Local Newspaper Decline and Political Polarization – Evidence from a Multi-Party Setting *

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Abstract

How does the decline of traditional news outlets affect political polarization? We provide novel evidence on this question by examining the link between local newspaper exits, media consumption, and ultimately electoral behavior in a multi-party setting. Our empirical analysis combines a unique panel of all German local newspapers between 1980 and 2009, electoral returns, and an annual media consumption survey of more than 670,000 respondents. Using a difference-in-differences design, we demonstrate that local newspaper exits causally increase electoral polarization. In addition, we show that local news exits increase individual-level politicization and partisanship. Further analyses point to changes in media consumption as the underlying mechanism driving this result: following local news exits, consumers substitute local news with national tabloid news. Our findings have implications for scholarship on the nationalization of news, and shed new light on the causal chain running from changing local news landscapes to electoral behavior.

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1 Introduction

How does the decline of traditional news outlets affect political polarization? Polarization has become a core challenge for established democracies. Increased political polarization has been linked to a number of undesirable consequences, such as legislative gridlock (Jones 2001) as well as de-legitimization and animosity towards political opponents (Mason 2018), which ultimately spills over into nonpolitical realms (Iyengar et al. 2019; McConnell et al. 2018). At the same time, social scientists have recognized how changes in the media environment are partially responsible for increasing polarization (see e.g. Prior 2007, 2013; Levendusky 2013a; Darr, Hitt and Dunaway 2018, 2021). In this paper, we provide new evidence on the relationship between political polarization and the decline of local news in a multi-party system. We build on research from the American context, where prior studies have examined the link between voting behavior and broadband access (Trussler 2020b), local news exits (Darr, Hitt and Dunaway 2018), and exposure to national vs. local news (Darr, Hitt and Dunaway 2021; Moskowitz 2021).

Going beyond prior work, we examine the link between local news decline, individual-level media consumption behavior, and political polarization in a multi-party system over three decades. We combine a novel, manually collected panel of all German local newspapers between 1980 and 2009 with county-level electoral results in local and national elections. We assess the effect of local news exits on electoral polarization, operationalized as the ideological dispersion of the vote in a given county (Dalton 2008). To construct this measure, we locate party positions on the left-right ideological spectrum based on the Comparative Manifesto Project (Volkens et al. 2020). To partial out time-invariant confounders, we rely on a difference-in-differences approach. We thus compare over-time changes in counties that experience exits to those that do not. For both federal and municipal elections, we find that exits have a positive effect on the average ideological dispersion in a county. Similarly, we demonstrate that the vote share of small parties, which tend to hold positions further from

the ideological center, increases after local news exit. Our results are robust across different model specifications and tests. In a series of additional checks, we confirm that outcome and covariate trends do not differ between counties that eventually experience exit and those that do not. Taken together, our findings confirm that the decline of local news has spurred electoral polarization over the past decades.

In the next step, we provide new evidence on the mechanisms underlying the aggregate electoral results. In established democracies like Germany and the US, local politics is often perceived as more consensual and less politicized compared to national politics, with a smaller emphasis on partisan differences (Holtkamp 2017; Bucchianeri 2020). Accordingly, the decline of local news can increase polarization by exposing voters to national – and less consensual – politics. In particular, this may occur when consumers substitute local news outlets with national news (Darr, Hitt and Dunaway 2018, 2021).

To shed light on this mechanism, we examine how local news exits affect media consumption and politicization at the individual level. To do this, we draw on two large-scale surveys that cover the full period of our study, starting in the 1980s. We present two pieces of evidence. First, we utilize an annual media consumption survey of more than 670,000 respondents to demonstrate that national news consumption increases both in relative and absolute terms after a local outlet exits (Hagenah, Meulemann and Akinci 2006; Brentel 2021). The outlet that gains the largest amount of readers is *Bild*, a tabloid that is known for sensationalist and inflammatory reporting (Arnold 2013). Second, we employ a panel survey to show that exits heighten the salience of partisanship among affected individuals. We find that newspaper exits render respondents more likely to identify with a party. In addition, respondents report higher intensities of partisanship and become more politically engaged.

We consider a number of alternative mechanisms that could drive our results. First, newspaper exits may be accompanied by underlying demographic or economic changes, which

could affect political behavior. Relatedly, increasing demand for national news may lead to both newspaper exits and changes in electoral behavior. Second, we examine whether local news exits affect political accountability and government efficacy, which may, in turn, change political attitudes. Third, consumers may substitute local news with partisan media, which could polarize political attitudes. As we discuss in detail in section A.1 in the SI, quantitative and qualitative evidence suggests that these mechanisms are of minor importance in our setting.

Our study makes several contributions to prior research on changing media environments, political polarization, as well as the nationalization of news (Prior 2013; Levendusky 2013*a*; Darr, Hitt and Dunaway 2018, 2021; Moskowitz 2021).

Our paper constitutes the most extensive study to examine the relationship between media consumption and polarization in a multi-party setting. Prior work has demonstrated pronounced differences between two-party settings and multi-party democracies with respect to polarization (Reiljan 2020; Wagner 2021). Studying the link between the media and polarization in a multiparty democracy provides the unique advantage to trace polarization on the basis of ideological dispersion in voter behavior. In the American context, electoral polarization is commonly measured indirectly using split-ticket voting (Darr, Hitt and Dunaway 2018), thus containing little information about changes in ideological extremity. In comparison, our measure reflects changes in voter attitudes measured on the basis of increasing support for non-centrist parties. By taking both voter behavior and party ideology into account, this operationalization constitutes a more precise measure of electoral polarization.

In addition, our study sheds light on several intermediate steps along the causal pathway between newspaper exits and electoral behavior. Triangulating a variety of different data sources, we precisely trace the individual-level mechanisms underlying increased political polarization at the aggregate level. We show that national news consumption increases after local news exits, and thus empirically demonstrate a key mechanism that most prior research

has only hypothesized. We shed new light on this substitution mechanism by examining the central role of consumer choice in this context. We show that consumers not only substitute local with national news but in doing so tend to choose particularly sensational and politicized tabloid news. In addition to evidence on news consumption and electoral polarization, we further present evidence on attitudinal effects at the individual level: using survey data, we show that respondents affected by newspaper exits report higher levels of partisan identification and political involvement, both of which are closely associated with rising affective polarization (see Mason 2018).

Finally, our panel data allows us to estimate the temporal persistence of aggregate electoral effects: we document an increase in electoral polarization for about eight years after local news exit. Our results suggest that local news exits have long-term political consequences that materialize over multiple election periods. This implies that prior research on this topic, which has mostly focused on shorter time frames, may have underestimated the overall cumulative effect of local news exits on political polarization. Further, the temporal scope of our data also allows us to assess changing local media before and after the widespread introduction of the internet. We demonstrate that newspaper exits primarily affected polarization prior to 2000 when circulation was higher and the internet was not a primary source of information. Over-time changes in the general media landscape may thus moderate the effects of local newspaper exits on political behavior (Prior 2013).

2 Political polarization and the decline of local news

Political polarization has become a widespread phenomenon in established democracies. In the US, prior work documents the increased relevance of partisan identities and growing ideological divisions between political elites (Hetherington and Weiler 2009; Druckman, Peterson and Slothuus 2013; Iyengar et al. 2019; Mason 2018). In Europe, polarization has created new lines of political conflict, pertaining especially to issues such as climate change

or immigration (Hobolt, Leeper and Tilley 2021).

Figure 1: Fractionalization of the vote in German federal elections

Note: The figure shows the vote share of the two large German parties, the center-right Christian Democrats (CDU/CSU) and the center-left Social Democrats (SPD) in comparison to all other parties in federal elections since 1980.

In Figure 1, we visualize this secular trend in Germany. Since the 1970s, the center-right Christian Democrats (CDU/CSU) and center-left Social Democrats (SPD) have steadily lost voters to smaller parties that tend to hold ideological positions further away from the center. Commonly cited causes for polarization are voter sorting and realignment (Abramowitz and Saunders 2008), greater overlap of individual party affiliation and other types of salient social identities (Mason 2018), and the emergence of radical candidates or parties that ‘pull’ voters from the political center (Banda and Cluverius 2018; Bischof and Wagner 2019).

In this study, we link polarization to the continuing decline of local news outlets – a trend that has attracted attention in both the public and scholarly discourse. In Germany, the total circulation of daily newspapers has dropped from more than 25 million copies in 1990 to about 15 million today (see figure 2). In section A.2 in the SI, we provide a detailed discussion of local news coverage and the role of local newspapers in the German media

landscape. A similar trend of declining local news can be observed in the United States, where the circulation of paid daily newspapers has decreased by more than 50% since 1990. Newspaper sales and advertising revenues have declined in virtually all Western democracies, as we show in figure A.1 in the appendix.

Figure 2: Newspaper circulation in Germany and the United States over time

Note: The figure shows the circulation of paid daily newspapers per capita in the United States and Germany over time. Data for the US was collected by *Pew Research Center*. Data for Germany was originally published by the *Informationsgemeinschaft zur Feststellung der Verbreitung von Werbeträgern*. We obtained the data from Statista (2020).

Our work builds on research concerning the link between newspaper closures and polarization, particularly in the American context. Darr, Hitt and Dunaway (2018) use a matching design to show that American local newspaper closures between 2009 and 2012 led to lower degrees of split-ticket voting in presidential and senatorial elections in 2012. The authors attribute rising electoral polarization differences in reporting on consensual local and contested national politics. This aligns with a general trend of nationalization of politics - both in media reporting and constituents' perceptions (Hopkins 2018; Trussler 2020a). In a recent book, Darr, Hitt and Dunaway (2021) leverage a natural experiment to provide further evidence that reduced exposure to national news decreases social and affective polarization. Our empirical evidence on the nationalization mechanism therefore builds on the arguments made by Darr, Hitt and Dunaway (2018, 2021).

3 Theoretical framework

How do local newspaper exits affect political behavior, particularly political polarization? Newspaper exits can lead to more nationalized patterns of individual news consumption. Affected readers can (i) switch to a different local outlet, (ii) substitute with a national newspaper, (iii) increase consumption of other news sources (e.g. radio or television), or (iv) not substitute at all and therefore reduce their overall news consumption. We note that these forms of consumption shifts are not mutually exclusive. The latter three responses will induce an increase in the relative share of national news consumption, particularly when constituents react to exits by subscribing to a national newspaper.

How do such shifts from local to national news exposure affect political preferences? First and foremost, a shift to national news consumption heightens the salience of national politics (Moskowitz 2021). This reasoning builds on theoretical arguments laid out in prior work by Darr, Hitt and Dunaway (2018, 2021). While local newspapers in Germany devote some space to coverage of national issues, local politics constitutes a large share of their reporting.¹ In contrast, political reporting in national outlets focuses almost exclusively on national politics. Prior research suggests that ideological differences in German local politics are less pronounced than in national politics (Holtkamp 2017). In Bavaria, for example, 45% of current mayors are not affiliated with any of the large national parties (Bayerische Landesamt für Statistik 2021). This stands in stark contrast to the national parliament, where each of the 709 MPs is strictly affiliated with a single party (Bundestag 2021). Compared to the national level, local politics is marked by for a lower salience of partisan identification (Metag 2016), more consensus across party lines (Wehling and Kost 2010) and a higher propensity for candidates to run as independents or on bipartisan tickets.

