorrow. While the correlation between FAZ Online and tweets by non-AfD politicians supports H3 the other correlations neither support H2, H3 nor H4.

Foreign Trade

The topic contains mainly tweets about trade agreements, punitive tariffs, free trade and the WTO. Table 7 contains two positive correlations between Bild ($\rho = 0.38$), Die Welt ($\rho = 0.28$) and tweets by non-AfD parliamentarians. These correlations indicate that more tweets by politi-

cians result in more articles about foreign trade in the upcoming days. Since both newspapers are offline outlets the values confirm H2. The correlations for the relationship between AfD tweets and newspapers are very ambiguous. FAZ has moderate, day-2 correlation ($\rho = 0.30$) which indicates that yesterday's tweets influence the number of articles tomorrow. Whereas, Die Welt shows a moderate, day+1 correlation that indicates that today's number of newspaper articles increases the number of tweets about foreign trade tomorrow. Latter supports H2. Again the correlations do not provide any clear support for any of the hypotheses.

Summary

The overall results are very ambiguous. Hypothesis 2 is confirmed as table 7 shows reciprocal relations. Hypothesis 3 is falsified. There is only one correlation that supports the idea of short time interaction between online media and tweets. Furthermore, I do not find any support for hypothesis 4. It seems that AfD politicians are not able to set the media agenda throughout Twitter. Generally, it appears that the AfD follows the media agenda. The table shows different cases where newspaper mentions lead the number of AfD tweets.

5 Discussion

Political communication has changed in the last decade with upcoming technologies like Twitter. These technologies provide new channels of communication (cf. Graham et al. 2013; Jackson and Lilleker 2011). Young parties such as the AfD and B90/Die Grünen have already adapted to these new channels. The above analysis provides insights how party members use the newly gained possibilities.

The analysis shows that many tweets cannot be categorized according to the *Comparative Agenda Project*. As shown throughout the analysis, these tweets contain information about the daily work of the politicians. This goes along with older findings by Jungherr (2014), Jackson and Lilleker (2011), and Golbeck, Grimes, and Rogers (2010). However, the communication of the AfD and the other parties differs in one substantial point. The AfD tweets mostly about immigration and related topics. Other topics are mostly not visible within the communication. There are two possible explanations for this pattern. First, since the AfD is still a young party a lot of positions about certain topics are not resolved within the party. Hence, the party communicates only resolved issues. Second, the party believes that *immigration* is the prior topic to gain votes. Hence, they concentrate on this issue to win elections.

The results of the cross-correlation analysis show that the relationship between newspapers and Twitter is under no circumstances unidirectional. The results confirm the reciprocal relationship as found by different scholars (Harder, Sevenans, and Van Aelst 2017, p. 288; Rogstad 2016, p. 143; Neuman et al. 2014; Groshek and Groshek 2013, p. 24; Broersma and Graham

2012, p. 417). Noticeable is also that the lag/lead and correlations strength vary along the different topics. Similar results are found in recent publications (Rogstad 2016, p. 152-153; Conway, Kenski, and Wang 2015, p. 374; Neuman et al. 2014, p. 210; Groshek and Groshek 2013, p. 21). A short time relationship as found in different papers is not confirmed (Conway-Silva et al. 2018; Lee, Lancendorfer, and Lee 2005). Whereas, the different time points, offline and online, suggest a source cycle (Conway, Kenski, and Wang 2015; Groshek and Groshek 2013; Sayre et al. 2010).

Lastly, the cross-correlation analysis shows clearly that the AfD follows the newspaper agenda and not the other way around. Hence, the news agenda is clearly not affected by AfD parliamentarians' tweets and hypothesis 4 is diminished. To answer the introductory question whether AfD parliamentarians are reiterating the own message or setting the media agenda I say that the results indicate that parliamentarians are only broadcast their message without affecting newspaper outlets.

While this paper provides interesting insight about German parliamentarians Twitter behavior and the relationships between newspapers and Twitter the results go along with certain limitations. Parmelee (2014) shows that nowadays journalists rely heavily on Twitter. While this probably indicates a direct relationship between tweets and newspaper articles the relationship may also result from third variables, such as Facebook or television (cf. Conway, Kenski, and Wang 2015, p. 375). The correlations shown do not necessarily indicate causality. Hence, the results cannot be generalized but quest for verification.

Future research should include additional media systems, such as Facebook and television news. A detailed overview about the characteristics of the German media system are important for the understanding of the reciprocal relationships (cf. Broersma and Graham 2012, pp. 417-418). In this respect, public broadcasting services and their broad offers should be taken into account. Additionally, future intermedia research should review a larger time frame to increase statistical significance. Finally, it is important that the research design always accounts and reflects the reciprocal relationships and the idea of source cycles.

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Appendix

Inter-coder Reliability

Landis and Koch (1977, p. 165) rate a value < 0.00 as "poor", $0.00 - 0.20$ as "slight", $0.21 - 0.40$ as "fair", $0.41 - 0.60$ as "moderate", $0.61 - 0.80$ as "substantial" and $0.81 - 1.00$ as "almost perfect".