When local newspapers exit, polarization can be exacerbated through increased exposure

¹We provide a detailed discussion of local news coverage and the role of local newspapers in the German media landscape in section A.2 in the SI.

to ideologically charged national politics (Darr, Hitt and Dunaway 2018, 2021). This can occur either through the activation of latent ideological dispositions or through a persuasion mechanism, where individuals move further away from the ideological center. The heightened salience of partisan positions in national news outlets may prime and strengthen political identities even without persuading consumers to change their opinions (Zaller 1992; Lelkes, Sood and Iyengar 2017). Stronger ideological priming through national news consumption may increase attitudinal extremity, as individuals increasingly seek out positions that confirm their prior ideological beliefs Levendusky (2013*b*).

In addition to priming ideological dispositions, the information presented in national outlets may persuade consumers to shift to more extreme political positions. German national news outlets present the reader with a cross-partisan set of viewpoints (see sections A.2 and A.6). Taber and Lodge (2006) show that individuals not only prefer ideologically congruent positions, but even strengthen their own convictions when exposed to such positions (see also Prior 2013). When consuming news about more contentious national politics, individuals might find themselves in agreement with more extreme arguments, even if made by the same party as in the local context. Citing Taber and Lodge (2006), Levendusky (2013*b*) argues that even cross-cutting media, i.e. outlets that present balanced reporting, could polarize attitudes if consumers start refuting information that runs counter to their own beliefs. As a result, individuals who consume a greater share of national news may become more extreme in their own viewpoints. Summarizing the argument, a shift from local to national news may (i) activate or strengthen political identities and (ii) persuade consumers to become more ideologically extreme.²

Even if individuals do not switch from a local to a national outlet, exits may nevertheless exacerbate polarization among those who previously read the exiting outlet. Local news outlets can maintain community identity and cohesion by providing information about

²We note that our theoretical framework mirrors the arguments laid out by Darr, Hitt and Dunaway (2018, 2021) on the connection between local news decline and polarization.

local matters (Park, Fisher and Lee 2021). This is reflected in positive coverage of social connections and solidarity between citizens, as well as favorable reporting on societal institutions and civic participation (Leupold, Klinger and Jarren 2018). Exposure to this kind of coverage may reduce political polarization by (i) spurring support for centrist parties that represent a broader set of interests or (ii) reducing the salience of group-based identities vis-a-vis a common, place-based identity.

Finally, we consider several alternative mechanisms. These are (i) switches to highly partisan outlets or other local news outlets, (ii) underlying economic or demographic changes that could affect both newspaper exits and electoral behavior, and (iii) newspaper exits and their repercussions for political accountability and government efficacy. We discuss and test these mechanisms in more detail in section A.1 in the SI. However, we argue that these mechanisms are likely of minor importance in our setting.

4 Data and empirical strategy

4.1 Electoral Polarization

Our main outcome variable is political polarization, measured on the basis of election results in federal and municipal elections. Our data covers eight federal elections held between 1980 and 2009 . Our data on municipal elections covers the time period 1990 – 2009 (Rademacher 2018); data for the 1980s is not centrally available. A detailed list of all elections in our analysis can be found in figure A.4 in the SI. To map between electoral results and polarization in a multi-party setting, we draw on the widely-used polarization measure introduced by Dalton (2008, see also Lupu 2015 for a more recent application of the measure). For federal elections, our main outcome variable $Y_{c,t}$, electoral polarization in county c in election t , is

defined as:

$$Y_{c,t} = \sqrt{\sum_j \psi_{j,c,t} (\tau_{j,t} - \bar{\tau}_t)^2}$$

where $\psi_{j,c,t}$ is the vote share of party j in county c at time t , $\tau_{j,t}$ is the position of party j at time-period t across the left-right political spectrum, and $\bar{\tau}_t$ is the mean party position in Germany at election period t (weighted by the number of votes). To measure $\tau_{j,t}$, the ideological position of parties, we draw on the left-right RILE scores from the Manifesto project (Volkens et al. 2020). To the best of our knowledge, this is the only data source that covers party positions at elections throughout our entire study period starting in the 1980s.³ We visualize the mean RILE scores of German political parties during our study period in figure A.3 in the appendix.

Intuitively, our measure of electoral polarization is smallest when all votes are concentrated in the center of the political spectrum, or when all parties run on the same ideological platform. In contrast, our polarization index is maximized when the vote is split between parties on the far left and on the far right. Mathematically, our measure corresponds to the weighted standard deviation of party positions in county c at time t . The weights vary across counties and correspond to each party’s vote share in a given county. The party positions on the left-right political spectrum vary over time but are constant across counties within a given election year. We visualize the distribution of our polarization measure across all federal elections between 1983 and 2009 in figure 3. Polarization tends to be higher in East Germany, where the Left Party attracts a sizable number of supporters. Our measurement of the polarization outcome is analogous for municipal elections (see section A.3.2 for more details).

We also consider the combined vote share of small parties (FDP, Left Party, Greens)

³For instance, in early waves of the Chapel Hill Expert Survey (CHES), expert evaluations of party positions sometimes do not align with election dates .

Figure 3: County-level electoral polarization

Note: The figure shows the distribution of our electoral polarization measure across counties in each federal election year (see section 4.1), for East and West Germany. East Germany only enters our sample after reunification in 1990. Our sample contains 325 (West German) counties prior to reunification and 401 counties thereafter.

as an alternative electoral outcome. Small parties generally hold positions further from the ideological center and often emphasize single political issues. The Green party, for example, primarily campaigned on environmental protection during our study period. The classical liberal FDP and socialist Left Party, on the other hand, typically focus on taxation and redistribution respectively in their election campaigns.

4.2 Local newspaper exits

To measure local newspaper exits, we manually digitized a novel data set on the entry and exit of all German local newspapers between 1980 and 2009. We draw on the *STAMM Leitfaden durch Presse und Werbung* (Stamm and Tewes 1979), an annual publication that

is intended for public relations and advertising purposes of companies, organizations, and agencies. We digitized and hand-coded relevant chapters for all editions published between 1980 and 2012. For each year, this translates to digitizing about 500 pages for a total of 15,000 digitized pages for the entire sample. This comprehensive data source allows us to precisely measure the exit and entry of newspapers into local media markets over more than thirty years.

Figure 4: Newspaper exits over time

Note: The figure shows the distribution of our treatment over time. We show the share of counties who experienced local newspaper exits prior to each federal election. Our sample of counties only covers West-Germany prior to reunification in 1990. Our sample contains 325 counties prior to reunification and 401 counties thereafter. Because the coding of coverage areas in our main data source changed between 1999 and 2001, we do not measure newspaper exits during this time period. For more information see Section A.3.1 in the S.I.

Specifically, we coded three binary indicator variables that measure changes in the local media market structure in a given county. $Exit_{c,t}$ is defined as the market exit of at least one local news outlet between time periods t and $t - 1$ in county c . This is our main treatment variable. We visualize its distribution over time in figure 4. In over 85% of cases, it captures the exit of one single local outlet. In rare cases, multiple outlets exit from the same market

between election periods. Analogously, $Entry_{c,t}$ is defined as the market entry of at least one new local news outlet. We provide more details on how we define the time periods in our study setup in section 4.5. Finally, we include an indicator variable for rare cases in which both newspaper exit and entry co-occur in the same time period. During the time period we study, market entry of new local outlets was a rare phenomenon. We, therefore, focus on market exit as our main treatment variable of interest. We also note that the measurement of our treatment relates to the presence of unique newspaper titles, not changes in ownership structure. We provide more details on the coding scheme that we used to measure the market entry, exit, and coverage areas of newspaper outlets in section A.3.1 in the appendix.

4.3 National news consumption

In section 2 we discussed different individual-level mechanisms that link local news decline and political polarization. In particular, we have argued that exposure to national news media might increase after local news exit, both in absolute and relative terms. To test this hypothesis, we leverage a large-scale annual survey conducted by the *Media Analysis Group* (Hagenah, Meulemann and Akinci 2006; Brentel 2021). The data allows us to examine changes in media consumption behavior after local news exit. Each year, about 23,000 respondents are surveyed about which national and local news outlets they read on a regular basis. In total, we leverage fine-grained individual-level data on the media consumption of more than 670,000 respondents during our study period 1980 - 2008.

At the individual level, we observe which daily newspapers respondents regularly read. Specifically, we consider the four largest national outlets (Bild, SZ, FAZ, Welt), which combined accounted for more than 90 % of the German national newspaper market as of 2010 (Brandt 2020). For each respondent, we also observe whether she reads a local newspaper. We consider a respondent as regularly exposed to a news outlet if she has read at least one issue of the paper within the last two weeks prior to the survey. We use this information to

calculate two county-level measures of national news consumption. First, we calculate the mean number of national news outlets respondents in county c read in election period t . We calculate this absolute measure of national news consumption as follows:

$$M_{c,t} = \frac{1}{N_{c,t}} \sum_{i=1}^{N_{c,t}} \sum_k \mathbb{1}_{Read_{k,i,t}}$$

where $N_{c,t}$ denotes the number of respondents interviewed in county c for election period t , $\mathbb{1}_{Read_{k,i,t}}$ is a binary indicator that equals one for respondents who read national newspaper k in period t . As mentioned above, we consider the four largest national newspapers $k \in \{1, 2, 3, 4\}$. Second, we measure the share of national news in respondent's media diet. We calculate the mean share of national outlets in county c in election period t as follows:

$$S_{c,t} = \frac{1}{N_{c,t}} \sum_{i=1}^{N_{c,t}} \frac{\sum_k \mathbb{1}_{Read_{k,i,t}}}{\left(\sum_k \mathbb{1}_{Read_{k,i,t}} \right) + \left(\sum_j \mathbb{1}_{Read_{j,i,t}} \right)}$$

For each respondent, we sum up the number of national outlets she reads, and divide this number by the total number of news outlets read by the respondent. The denominator contains the four national newspapers we consider and all $j \in \{1, \dots, 162\}$ local news outlets covered by the MLFZ survey.⁴ Our relative measure of national news consumption ranges from zero to one. Similar to our main analysis, we difference our measure of media consumption at the county level, i.e. we examine within-county changes in media consumption behavior after local news exit. We provide more details on the coding and aggregation of our media consumption data in section A.3.3 in the appendix.

We recognize that self-reported measures of media consumption may entail a considerable degree of measurement error (Prior 2009). However, we note that our analysis does not leverage differences in the time of exposure – which is more difficult to recall – but whether

⁴The coding scheme for regional newspapers differs between the MLFZ data and our main dataset on local newspaper coverage areas. We are therefore not able to directly link the two data sources.

or not a respondent has any exposure to a given outlet at all. We also note that our difference-in-differences design (see section 4.5) can accommodate measurement error to the extent that the propensity of respondents to misrepresent their true degree of media exposure evolves in parallel between treated and control counties over time.

4.4 Individual partisanship

Finally, to shed further light on the mechanisms linking local news exit and political polarization, we leverage individual-level panel data on political attitudes and engagement. We use the German Socio-Economic Panel Study (Schupp 2012), a panel survey that includes about 50,000 individuals between 1984 and 2009. We selected SOEP outcomes that measure (i) if a respondent identifies with any party, (ii) the strength of individual partisanship on a scale from 0–5, and (iii) a four-point scale of participation in political parties, political causes, and initiatives. We leverage the panel structure of the SOEP and analyze the effect of local news exits on within-person changes in party identification, identification intensity, and political participation over time. We provide more details on the measurement and model estimation for the SOEP data in section A.3.4 in the appendix.

4.5 Design and model estimation

To analyze the effect of local newspaper exits on electoral polarization, we estimate a series of first-difference OLS models of the following form:

$$\Delta Y_{c,t} = \alpha_t + \tau \mathbb{1}_{Exit_{c,t}} + \gamma \mathbb{1}_{Entry_{c,t}} + \delta \mathbb{1}_{Entry_{c,t} \cap Exit_{c,t}} + \epsilon_{c,t}$$

To partial out time-invariant confounders, we leverage the panel structure of our data and measure both the outcome and treatment variables as within-county changes over time. Counties are the administrative unit between states and municipalities. The aver-

age county area is 900 km² and the average population is about 200,000 inhabitants. All of our analyses are based on the county boundaries as of 2018. Our main outcome variable $\Delta Y_{c,t} = Y_{c,t} - Y_{c,t-1}$ measures the change in electoral polarization (as defined in section 4.1) between consecutive elections in time periods t and $t - 1$. The main parameter of interest is τ , the effect of local newspaper exit on polarization.

Our preferred specification includes period-fixed effects α_t . This implies that we compare the change in polarization in counties in which a local newspaper exit occurred to counties in which the structure of the local media market remained unchanged between subsequent election periods (e.g. between 1994 and 1998). Crucially, we only leverage comparisons across consecutive election periods for identification. For example, we do not compare outcome changes measured after local news exit in 1994 to control counties measured in 2005. We also include an indicator ($\mathbb{1}_{Entry_{c,t} \cap Exit_{c,t}}$) for rare cases in which counties experienced both exits and entries during the same time period (see section 4.2). This ensures that our control group only consists of counties that did not experience any change in the market for local news between subsequent election periods. We use robust standard errors clustered at the county level for all of our analyses. Finally, we also conduct an additional analysis to account for possible spillovers between counties, which we discuss in more detail in section 5.5.

The definition of the time period t depends on the election cycle. Generally, we measure changes in both polarization and media market structure between consecutive elections. For example, we measure both the change in polarization and local news availability in a given county between the federal elections 2009 and 2005. Federal elections are generally held every 4 years. For municipal elections, the election cycle varies across states. A detailed overview of all elections covered in our analysis can be found in figure A.4 in the appendix. Our panel only covers West Germany from 1980 to 1991. Starting in 1991, our panel includes all counties in East Germany (former GDR). 1994 is hence the first election in which East German counties enter the analysis. For this election, we measure the change in the number of local news outlets between 1991 and 1994. In a supplementary analysis, we verify that

our results are not driven by structural changes in the East German media landscape after reunification (see section 5.5).

For our main results, we rely on first-difference estimator. We choose this specification over the canonical two-way fixed effects model or more recent DiD estimators (Goodman-Bacon 2021) because it allows us to accommodate a number of unique features of our setting, and at the same time closely approximates the design-based logic underlying the DiD design. First – in contrast to the two-way fixed effects estimator – our specification makes explicit comparisons between localities that experienced local newspaper exits in a given time period vs. those that did not. Second, using a first-difference specification allows us to account for the fact that the treatment – newspaper exit – is reversible in our setting. A county might experience local newspaper exit between periods t_1 and t_2 but not between periods t_2 and t_3 . As outlined above, newspaper exit and entry may, in rare cases, even coincide in the same time period. In using a first-difference estimator, our empirical strategy mirrors prominent prior studies in this literature, most notably Gentzkow, Shapiro and Sinkinson (2011).

We recognize that our treatment, local newspaper exit, is not randomly assigned. As we lay out in section A.2 in the SI, the decline of local newspapers is likely related to demographic trends or local market conditions. However, we emphasize that our empirical design does not require that local news exits are randomly assigned. By comparing *changes* in electoral polarization across counties over time, our panel design explicitly accounts for level differences in factors such as demographics or local purchasing power. While polarization is clearly stronger in some regions of the country than in others, our results do not simply arise from a comparison of level differences in polarization across disparate regions of the country.

To further probe when exits occur, we present a supplementary analysis in figure A.14 in the appendix. Here, we use population, employment rates, and GDP/capita to predict exits. We find that newspaper exits are more likely in counties that experience population decline. This suggests that newspaper exits result from a shrinking consumer base. Neither changes

nor levels in GDP per capita and employment predict newspaper exits at conventional levels of statistical significance. To account for this potential confounding factor, we estimate additional specifications where we explicitly account for time-varying covariates, particularly population size (see section 5.5).

In addition to the base specification described above, we also investigate the temporal dynamics in the effect of local newspaper exit on polarization. To do so, we regress our outcome variables on future and past newspaper exits (see also Gentzkow, Shapiro and Sinkinson 2011).

$$\Delta Y_{c,t} = \alpha_t + \tau \mathbb{1}_{Exit,t+k} + \gamma \mathbb{1}_{Entry,t+k} + \delta \mathbb{1}_{Entry \cap Exit,t+k} + \epsilon_{c,t}$$

where $k \in \{-2, -1, 0, 1\}$. We run separate regressions for each value of k . We pursue two primary goals with this analysis. First, the specification allows us to test whether counties with and without exits follow similar outcome trajectories prior to the local news exit. Against this background, we test whether *future* newspaper exits ($k > 0$) predict changes in our outcome variables $\Delta Y_{c,t}$. Our key identification assumption, parallel trends, implies that leads of the treatment (i.e. future exits) should not be predictive of the outcome. Second, we investigate the temporal evolution of the treatment effect over time. This corresponds to the case $k \leq 0$, where $k = 0$ corresponds to our baseline model described at the beginning of this section. Going beyond our baseline specification, we test whether treated counties diverge from control counties for two elections after local news exit occurs. Because we are measuring our outcome variables as changes between consecutive election periods, the effect estimates for each lag of the treatment should be interpreted as cumulative. We separately estimate the effect of newspaper exits on changes in polarization between periods $t - 1$ and t , and between periods t and $t + 1$.

5 Results

In a first step, we assess how electoral polarization changes in the first election after a local newspaper exits. In figure 5, we show the effect of newspaper exits on two measures of political polarization in federal and municipal elections. We find that the exit of a local newspaper increases polarization, as measured by the distance from the party system average, in both federal and municipal elections. In the second panel of figure 5, we show that this effect stems from a greater propensity to vote for small parties that tend to be further from the ideological center. While the magnitude of the effect on vote shares for smaller parties is similar in federal and municipal elections, standard errors are larger in the case of municipal elections. Following prior work by Gentzkow, Shapiro and Sinkinson (2011) and Cagé (2019), we also estimate the effect of local newspaper exits on turnout. However, we do not find statistically significant effects (see figure A.10 in the appendix).

Figure 5: Effects of newspaper exits on electoral polarization

Note: The plot shows the estimated effect (τ) of a newspaper exit on two outcomes: political polarization, as well as the vote share of small parties. The results are based on the benchmark specification, which uses first-differenced outcomes and year fixed effects. Polarization is measured as the weighted ideological dispersion of party positions on the county level (see Dalton 2008). Small party vote share is obtained by summarizing the vote share of all non-mainstream parties. The number of observations is 2,166 for federal elections and 11,416 for municipal elections. We provide more details in table A.4 in the SI.

To contextualize the observed effect sizes, we compare our results with related studies. We find that local newspaper decline between two consecutive elections raises the Dalton (2008) measure of polarization by 0.1 standard deviations, while small party vote share increases by 0.5 percentage points after newspaper exits. Gentzkow, Shapiro and Sinkinson (2011) find that newspaper exits decrease turnout in presidential elections by 0.069 standard deviations or 0.1 percentage points.⁵ In the European context, Cagé (2019) reports that newspaper exit increases turnout in French local elections by 0.3 percentage points.

Figure 6: Effect heterogeneity over time

Note: The plot shows the estimated effect (τ) of a newspaper exit on two outcomes: political polarization, as well as the vote share of small parties. We only consider federal elections. The results are based on the benchmark specification, which uses first-differenced outcomes and year fixed effects. We split our sample into two subsets defined by elections before and after the year 2000, as indicated on the x-axis.

Next, we test a direct empirical implication of the theoretical framework. As elaborated in section 2, we expect that exits will induce larger consumption shifts when local newspaper readership prior to exit is larger. While we do not observe circulation for individual outlets, we can compare the effect of exits over time, as readership has decreased since the mid-1980s. As a result of declining readership, more recent exits should affect fewer constituents than exits during the 1980s and 1990s. In figure 6, we demonstrate that for elections prior to

⁵The coefficient stems from an analysis of presidential elections between 1956 and 2004, which is closest to our observation period. Note that this effect is not significant.

2000, we find pronounced and significant effects of newspaper exit. For elections after 2000, we observe point estimates close to zero. We view this as evidence in support that the effect of newspaper readership operates through shifts in consumption behavior.

Figure 7: Main results – leads and lags

Note: The plot shows the estimated effect (τ) of a newspaper exit on two outcomes: political polarization, as well as the vote share of small parties. The x-axis indicates the election relative to the time when newspaper exit occurs. Elections labeled -1 and -2 are prior to exit, while elections labeled 1, and 2 are after exit occurs. The effect for the election labeled 1 is the main effect presented in figure 5. See also section 4.5 for more details on the estimation. $N=2,244$ for political polarization and $N=2,568$ for small party vote share.

5.1 Dynamic effects

Next, we examine trends in electoral polarization before and after exits occur. A potential threat to our empirical strategy is that counties where local newspapers exit already diverge in terms of polarization prior to treatment. Our key identifying assumption requires that counties with and without exits would have followed similar trajectories if local news exit had not occurred. Similarly, an important question is whether the effects of newspaper exit materialize over more than one electoral cycle. To answer these questions, we estimate leads and lags of the treatment (see section 4.5). In figure 7, we present the results. Reassuringly, we find that polarization in counties where newspapers exit evolves in parallel to control counties prior to exit. In the two elections preceding newspaper exits, we detect no significant

differences in polarization and support for smaller parties. We take this as evidence that counties that eventually experience newspaper exits are not already on different electoral trajectories than unaffected counties.

In addition, we find cumulative effects for eight years (two election periods) after local news exit. We observe a divergence between treated and control counties starting right after local news exit: electoral polarization increases in counties in which local news exit. Treated counties experience another relative increase in polarization in the next election period (years 5-8) after local news exit occurred.

5.2 Exit effects conditional on remaining outlets

The richness of our data further allows us to examine whether the effects of local newspaper exits vary according to how strongly they affect the local market for news. In doing so, we disaggregate newspaper exits by the number of remaining outlets after exits occur. In figure A.11 in the SI, we find that exits where three or more local outlets remain have small effects on our outcomes of interest. In contrast, we observe larger effects when exits constitute more substantial changes to the market. When only one or two outlets remain, the effect of an exit is more than double compared to cases where three or more outlets remain. This evidence is consistent with the main results. When many local outlets remain, the shift towards national news coverage is likely less pronounced than in cases where only a few outlets remain. This aligns with our theoretical expectations, which imply that larger relative changes to the local newspaper market have more pronounced effects on polarization.