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
[1]	1.00							
[2]	0.62	1.00						
[3]	0.66	0.64	1.00					
[4]	0.65	0.76	0.69	1.00				
[5]	0.57	0.60	0.66	0.65	1.00			
[6]	0.73	0.60	0.63	0.60	0.66	1.00		
[7]	0.71	0.69	0.66	0.78	0.56	0.69	1.00	
[8]	0.58	0.55	0.56	0.52	0.60	0.61	0.58	1.00

Table 8: The intercoder reliability between each coder where each digit describes one coder. I use Conger's adjustment of Fleiss' Kappa to calculate the reliability among coders (Fleiss 1971, pp. 379-380; Conger 1980, pp. 324-326).

Categories: Newspaper Queries and Tweets

[3] Health

Query: Pflege OR Gesundheitssystem OR Krankenversicherung OR Privatversicherung OR Kassenpatienten OR Landarzt OR Hebame
Sample tweets:

- IGEL Leistungen sollten wir verbieten. Die sinnvollen sollten von den Kassen erstattet, die meisten anderen gestrichen werden. Schaden im Durchschnitt mehr als sie helfen und kosten Geld. Patienten machen nur mit weil sie sich beim Arzt schämen abzulehnen.
  – Karl Lauterbach (SPD), 03-05-2018

- Wie umgehen mit Zucker, Fetten und Tabak mit Blick auf Gesundheit unserer Bevölkerung? Diese und andere Themen diskutieren wir auf dem Gesundheitsministerrat der EU in Sofia. #europa
  – Jens Spahn (CDU), 23-04-2018

- Heute war ich im Gemeinschaftskrankenhaus #bonn und habe mich über die Situation der Pflege informiert. Es ging um Bezahlung und Arbeitszeitmodelle, Ausbildung und vor allem um Anerkennung einer immens wichtigen Tätigkeit - Danke für die Einblicke #PflegeStärken
  – Katja Dörner (B90/Die Grünen), 08-05-2018

[8] Energy

Query: Atomkraft OR Erneuerbare OR Tihange OR Atomausstieg OR Energiewende OR Kohlekraft OR Kohleausstieg
Sample tweets:

- Bündnis #Bürgerenergie @bundnis hat @campact Petition gestartet: BuReg soll Blockade in Brüssel gegen dezentrale #Energiewende stoppen & Vorschlag d EuropäischenParlaments folgen - mehr Rechte f #Prosumer! #Eigenverbrauch #Mieterstrom @BSWSolareV @GreensEP
  – Julia Verlinden (B90/Die Grünen), 29-03-2018

- Heute hatte ich meine erste Rede vor dem Bundesrat. Es ging um den #Netzausbau und die #Energiewende. @bundesrat #Strom
  – Thomas Bareiß(CDU), 27-04-2018

- Die #Energiewende wird zu einem Drahtseilakt ohne Netz und doppelten Boden. Die drohende Unterdeckung gefährdet den Industriestandort Deutschland und treibt die Verbraucherpreise unnötig in die Höhe. Wir fordern die ersatzlose Abschaffung des #EEG!
  – Andreas Bleck (AfD), 24-04-2018

[9] Immigration

Query: Flüchtlinge OR Grenzkontrolle OR Asyl
Sample tweets:

- Verdammt gutes Podium bei #Bewegungslinke zu den Grundpfeilern einer linken Flüchtlings- und Migrationspolitik: große Einigkeit bei sicheren Fluchtwegen, legale Einreise und offenen Grenzen #LINKE
  – Nicole Gohlke (Die Linke), 21-04-2018

- Die skandalöse Kumpanei der innenpolitischen Sprecherin der Linksfraktion @UllaJelpke mit kriminellen und gewalttätigen Asylbewerbern, die das staatliche Gewaltmonopol herausfordern, kann nicht unwidersprochen bleiben! #AfD #Ellwangen → https://t.co/zJ3m
  – Dr. Alice Weidel (AfD), 05-05-2018

- Bundesinnenminister @BMI_Bund Horst #Seehofer im #Innenausschuss #Bundestag zu #AnKER-Zentren: Es geht dabei nicht darum, Menschen einzusperren. Residenzpflicht ist ausreichend. Es sollen maßvolle Einrichtungen sein der Größe nach.
  – Marco Wanderwitz (CDU), 18-04-2018

[18] Foreign Trade

Query: WTO OR Handelskrieg OR CETA OR TTIP OR Handelsdefizit OR Handelsüberschuss OR Exportweltmeister OR Zölle OR Strafzölle

Sample tweets:

- Vorsicht, ob dabei wirklich nur Zollregelungen folgen? Und für was? Für faire + ökologische Produkte? ? Reaktion auf US-Strafzölle: TTIP als Gegengift im Handelsstreit https://t.co/buD5j3Tzof via @SPIEGELONLINE
  – Renate Künast (B90/Die Grünen), 24-03-2018

- Es ist falsch immer wieder von Ausnahmeregelungen zu sprechen, damit erkennt man implizit die Legitimität der #Strafzoelle an - das sind sie aber nicht. #freierhandel #free-trade #eu @handelsblatt https://t.co/vEJ1MXBq6S
  – Andreas Lenz (CSU), 26-04-2018

- Frau #Merkel muss die Frage der drohenden #Strafzölle zur #Chefsache machen und das zentrale wirtschaftspolitische Thema #Freihandel mit mehr Herzblut betreiben!
  – Michael Theurer (FDP), 28-04-2018