5.3 National news consumption

Having established that newspaper exits increase electoral polarization, we now probe whether local newspaper exits affect the consumption of national news.

In figure 8, we present the results from a leads and lags specification. We estimate the effect of newspaper exits on absolute and relative levels of national newspaper consumption over time. We find that national news consumption increases after local newspapers exit. This holds both for our absolute and relative measures of national news consumption. National news readership increases in counties where local newspapers exit. Concomitantly, the share of national news in the media diet of affected consumers increases. These results suggest that local news exits lead to a decrease in exposure to consensual local politics. At the same time, exposure to partisan politics at the national level increases. Reassuringly, the timing of these effects is similar to what we observe for the electoral outcomes in figure 7. More precisely, effects increase after exits occur, and are largest in the second election after the exit.

Figure 8: Effects of newspaper exits on national news consumption

Note: The plot shows the estimated effect (τ) of a newspaper exit on two outcomes: absolute levels of national newspaper consumption, and the relative share of national outlets among all newspapers that individuals consume (see section 4.3). The x-axis indicates the election relative to the time when newspaper exit occurs. Elections labeled -1 and -2 are prior to exit, while elections labeled 1 and 2 are after exit occurs. $N=1,769$ for the first election after exit. More details are given in table A.7

Further, the results in figure 7 shed light on trends in national news consumption *prior* to local news exits. Feasibly, local news exits may be driven by increased demand for national news, which is accompanied by a drop in demand for local news. Our national

news consumption data allows us to directly assess this scenario. Based on the estimates for the two elections prior to exit shown in figure 7, we find no evidence that demand for national news increased differentially in counties that eventually experience local news exits. In summary, our results suggest that the increased consumption of national news does not already occur before local newspapers exit. As an additional robustness check, we also estimate the effect of local news exits on national news consumption including time-varying covariates. Reassuringly, our results remain unchanged when controlling for changes in population and GDP per capita (see table A.7 in the SI).

The magnitude of the effect size estimates may appear small at first sight. However, we emphasize that our consumption data covers the entire population, of which only a small subset is directly affected by local newspaper exits. Specifically, we would only expect a shift in the media diet for individuals who previously subscribed to the exiting outlet. For the absolute consumption measure, our effect size estimates imply that two in one hundred people in a given county subscribe to a national news outlet as a result of local news exit. However, given that local news outlets only reach about half of all adults in Germany (see section A.2), and that the exiting outlet likely held less than 50% market share, the population share directly affected by the exit is likely much lower than 25%. Similarly, for our relative measure of national news consumption, our results are consistent with a scenario in which the share of national news consumption increases from 50% to 100% for two in one hundred people in a given county. For example, this would apply to individuals who consumed one national and one local outlet each prior to exit and continue to read the national outlet after local newspaper exit occurred.⁶ Considering the size of the treated population, the effect size estimates are not only statistically significant but also substantively meaningful.

In the next step, we disaggregate the national news readership effects by outlet. In figure

⁶We note that our aggregate results for national news consumption can arise from multiple, heterogeneous scenarios of shifting media consumption at the individual level. We describe typical scenarios to illustrate the effect size magnitude.

9, we present the effects of local newspaper exits on the likelihood of consuming four different national newspapers. Together, these outlets accounted for more than 90% of the German national newspaper market as of 2010 (Brandt 2020). We observe large and significant positive effects for the *Bild*, a tabloid that is Germany’s most widely read national outlet. For the *FAZ*, *SZ* and *Welt*, which report in a less sensational and more serious manner, we do not observe any changes in readership due to local newspaper exits. While we do not have data on individual motivations for switching from local newspapers to *Bild* rather than other outlets, this result could be explained by the fact that *Bild* is more readily available as well as cheaper, and reports in a more accessible manner (Arnold 2013). Accordingly, the readership of *Bild* closely resembles the overall population in terms of socio-demographic characteristics and cuts across partisan lines (we elaborate on these points in sections A.6 and A.15).

Figure 9: Effects of newspaper exits on national news consumption, by outlet

Note: The plot shows the estimated effect (τ) of a local newspaper exit on consumption of four national newspapers. We employ the same first-difference specification as in the main analyses. We present effects one election after exit (labeled ‘1-4 years after exit’, $N=1,769$) and two elections after exit (labeled ‘5-8 years after exit’, $N=1,771$).

We argue that the shift from local to national news polarizes consumers. An alternative consequence is that consumers adopt the political leanings of the national outlet they

switch to. This scenario presumes that national outlets are sufficiently partisan to persuade consumers. While some of the national outlets we analyze have been described as left- or right-leaning, data on the partisan composition of their readership indicates that all the major national newspapers are read by people from across the political spectrum (see section A.6 in the appendix for more information). In particular, the four newspapers described in figure 9 all have a large share of readers who do not identify with any political party – in fact, the newspaper with the highest share of ‘independent’ readers is the *Bild*. As result, we do not expect strong persuasion effects in a specific direction due to pronounced partisan slant of one of the national outlets.

Overall, these results are consistent with the argument that the polarizing effects of newspaper exits stem from an increase in national news consumption (Darr, Hitt and Dunaway 2018). More specifically, national news exposure rises because a subset of affected consumers increase their consumption of national outlets, suggesting that the combination of local newspaper exit and a shift towards national news is the primary driver of our main results for the voting outcomes.

5.4 Effects on partisanship

We now turn to the effect of newspaper exits on individual-level outcomes based on the SOEP panel survey. We again estimate first-difference models using within-person variation based on the SOEP survey data. As shown in figure 10, local newspaper exits increase constituents’ level of identification with a party and degree of participation in politics. Respondents in counties where newspapers exit become more likely to identify with a party, report stronger feelings towards a given party, and become more likely to be politically active. This aligns with the aggregate-level electoral results, as heightened levels of partisan identification and political activism have been found to be closely associated with rising affective polarization (see Lupu 2015; Mason 2018).

Figure 10: Effect of newspaper exit on individual-level outcomes

Note: The plot shows exit effects for three outcomes measured as the change between two consecutive federal elections. Partisan identification ranges from -1 to 1 and denotes if a person ceases to lean towards a party (-1), did not change (0), or begins to lean towards a party (+1). Party ID intensity measures the within-person change in intensity on a scale from -5 to 5, where higher scores indicate stronger identification with a given party. Political participation measures the within-person change in activism on a scale from -3 to 3. 90% (thick lines) and 95% (thin lines) confidence intervals are reported based on robust standard errors clustered by county. Details on the results and number of observations are given in table A.3.4 in the appendix.

The observed patterns are in line with a shift towards national news intake. National reporting focuses more strongly on lines of conflict between parties. When confronted with partisan disagreement about policies, voters are more likely to associate themselves with a political faction and develop a stronger partisan identity. This, in turn, should increase the strength of party identification and may affect partisan involvement and mobilization.

5.5 Robustness and alternative mechanisms

We perform a number of additional checks to ensure the robustness of our main results. First, we address the concern that the observed positive effect on polarization may stem from a common cause, such as economic downturns or demographic decline. If a county loses population or experiences an economic downturn, this may lead to both newspaper

exits and electoral losses for the centrist SPD and CDU/CSU parties. We note that this is an unlikely scenario, as treated and untreated counties are on similar electoral trajectories prior to exit (see figure 7). However, we do find that newspaper exits are slightly more likely to occur in counties that experienced population decline (see section A.14). To address this concern, we adjust for time-varying covariates that capture demographic or economic trends that could bias our estimates. Specifically, we estimate models where we control for changes in population and GDP/capita. We present the results in table A.4. We find that our results are generally robust to estimating alternative specifications. This is especially true for the period prior to 2000, where all but one specification is significant at $\alpha = 0.01$ (see figure 6). In addition to the model-based approach to mitigating these concerns, we also note that if the explanation behind our results was economic or demographic decline, we would not expect to only find sizable effects prior to 2000. However, the fact that the effects of exits decrease over time is consistent with a mechanism that stems from changes in media consumption after exits, since local newspaper readership was lower after 2000. This suggests that changes in media consumption behavior rather than economic or demographic trends explain our findings.

Second, we verify that our results are not driven by structural changes in the East German media landscape after reunification. In table A.4, we show that our results remain unchanged when we omit East German counties during the 1994 election from the sample (since we use first differences, the 1990 election in East Germany is never part of our analyses).

Third, we evaluate whether our results are sensitive to varying definitions of the party system mean $\bar{\tau}$. In our main specifications, we use weighted RILE scores in election t , with party vote shares at the federal level as weights. In figure A.12 in the appendix, we present results using two alternative definitions of $\bar{\tau}$, using state- and county-level vote shares as weights for the party system mean. Reassuringly, we find that the results remain largely unchanged when using alternative definitions of the party system mean.

Fourth, we test for spillover effects after newspaper exits between counties. In doing so, we examine whether polarization in a given county is affected by newspaper exits in neighboring counties. To implement this, we run a similar difference-in-differences analysis as for our main results, but now regress changes in polarization on newspaper exits in neighboring counties. For this analysis, we subset to those counties that never experience newspaper exits themselves during our study period. We present the results in figure A.13, and provide more details on the estimation in section A.12. Reassuringly, we do not find evidence for spillovers across adjacent counties. Polarization is not affected by newspaper exits in adjacent media markets.

6 Discussion

Does the decline of local news affect political polarization? Based on a novel data set on the entry and exit of all German local newspapers between 1980 and 2009, we show that local newspaper exits increase electoral polarization. Going beyond prior work, we link changes in local media markets to changes in the media diet using a large-scale annual media consumption survey. We show that both absolute and relative consumption of national newspapers increases after local newspapers exit. Specifically, exits lead readers to consume the tabloid *Bild*, which arguably exhibits the strongest emphasis on conflict and partisan differences among all major German national newspapers (Wellbrock 2011; Arnold 2013). Taken together, our results underline how changes in local media markets shape polarization in established democracies (Moskowitz 2021; Darr, Hitt and Dunaway 2018, 2021).

Whether our results travel to other contexts depends both on the nature of local politics, the relevance of local news, and differences in electoral systems. With regards to the decline of the newspaper publishing market, Germany is one among many developed countries where readership and revenues are decreasing (see figure A.1 in the appendix). However, the electoral effects of local newspaper exits likely vary across contexts. In particular, we would

expect similar results in countries where national politics is more adversarial, and where local news consumption remains sufficiently salient to the population. In the European context, German consumers are among the most likely to state that they closely follow local news. While people in other European countries tend to follow local news less closely, a broader international comparison reveals that local news remains highly relevant in a multitude of contexts, such as sub-Saharan Africa, India, or Australia (Mitchell et al. 2018). Recessions of local newspaper markets and trends of increasingly nationalized news coverage are therefore likely to have electoral repercussions in a wide variety of settings, even beyond traditional Western democracies.

References

- Abramowitz, Alan I. and Kyle L. Saunders. 2008. “Is Polarization a Myth?” *The Journal of Politics* 70(2):542–555.
- Arnold, Klaus. 2013. “Die Qualität Der BILD-Zeitung. Journalistische Leistungskriterien Und Die Boulevardpresse.” *Zeitschrift für Kommunikationsökologie* 15(1):43–48.
- Banda, Kevin K. and John Cluverius. 2018. “Elite Polarization, Party Extremity, and Affective Polarization.” *Electoral Studies* 56:90–101.
- Bayerische Landesamt für Statistik. 2021. “Erste Bürgermeister, Oberbürgermeister Und Landräte.” <https://www.statistik.bayern.de/wahlen/kommunalwahlen/bgm/>.
- Bischof, Daniel and Markus Wagner. 2019. “Do Voters Polarize When Radical Parties Enter Parliament?” *American Journal of Political Science* 63(4):888–904.
- Brandt, Mathias. 2020. “Axel Springer von Printkrise Besonders Betroffen.” <https://de.statista.com/infografik/10376/verkaufte-auflage-ueberregionaler-tageszeitungen-in-deutschland/>.
- Brentel, Inga. 2021. “Media-Analyse: Pressemedien - Langfristdaten (Version 2.0) (Version:

1.0.0).”.

- Bucchianeri, Peter. 2020. “Party Competition and Coalitional Stability: Evidence from American Local Government.” *American Political Science Review* 114(4):1055–1070.
- Bundestag, Deutscher. 2021. “Abgeordnete des Deutschen Bundestags.” <https://www.bundestag.de/mdb>.
- Cagé, Julia. 2019. “Media Competition, Information Provision and Political Participation: Evidence from French Local Newspapers and Elections, 1944–2014.” *Journal of Public Economics* p. 104077.
- Dalton, Russell J. 2008. “The Quantity and the Quality of Party Systems: Party System Polarization, Its Measurement, and Its Consequences.” *Comparative Political Studies* 41(7):899–920.
- Darr, Joshua P, Matthew P Hitt and Johanna L Dunaway. 2018. “Newspaper Closures Polarize Voting Behavior.” *Journal of Communication* 68(6):1007–1028.
- Darr, Joshua P., Matthew P. Hitt and Johanna L. Dunaway. 2021. *Home Style Opinion: How Local Newspapers Can Slow Polarization*. Cambridge University Press.
- Druckman, James N., Erik Peterson and Rune Slothuus. 2013. “How Elite Partisan Polarization Affects Public Opinion Formation.” *American Political Science Review* 107(01):57–79.
- Gao, Pengjie, Chang Lee and Dermot Murphy. 2020. “Financing Dies in Darkness? The Impact of Newspaper Closures on Public Finance.” *Journal of Financial Economics* 135(2):445–467.
- Gentzkow, Matthew, Jesse M Shapiro and Michael Sinkinson. 2011. “The Effect of Newspaper Entry and Exit on Electoral Politics.” *American Economic Review* 101(7):2980–3018.
- Goodman-Bacon, Andrew. 2021. “Difference-in-Differences with Variation in Treatment Timing.” *Journal of Econometrics* 225:254–277.
- Hagenah, Joerg, Heiner Meulemann and Haluk Akinci. 2006. “German Media-Analyse (MA):

- A Large Scale Commercial Data Source Available for Secondary Analyses on Media Use and Social Change.” *Schmollers Jahrbuch* p. 10.
- Hetherington, Marc J. and Jonathan Daniel Weiler. 2009. *Authoritarianism and Polarization in American Politics*. New York: Cambridge University Press.
- Hobolt, Sara B., Thomas J. Leeper and James Tilley. 2021. “Divided by the Vote: Affective Polarization in the Wake of the Brexit Referendum.” *British Journal of Political Science* 51(4):1476–1493.
- Holtkamp, Lars. 2017. *Formen Kommunalen Demokratie*. Bern, Switzerland: Peter Lang.
- Hopkins, Daniel J. 2018. *The Increasingly United States - - How and Why American Political Behavior Nationalized*. University of Chicago Press.
- Iyengar, Shanto, Yphtach Lelkes, Matthew Levendusky, Neil Malhotra and Sean J. Westwood. 2019. “The Origins and Consequences of Affective Polarization in the United States.” *Annual Review of Political Science* 22(1):129–146.
- Jones, David R. 2001. “Party Polarization and Legislative Gridlock.” *Political Research Quarterly* p. 17.
- Lelkes, Yphtach, Gaurav Sood and Shanto Iyengar. 2017. “The Hostile Audience: The Effect of Access to Broadband Internet on Partisan Affect.” *American Journal of Political Science* 61(1):5–20.
- Leupold, Anna, Ulrike Klinger and Otfried Jarren. 2018. “Imagining the City.” *Journalism Studies* 19(7):960–982.
- Levendusky, Matthew. 2013a. *How Partisan Media Polarize America*. University of Chicago Press.
- Levendusky, Matthew S. 2013b. “Why Do Partisan Media Polarize Viewers?” *American Journal of Political Science* 57(3):611–623.
- Lupu, Noam. 2015. “Party Polarization and Mass Partisanship: A Comparative Perspective.”

- Political Behavior* 37(2):331–356.
- Martin, Gregory J. and Joshua McCrain. 2019. “Local News and National Politics.” *American Political Science Review* 113(2):372–384.
- Mason, Lilliana. 2018. *Uncivil Agreement: How Politics Became Our Identity*. University of Chicago Press.
- McConnell, Christopher, Yotam Margalit, Neil Malhotra and Matthew Levendusky. 2018. “The Economic Consequences of Partisanship in a Polarized Era.” *American Journal of Political Science* 62(1):5–18.
- Metag, Julia. 2016. “Political Communication and Opinion Formation in Germany: A Comparative Study of Local and National Issues.” *European Journal of Communication* 31(2):185–203.
- Mitchell, Amy, Katie Simmons, Katerina Eva Matsa and Laura Silver. 2018. “Publics Globally Want Unbiased News Coverage, but Are Divided on Whether Their News Media Deliver.” *Pew Research Center* 11.
- Moskowitz, Daniel J. 2021. “Local News, Information, and the Nationalization of US Elections.” *American Political Science Review* 115(1):114–129.
- Park, Sora, Caroline Fisher and Jee Young Lee. 2021. “Regional News Audiences’ Value Perception of Local News.” *Journalism* p. 1464884921992998.
- Prior, Markus. 2007. *Post-Broadcast Democracy: How Media Choice Increases Inequality in Political Involvement and Polarizes Elections*. Cambridge University Press.
- Prior, Markus. 2009. “Improving Media Effects Research through Better Measurement of News Exposure.” *The Journal of Politics* 71(3):893–908.
- Prior, Markus. 2013. “Media and Political Polarization.” *Annual Review of Political Science* 16(1):101–127.
- Rademacher, Christian. 2018. “Local Party Systems in Germany Lokale Parteiensysteme in

Deutschland.”

- Reiljan, Andres. 2020. “‘Fear and Loathing across Party Lines’ (Also) in Europe: Affective Polarisation in European Party Systems.” *European Journal of Political Research* 59(2):376–396.
- Ridder, Christa-Maria. 2005. “Trends in Der Nutzung Und Bewertung Der Medien 1970 Bis 2005.” *Media Perspektiven* 10(2005):490–504.
- Schupp, Jürgen. 2012. “Das Sozio-oekonomische Panel (SOEP).” *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz* 55(6-7):767–774.
- Snyder, James M. and David Strömberg. 2010. “Press Coverage and Political Accountability.” *Journal of Political Economy* 118(2):355–408.
- Stamm, Willy and Ulrich Tewes. 1979. *STAMM Leitfaden Durch Presse Und Werbung*. Stamm-Verlag.
- Statista. 2020. “Paid circulation of daily and Sunday newspapers in Germany in selected years from 1975 to 2019.” <https://www.statista.com/statistics/410995/daily-and-sunday-papers-circulation-germany/>.
- Taber, Charles S. and Milton Lodge. 2006. “Motivated Skepticism in the Evaluation of Political Beliefs.” *American Journal of Political Science* 50(3):755–769.
- Trussler, Marc. 2020a. “The Effects of High-Information Environments on Legislative Behavior in the US House of Representatives.” *Legislative Studies Quarterly*.
- Trussler, Marc. 2020b. “Get Information or Get in Formation: The Effects of High-Information Environments on Legislative Elections.” *British Journal of Political Science* pp. 1–21.
- Volgens, Andrea, Pola Lehmann, Sven Regel, Krause Werner, Tobias Burst, Theres Matthieß, Nicolas Merz, Bernhard Weßels and Lisa Zehnter. 2020. “The Manifesto Data Collection. Manifesto Project (MRG/CMP/MARPOR). Version 2020a.” *Wissenschaftszentrum Berlin*

(<https://manifestoproject.wzb.eu/>) .

Wagner, Markus. 2021. “Affective Polarization in Multiparty Systems.” *Electoral Studies* 69:102199.

Wehling, Hans-Georg and Andreas Kost. 2010. *Kommunalpolitik in der Bundesrepublik Deutschland - eine Einführung*.

Wellbrock, Christian M. 2011. “Die journalistische Qualität deutscher Tageszeitungen – Ein Ranking.” *MedienWirtschaft* 8(2):22–31.

Zaller, John R. 1992. *The Nature and Origins of Mass Opinion*. Cambridge University Press.

A Supporting Information (Online Only)

Contents

A.1	Alternative mechanisms	1
A.2	Local newspapers in Germany	2
A.3	Additional information on data and estimation	3
A.3.1	Details on newspaper exit coding	3
A.3.2	Municipal election data	4
A.3.3	News consumption data	5
A.3.4	Panel survey data	5
A.4	Descriptive statistics	7
A.5	Correlates of local news readership	9
A.6	Partisanship among national newspaper readers	12
A.7	Differences between local and national newspaper reporting	12
A.8	Individual-level panel results	13
A.9	Main results and alternative specifications	14
A.10	Results by number of remaining outlets after exit	15
A.11	Results for different reference categories	15
A.12	Spillover effects	16
A.13	Predicting newspaper exit	16
A.14	Newspapers and accountability	17
A.15	Additional data on reasons for switching to <i>Bild</i>	19
A.16	Details on consumption results	19

A.1 Alternative mechanisms

We consider four alternative mechanisms. First, consumers have been found to select into consuming news outlets that confirm their ideological priors (Levendusky 2013*b*). Building on this finding, local newspaper exits may affect polarization if affected consumers (i) substitute by consuming news from a highly partisan outlet or (ii) switch to a remaining local news outlet that differs in its ideological slant. The first scenario requires the existence of sufficiently partisan alternatives. While abundant today, such alternatives were rare during our study period (1980–2009). Most commonly, highly partisan environments can be found on the internet (see e.g. Lelkes, Sood and Iyengar 2017). However, Ridder (2005) shows that internet use was non-existent during the majority of our time period (see also section A.2 for more information). Similarly, partisan cable news channels do not exist in Germany, and newspapers tend to exhibit only weakly partisan tendencies (Blotevogel 1984). As a result, we consider it unlikely that local newspaper exits caused selection into partisan outlets, at least for the period that we analyze.

Second, consumers may also switch from the exiting outlet to another, remaining local outlet. Instead of consuming national news, individuals may substitute local news with local news. If local newspapers are sufficiently partisan and if consumers select into local news based on their priors, we might expect that switching to a different local outlet lowers polarization. If readers initially base their choice of news outlet based on ideological closeness, switching to a remaining local outlet would then lower ideological agreement between a reader and the outlet she reads. Crucially, this requires that ideological variation between local newspapers is large enough to cause selection based on partisan preferences. However, the previously mentioned lack of evidence for partisan slanting in German local newspapers suggests that changes in ideological congruence between readers and local outlets due to exits are likely small. Therefore, it appears improbable that partisan differences between local newspapers would affect polarization.

Third, the relationship between newspaper exits and polarization could be related to what Martin and McCrain (2019) term ‘demand’ rather than supply effects. If newspaper exits are caused by underlying demographic or economic trends, such as downturns or population declines, trends in polarization may simply reflect these underlying secular trends. Similarly, individuals might perceive the exit of local newspapers as a signal of economic decline. To punish incumbent centrist parties, voters might shift their electoral support to parties further from the ideological center, leading to political polarization. We return to this potential mechanism in section 5.5, where we demonstrate that our results are robust to the inclusion of time-varying control variables that capture economic and demographic decline. This suggests that demand effects cannot account for our results.

Fourth, the observed effects may stem from changes in political accountability or the quality of governance as a result of newspaper exits. Prior research suggests that exits negatively affect accountability and lead to more inefficient local governance (Gao, Lee and Murphy 2020), which may, in turn, affect voting behavior. To test for this mechanism, we use municipal debts as an indicator of the quality of governance. Using a cross-sectional design, we find no evidence that fewer local outlets are associated with higher municipal debts (we describe the analysis and results in more details in section A.14 in the SI). This analysis suggests that our results are not driven by changes in the governance behavior of politicians.

A.2 Local newspapers in Germany

Similar to the American market, the German media market is characterized by high levels of newspaper circulation, the early establishment of mass-circulation newspapers, and a high degree of professionalization among journalists and media companies (Hallin and Mancini 2004). The recent history of the German media landscape is unique in that it was fundamentally restructured after World War II. In West Germany, the Allies administered the transition into a pluralistic and free newspaper market. In the socialist East, on the other hand, the Soviet Union established a closely regulated, state-run media system. We do not include East Germany in our analysis prior to 1990. In addition, we conduct a robustness check to ensure that our results are not driven by the dynamics of the East German democratic transition after 1990 (see Table A.4).

During our study period, local newspapers constituted a highly trusted source of information for a large share of the adult population in Germany. While readership has declined since the late 1970s, local newspapers still reached 55.8% of all adults in Germany in 2011, down from more than 70% in the year 1979 (Bundesverband Deutscher Zeitungsverleger 2011; Vogel 2014). In section A.5 in the SI, we systematically examine the individual-level correlates of local news readership using a 2009 survey of more than 2000 eligible voters. We find that local news readership is particularly high among older, more educated individuals with high levels of political interest. We only find marginal differences in local news readership across states. Using the same data, we find that German voters rarely subscribe to multiple local news outlets at the same time. While 73% of respondents indicated that they read one local newspaper, only about 7% reported reading multiple local outlets.

Local newspapers are viewed as more credible than most other forms of media. According to recent survey data, Germans view local newspapers as more trustworthy than even the most reputable national newspapers (Nic et al. 2018, p. 81). When asked about the reasons for reading the local newspaper, respondents most frequently mention local news reports about the region (87%), edging out national and international news.

While local newspapers enjoy high levels of trust, their numbers and readership have decreased since the 1980s. This process has primarily been attributed to two developments: increased competition for customers after the introduction of private broadcasting services, and a lower propensity to consume newspapers among younger cohorts (Stieler 2009). Private television and radio stations only became widespread in the first half of the 1980s, and quickly gained in popularity, especially among the younger generation. This development greatly increased competition for consumers and reduced advertising revenues, which constituted a major source of earnings for local newspapers. At the same time, younger cohorts became less likely to read local newspapers. Notably, this behavior largely persisted as individuals aged – even older individuals would not consume local newspapers if they never did so in the first place (Vogel 2014). Due to these circumstances, many newspapers became unprofitable and consequently stopped publication. This occurred either through exits by the unprofitable newspaper, or through a takeover by other newspapers that sought to reduce competition by buying and then closing a direct competitor (Stieler 2009).

German local newspapers prioritize local events and politics in their reporting, providing the “informational backbone of what people know about social life in their city” (Leupold, Klinger and Jarren 2018, p.960). Their style of reporting mirrors the consensual norms of decision making at the local level – reporting tends to be factual and does not exhibit pronounced degrees of partisan slant. While local newspapers used to be aligned with political parties before World War II, readers

have since come to prefer unaligned and independent local news over partisan reporting (Blotevogel 1984). In a 2009 survey of more than 2,000 individuals, more than 85% of respondents agreed that political reporting in the local newspaper they read was not biased in favor of a particular party (GLES 2019). This statistic also informs the behavior of the surviving local newspapers after exits occur. Since German consumers value the lack of partisanship in local news reporting, we do not expect that local news outlets face incentives to shift their style of reporting when competitors exit.

Although local newspapers do report on national politics, the relative share of editorial space dedicated to national news is much lower than in national newspapers. As an example, local newspapers report less frequently on policies that are traditionally associated with national politics, such as migration, law and order, or environmental issues (see figure A.9, which is based on content-coded news articles by the GLES survey (Roßteutscher et al. 2017)).

Finally, we emphasize that online news outlets were either completely absent or of limited importance during the time period covered in our study (1980 – 2009). The total number of broadband internet connections in Germany has steadily increased since 2001, but was still at low overall levels prior to 2009 (see figure A.2 in the appendix). In 2010, only 16% of the population indicated that they consumed online news. In the 2009 German Longitudinal Election Study survey, only 5.7% of respondents reported reading a daily newspaper online (GLES 2016). Similarly, only about 7% of the German population were active users of the largest online social network, Facebook, in the year 2010 (Statista 2014). Online news sources were generally not viewed as credible – in a 2011 survey, only 6% of respondents list online news as their most trusted source of news. Finally, we note that 69% of the federal election observations we use fall into the period prior to 1998, when online news consumption was negligible (see section 4 for more details).

The majority of the German population consumes national news on a regular basis, most commonly in the form of national newspapers or television. Between 1980 and 2005, television reached between 77% and 89% of all individuals over the age of 14, while national newspapers reached between 51% and 76%. For more data on news consumption in Germany, see Ridder (2005).

A.3 Additional information on data and estimation

A.3.1 Details on newspaper exit coding

We collected data on the market exit, entry, and coverage areas of all local newspapers in Germany from the *STAMM Leitfaden durch Presse und Werbung* (“STAMM Leitfaden”), an annual publication that is intended for public relations and advertising purposes of companies, organizations, and agencies. We obtained, digitized, and hand-coded relevant chapters for all editions published between 1980 and 2012, with the exception of 1999.

We observe all local newspapers as listed in the Stamm Leitfaden. Each newspaper can have multiple local editions whose content focuses on and appears in non-overlapping geographies. The raw data is collected at the municipality level. We aggregate this information up to the county level and measure the number of unique local outlets available in each county. We argue that this does not introduce substantial measurement error, as coverage regions of German local newspapers generally go beyond a single municipality and span the entire surrounding county (or multiple counties).

In 1999, the general layout of the STAMM Leitfaden and the way that newspapers’ coverage areas are recorded changed. This change resulted in a reduction in the number of captured newspapers from 1999 to 2001. For this reason, we treat the years 1980 – 1999 and 2001 – 2012 as separate datasets: We never exploit variance in local newspaper market structure across the two time periods. We therefore exclude the 2002 federal election from our analysis.

Our categorical treatment variable measures changes in the number of unique local news outlets available in a given county over time. To do this, we first compare the outlets available in county c in year t to the outlets available in the same county c in year $t - 1$. To account for measurement error in our original data source, we do not count the following events as changes in the local newspaper market:

- the entry of a newspaper in year t that exited in the previous year $t - 1$
- the entry of a newspaper in year t that exits in the next period $t + 1$
- the exit of a newspaper in year t that will re-enter the dataset in the next year $t + 1$
- the exit of a newspaper in year t that just entered in the previous period $t - 1$

We also exclude any changes that relate to ‘non-unique newspapers’. For example, when two newspapers are editorially identical because two local editions of the same regional newspapers contain the same content, we assign them the same newspaper id. If both are available in county c at time t but only one of them is available at time $t + 1$, we do not count this as a market exit. We also exclude regional editions of the national newspaper *Bild* from our dataset. For East-Germany, we record changes in local newspaper availability starting in 1992.

When we measure changes between election-years (e.g. between 1994 and 1998), we aggregate the year-to-year changes that we coded as described above. If at least one unique newspaper exited the local market in at least one year, we code this as ‘market exit’. If at least one unique newspaper entered the local market in at least one year, we code this as ‘market entry’. If both events occurred between the two periods, we code this as ‘exit and entry’. If neither of the events happened, we code this as ‘no change’ (all indicator variables are set to zero).

Finally, we note that the measurement of our treatment relates to the presence of unique newspaper titles, not changes in ownership structure. For example: when a newspaper is acquired by its competitor in a duopolistic market but continues to be published as a distinct outlet, this would not be coded as a newspaper exit in our data. When a newspaper is acquired and rebranded, this would count as both exit and entry at the same time, and hence be captured in our residual treatment category. Finally, suppose a newspaper ceases to be published as a distinct outlet after being acquired. In this scenario, we would observe a newspaper exit in our data.

A.3.2 Municipal election data

Our data on municipal elections covers 66 out of all 72 municipal elections that were held during this time period (92%). Election data for some municipal elections was not available from official sources (Rademacher 2018). We also use the Manifesto data to calculate polarization in municipal elections. Bräuninger et al. (2020)[p.57] show that federal and state-level party positions strongly correlate.

For municipal elections, our main outcome variable $Y_{m,t}$, electoral polarization in municipality m in election t , is defined as:

$$Y_{m,t} = \sqrt{\sum_j \psi_{j,m,t} (\tau_{j,t} - \bar{\tau}_t)^2}$$

where $\psi_{j,m,t}$ is the vote share of party j in municipality m at time t , $\tau_{j,t}$ is the position of party j at time-period t across the left-right political spectrum, and $\bar{\tau}_t$ is the mean party position in Germany at time t (weighted by the number of votes). Municipality elections do not all occur at the same time. We therefore translate between the federal and municipal election years as follows: we link each municipal election to the closest federal election. As an example, municipal elections held in either 2004 or 2006 are linked to the 2005 federal election. To estimate the mean party position $\bar{\tau}_t$, we then calculate the weighted mean of the party positions $\tau_{j,t}$, where the weights are municipal-level vote shares $\psi_{j,m,t}$, for all municipal elections that occur in close temporal proximity to a given federal election t .

While we measure the polarization outcome at the municipality level, we always use standard errors clustered at the county level. The treatment (newspaper exit) is likewise measured at the county level. We note that in municipal council elections, not all major parties field candidates in all municipalities, as opposed to federal elections, where all major parties are always on the ballot in all counties. For our polarization measure, this is not an issue, since the aggregate polarization measure would then just be based on the parties that are on the ballot. For the small party vote share variable, we omit the party in question from the sum that forms this variable.

A.3.3 News consumption data

The MLFZ data contains information on ‘exposure probabilities’ (*Kontaktwahrscheinlichkeiten*) in percentage points for different news outlets. Exposure probabilities as measured in MLFZ always relate to the two-week period prior to the survey date. We observe the share of published issues that a respondent has read over the last two weeks. For example, if a respondent read every other issue over a two-week period, this would translate into an exposure probability of 50%. We dichotomize these variables at the individual level: exposure probabilities greater than zero are coded as one. We consider a respondent as regularly exposed to a news outlet if she has read at least one issue of the paper within the last two weeks prior to the survey.

As for our main analysis, the definition of t follows electoral cycles. We aggregate four-year periods of consumption data per county. As an example, we would obtain our consumption measure for a county c in the 1998 election by calculating the mean consumption across all respondents in this county between 1995 and 1998. While this method allows for easier comparison with the electoral polarization outcome, it also increases the number of observations we can use to calculate the county-level means of media consumption behavior. We present more information on the number of respondents per county in figure A.5 in the appendix. For the median county, we have about 140 observations, while there are more than 100 respondents for 75% of all counties.

A.3.4 Panel survey data

In order to assess individual-level attitude changes after local newspaper exits, we rely on the German Socio-Economic Panel (Schupp 2012). To the best of our knowledge, no other panel survey that

measures voter attitudes and covers our study period (in particular the 1980s and 90s) is available. Please note that in order to match panel respondents with our local newspaper exit treatment on the county level, we relied on geocoded information. While the main panel is openly accessible, geocoded data on the county level is restricted for privacy concerns and requires personal access at the German Institute for Economic Research (DIW).

We analyze whether panel respondents in counties that are affected by local newspaper exits become more politically engaged. The panel provides information on respondent attitudes between 1984 and 2009, which is almost identical to the time period covered in the main analysis. While a majority of regularly reoccurring items in the SOEP deal with economic and sociodemographic characteristics, we find three items particularly suitable to capture politicization of attitudes:

First, participants are regularly asked if they identify with a party. Since the item was surveyed over more than a 20-year period and then harmonized by the SOEP-team, the wording of the question deviates slightly. The most common wordings of the item are:

1. *Many people in Germany tend to one party in the long term, even if they occasionally vote for another party. Do you tend to a particular party?*
2. *A lot of people in Germany lean towards a certain party for a longer time, although they vote from time to time for another party.*

Respondents could simply agree or disagree to being a long-term supporter of a political or choose not to answer. We first coded this variable as a dichotomous party identification identifier, where a value of 1 indicates that the respondent is a long-term supporter of a party and 0 shows that she is not. We ignored missing values.

Next, those respondents who indicated possessing a party identification were asked about the intensity of their support. The exact wording was:

And to what extent do you tend to this party?

We use this item to assess party ID intensity. Survey participants could classify their identification intensity on a five-point scale, or choose not to answer. We recoded the scale so that higher values denote stronger feelings towards a party. In addition, those who did not indicate having a party identification in the prior item did not receive this question and were assigned a special code in the original survey. We decided to recode them as having an intensity of zero (i.e. no partisan identity), so that we end up with a six-point scale (from zero to five), where higher values denote more intense support.

Finally, we measured changes in self-reported political participation. Respondents have been asked how often they participate in parties, local politics, or citizen initiatives during their free time. Constituents could choose from a four point scale (1 to 4) if they never, rarely, monthly, or weekly participated in politics. We recoded the values so that higher numbers align with more participation.

For these three items, we then emulated the estimation strategy that is applied in the main analysis (see section 4). First, we made sure to include respondents that have been surveyed in a federal election year. Then, we calculated the within-person change for the three items across the electoral cycle. For instance, a respondent could score a party ID value of 1 if she reported feeling close to a party at election t , but reported no affiliation at the previous election ($t - 1$). Conversely, a participant could score a -1 if she dropped her affiliation in the subsequent election (moving from t to $t + 1$).

For each respondent, we also identified if she was living in a county that experienced a local newspaper exit, a newspaper entry, or an exit and entry over the electoral cycle and coded the treatment status with a set of dummy variables, as described above. Yet again, we were unable to observe changes from 1998 to 2002 due to incompatible coding of the original newspaper coverage regions. Note that we relied on restricted in-person access to classified geo-spatial data by the SOEP to locate respondents.

Finally, we run a series of regression models following the equation in section 4.5. The main difference is that the outcome traces individual-level changes over the electoral cycle. We include time fixed effects to avoid extrapolation across the electoral cycle and cluster standard errors at the county level.

A.4 Descriptive statistics

Table A.1: Summary statistics, federal election data

Variable	Mean	Median	S.D.	N	Min	Max
SPD voteshare	0.33	0.33	0.10	2651	0.10	0.65
CDU/CSU voteshare	0.42	0.42	0.11	2651	0.14	0.75
Greens voteshare	0.07	0.06	0.03	2651	0.00	0.26
FDP voteshare	0.09	0.09	0.04	2651	0.02	0.34
Left Party voteshare	0.06	0.03	0.08	2003	0.00	0.38
Other parties voteshare	0.04	0.04	0.03	2651	0.00	0.14
Turnout	0.78	0.79	0.07	2651	0.55	0.93
Newspaper entry (0/1)	0.05	0.00	0.22	2570	0.00	1.00
Newspaper exit (0/1)	0.09	0.00	0.29	2570	0.00	1.00
Newspaper exit and entry (0/1)	0.04	0.00	0.20	2570	0.00	1.00
Electoral polarization	9.05	7.90	2.76	2651	4.84	16.56
East Germany (0/1)	0.14	0.00	0.35	2651	0.00	1.00
Population size (thousands)	198.51	145.19	214.68	2637	33.33	3472.01
GDP per capita (thousands)	19.27	17.20	9.33	2573	5.27	80.37
SPD voteshare	-0.02	-0.02	0.06	2574	-0.22	0.17
CDU/CSU voteshare	-0.02	-0.03	0.04	2574	-0.19	0.09
Greens voteshare	0.01	0.01	0.02	2574	-0.10	0.10
FDP voteshare	0.00	0.01	0.03	2574	-0.28	0.09
Left Party voteshare	0.03	0.02	0.03	1602	-0.05	0.19
Other parties voteshare	0.01	0.01	0.02	2574	-0.13	0.10
Electoral polarization	-0.75	-1.56	4.40	2250	-7.14	10.88
Population size (thousands)	2.04	1.74	10.03	2236	-99.68	136.05
GDP per capita (thousands)	2.34	2.04	2.18	2172	-17.26	25.63

Notes: The table shows summary statistics for the federal election data. The unit of analysis is the county. We present summary statistics for either levels or differences between the current period and the previous election (see section 4). East German counties only enter the sample after reunification in 1990.

Table A.2: Summary statistics, individual-level data

Variable	Mean	Median	S.D.	N	Min	Max
Levels						
Partisan identification	0.48	0	0.50	57544	0	1
Party ID intensity	1.51	0	1.78	57942	0	5
Political involvement	1.12	1	0.45	18072	1	4
Changes (first difference)						
Partisan identification	-0.02	0	0.47	57544	-1	1
Party ID intensity	-0.08	0	1.61	57942	-5	5
Political involvement	-0.05	0	0.48	18072	-3	3

Notes: The table shows summary statistics for the individual-level panel data. The unit of analysis is the respondent. We present summary statistics for either levels or differences between the current period and the previous period. East German respondents only enter the sample after reunification in 1990. The number of observations differs across outcomes, since political involvement is not asked as frequently as the other two outcomes.

Figure A.1: Newspaper decline in OECD countries

Note: Estimated newspaper publishing market decline in OECD countries, 2007-2009 (in percent). The data relates to the combined revenue of newspapers from circulation and advertising. We obtained the data from the OECD (2010).

Figure A.2: Broadband internet in Germany, 2001 – 2019

Note: The figure shows the total number of digital subscriber lines (DSL) in Germany between 2001 and 2019. Data obtained from Statista (2020a).

Figure A.3: Left-right position of political parties in Germany

Note: The figure shows the average RILE scores of political parties in Germany between 1980 and 2009, based on the Manifesto data (Volkens et al. 2020). Higher scores correspond to more right-wing political platforms.

Figure A.4: Elections by state and year

Note: The figure shows all elections used in our analysis, by state, year and type of election. The five states at the bottom of the table are East German states, where free elections were first held after the German unification in 1989.

A.5 Correlates of local news readership

In this section, we examine the individual-level correlates of local news readership. To do this, we draw on the 2009 GLES pre-election survey. This is a survey of more than 2,000 eligible voters conducted prior to the 2009 federal election. We refer to the study documentation available on GESIS for more details on the survey methodology and sampling scheme (GLES 2019). We use a

Figure A.5: Newspaper consumption data: number of individual respondents by county and election

Notes: The figure shows the number of individual survey respondents across counties by election. For the measure used in the paper, we aggregate responses from all individual survey participants to the county level. The dashed vertical line indicates the bottom decile – for this number, 90% of counties in a given year have more respondents. The dotted vertical line indicates the median. Since the number of respondents is skewed, we use a log scale on the x axis.

survey item that asks respondents whether they occasionally or regularly read a daily local or regional newspaper. We recode this item to a binary indicator variable that equals one for respondents who read local news. To descriptively examine the correlates of local news readership, we then estimate a linear probability model where local news readership, as defined above, is the outcome variable. We include the following covariates:

- Gender (male vs. female)
- Age in years (divided by 10 to ease the interpretation of effect estimates)
- Education (respondents with an A-levels degree (*Abitur*) vs. those without A-levels (0/1))
- Having at least one foreign-born parent (0/1)
- Political interest (measured on a scale from 1–5); to ease the interpretation of the results, we reversed the scale such that higher values correspond to higher levels of political interest
- Federal state fixed effects

We present the results in Figure A.6. Because we estimate a linear probability model, the effect estimates can be interpreted as average changes in the probability of local news readership for a one-unit change in each covariate. Local news readership is highest among older, more educated individuals with higher levels of political interest. However, it should be noted that local news readership is generally at very high levels. In the 2009 GLES sample, more than 73% of respondents indicated that they read a local newspaper.

Figure A.6: Individual-level correlates of local news readership

Note: The figure shows the OLS effect estimates from linear probability models, where a binary indicator for local news readership is the outcome variable. We use data from the 2009 GLES survey for this analysis (GLES 2019). Additional details on this analysis are provided in section A.5 in the SI.

Figure A.7: Local news readership in GLES sample by state

Note: The figure shows the share of respondents who indicate that they read local news by federal state. We use data from the 2009 GLES pre-election survey (GLES 2019). We note that the GLES sample is not necessarily representative for the population within each federal state.

To provide additional background information on local news readership, we visualize the share of respondents who indicate that they read local news by federal state in Figure A.7. While there is some variation in local news readership across states, local news readership is generally at very high levels. In all states except Berlin, more than 50% of respondents indicate that they occasionally or regularly read a daily local or regional newspaper. We note that the GLES sample is not necessarily representative of the population within each federal state. We hence caution against over-interpreting the raw numbers presented in Figure A.6.

A.6 Partisanship among national newspaper readers

Drawing on a 2009 survey of about 2,200 respondents (GLES 2019), we present evidence that national news readership in Germany is not divided along ideological lines. In Figure A.8, we show the distribution of partisan identification among readers of different news outlets. The readership of all four national outlets we consider covers the entire political spectrum from left to right, with a large share of independent readers who do not lean towards a particular political party. This applies to the *Bild* in particular, whose readership comprises a particularly high share of independents.

Figure A.8: Partisanship by national news readership

Note: The figure shows the distribution of partisan identification conditional on national news readership. Individuals in the survey can indicate to read multiple news outlets and may therefore appear in multiple conditional distributions. We use data from the 2009 GLES survey ($N \approx 2,200$) for this analysis (GLES 2019).

A.7 Differences between local and national newspaper reporting

Evidence from the US highlights that local and national newspapers strongly differ in their style on political reporting (Darr, Hitt and Dunaway 2021). We analyze differences in local and national newspaper reporting for our case based on data from the German Longitudinal Election Survey (GLES, Roßteutscher et al. 2017). GLES is the most comprehensive German election survey and offers newspaper content analyses for the time period from 2009 to 2013. Around local and federal elections, GLES has collected newspaper articles from the main page and politics section of five national newspapers and magazines (*Bild*, *FAZ*, *SZ*, *Spiegel*, *Focus*), as well as fourteen regional newspapers. Matches between newspaper content and dictionary items were counted on the article level. Although the GLES newspaper tracking includes only a fraction of the entire German local newspaper market (that we use in the main analysis), the data enables us to test if local and national newspapers differ in terms of their content.

Figure A.9 shows the differences in media content. We plot the share of articles that include at least one keyword associated with five policy areas. We chose law and order, migration, and environmental policy as issues closely associated with the national policy debate. On the other hand, infrastructure and education are mostly organized on the sub-national level within the German federal system - and constitute issues that are less contested on the national stage. We indeed observe that national newspapers report significantly more often on law and order, migration, and environmental issues. Priming constituents with these policy fields, in which parties take on distinct positions on the national level, may induce consumer polarization. Conversely, less contested issues, such as infrastructure or education, are equally prevalent in local and national news reporting. Here, many decisions are made on the state- or local level, supported by coalitions across party lines.

Figure A.9: Local and national newspaper content

Note: The plot shows differences in reporting of 23'027 content-coded local and national newspaper articles around federal and national elections between 2009 and 2013. Articles stem from the title page and politics section of each medium. The article content has been coded by GLES (2017) following a dictionary approach. The plot shows the share of articles that included at least one keyword associated with five policy fields: Law and Order, Migration, Environment, Infrastructure, and Education. We find that national outlets are significantly more likely to report on the first three issue areas (two sample t-tests; $p < 0.001$), whereas no significant differences exist among the latter two.

A.8 Individual-level panel results

Table A.3: Summary of results for the individual-level outcome.

Outcome	Model	Estimate	SE	P	N
Party identification	Year FE	0.013	0.007	0.056	57,544
Party ID intensity	Year FE	0.053	0.028	0.061	57,942
Political involvement	Year FE	0.025	0.015	0.104	18,072

Notes: The table lists estimates and related quantities for model presented in figure10. Each row represents an estimate of the coefficient τ (see also the discussion in section A.3.4). The last column lists the number of observations.

A.9 Main results and alternative specifications

Table A.4: Summary of main results for different samples, outcomes and model specifications.

Outcome	Election	Model	Estimate	SE	T-stat	P	N
1. Full sample							
Small party vote share	Federal	Year FE	0.006	0.002	3.510	0.000	2,568
Small party vote share	Federal	Covars + Year FE	0.003	0.002	1.951	0.051	2,166
Polarization	Federal	Year FE	0.489	0.086	5.663	0.000	2,244
Polarization	Federal	Covars + Year FE	0.340	0.086	3.942	0.000	2,166
Small party vote share	Municipal	Year FE	0.005	0.004	1.173	0.241	11,861
Small party vote share	Municipal	Covars + Year FE	0.005	0.004	1.183	0.237	11,589
Polarization	Municipal	Year FE	0.552	0.201	2.748	0.006	11,688
Polarization	Municipal	Covars + Year FE	0.537	0.206	2.612	0.009	11,416
2. Before 2000							
Small party vote share	Federal	Year FE	0.008	0.002	4.493	0.000	1,772
Small party vote share	Federal	Covars + Year FE	0.005	0.002	3.198	0.001	1370
Polarization	Federal	Year FE	0.603	0.097	6.228	0.000	1,448
Polarization	Federal	Covars + Year FE	0.406	0.099	4.102	0.000	1,370
3. After 2000							
Small party vote share	Federal	Year FE	-0.003	0.003	-0.821	0.412	796
Small party vote share	Federal	Covars + Year FE	-0.002	0.003	-0.555	0.579	796
Polarization	Federal	Year FE	0.112	0.147	0.760	0.447	796
Polarization	Federal	Covars + Year FE	0.132	0.145	0.916	0.360	796
4. Full sample (omitting East Germany in 1994)							
Small party vote share	Federal	Year FE	0.003	0.001	2.275	0.023	2,492
Small party vote share	Federal	Covars + Year FE	0.003	0.002	1.951	0.051	2,166
Polarization	Federal	Year FE	0.343	0.088	3.882	0.000	2,168
Polarization	Federal	Covars + Year FE	0.340	0.086	3.942	0.000	2,166

Notes: The table lists estimates and related quantities for the main models presented in the paper. Each row represents an estimate of the coefficient τ (see also the discussion in section 4). We present estimates for four different samples, two elections and two different model configurations. The last column lists the number of observations.

Figure A.10: Effect of newspaper exit on turnout

Note: The plot shows the estimated effect (τ) of a newspaper exit on turnout. The results are based on the benchmark specification, which uses first-differenced outcomes and year fixed effects.

A.10 Results by number of remaining outlets after exit

We now differentiate exits according to how many outlets remain after an exit occurs. In doing so, we estimate an augmented version of the main specification:

$$\Delta Y_{c,t} = \alpha_t + \sum_j \tau_j \mathbb{1}_{Exit_{c,t}^j} + \gamma \mathbb{1}_{Entry_{c,t}} + \delta \mathbb{1}_{Entry_{c,t} \cap Exit_{c,t}} + \epsilon_{c,t}$$

Except for the second term on the right-hand side, the specification is the same as the main specification described in section 4. Instead of one term for newspaper exits, we now distinguish between three types of newspaper exits, indexed by j : exits where one outlet remains, exits where two outlets remain, and exits where three or more outlets remain. We do not observe exits after which no outlets remain. In about 85% of observations for which exits occur, one newspaper exits. Therefore, these categories can also be considered to measure the relative reduction in the number of available outlets. Exits with one remaining outlet correspond to a $\sim 50\%$ reduction, exits with two remaining outlets correspond to a $\sim 33\%$ and exits with three or more remaining outlets correspond to at most a 25% reduction.

From the specification above, we obtain three coefficients τ_j for each of these three scenarios. In figure A.11, we present coefficient estimates for the three τ_j for our two main outcomes in federal elections. We find that the estimated effects are largest for exits where one or two newspapers remain. These results are consistent with the argument that more severe changes in the market for local news have greater consequences for political behavior.

Figure A.11: Effect of newspaper exit on polarization – by number of remaining outlets

Note: The plot shows the estimated effects (τ_j) of three types of newspaper exits on two outcomes: political polarization, as well as the vote share of small parties. The results are based on the benchmark specification, which uses first-differenced outcomes.

A.11 Results for different reference categories

As described in section 4, our main outcome measures electoral polarization as the weighted distance from a party system mean $\bar{\tau}_t$ at time t . In our main specifications shown in the paper, this is the

country-level party system mean in election t , i.e. it is defined as $\sum_j \psi_{j,t} \tau_{j,t}$ where $\psi_{j,t}$ and $\tau_{j,t}$ are the vote share and left-right party position of party j in federal election t , respectively. Instead of using the country-wide party system mean, an alternative approach would be to use the state-level party system mean, or a more local measure like county-level party system means. In figure A.12, we show that the choice of reference unit (i.e. country, state or county) makes little difference for our main results. This result holds when we add year fixed effects as well as covariates to the base first-difference specification.

Figure A.12: Effect on polarization using different reference categories

Note: The plot shows the estimated effect (τ) of a newspaper exit on political polarization. Polarization is measured as the weighted ideological dispersion of party positions on the county level, relative to one of three different reference categories (see Dalton 2008). These reference categories are represented by the color and shape of the symbols in the figure. We present results for two different specifications.

A.12 Spillover effects

In this section we perform an additional robustness check to test for spillover effects. In particular, we test whether electoral behavior when newspapers exit in neighboring counties. To do this, we create a new treatment indicator variable that takes on the value one if at least one newspaper exit occurred in a contiguous, neighboring county (by this, we mean that counties have to border each other directly). The treatment variable does not equal one if both exits and entries occur in neighboring counties. We then run a similar difference-in-differences analysis as for our main results (see section 4.5), but now regress changes in polarization on newspaper exits in neighboring counties.

$$\Delta Y_{c,t} = \alpha_t + \tau \mathbb{1}_{\text{Exit in neighboring county}_{c,t}} + \epsilon_{c,t}$$

For this analysis, we subset to those counties that never experience newspaper exits themselves during our study period. We present the results in figure A.13. We do not find evidence for spillovers across adjacent counties. Newspaper exits in neighboring counties do not predict changes in polarization.

A.13 Predicting newspaper exit

In this section, we examine whether changes in demographic and economic conditions are correlated with newspaper exit. For this analysis, we obtained data on employment (*Erwerbstätige*) and GDP

Figure A.13: Effect of newspaper exit in neighboring counties

Note: The plot shows the estimated effect (τ) of a newspaper exit in neighboring county on political polarization and small party vote share in federal elections. Polarization is measured as the weighted ideological dispersion of party positions on the county level (see Dalton 2008). We present results for two different specifications. The sample only includes counties that never experience newspaper exits themselves. Standard errors are clustered at the county level.

(*Bruttowertschöpfung*) from Statistische Ämter des Bundes und der Länder (2019). For the period prior to German reunification, only biannual GDP data is available. We used a linear interpolation to impute missing GDP data. For example, we used a linear approximation between 1992 and 1994 to impute the GDP value of a given county in 1993. We obtained county-level data on population size covering the period 1980 to 2013 from the *Statistisches Bundesamt*. County-level data on employment rates prior to 1992 is not available. We scaled both employment and GDP by county population size. We estimate two specifications of the following form:

$$\begin{aligned}\mathbb{1}_{Exit} &= \alpha_t + \beta \Delta X_{c,t} + \epsilon_{c,t} \\ \mathbb{1}_{Exit} &= \alpha_t + \beta X_{c,t-1} + \epsilon_{c,t}\end{aligned}$$

As in the main specification, $\mathbb{1}_{Exit}$ indicates whether a newspaper exits in county c between $t - 1$ and t , where we use federal elections as time periods. Since we use a binary outcome, the control group (i.e. $\mathbb{1}_{Exit} = 0$) consists of counties where the number of newspapers stays constant. We use either trends or levels in the covariates to predict exits. In the first equation, we use trends such that $\Delta X_{c,t} = X_{c,t} - X_{c,t-1}$ is the first-differenced covariates. In the second specification, we instead just use $X_{c,t-1}$, i.e. covariate levels in the previous period. We estimate the model with and without year fixed effects α_t . We estimate a total of six models, where each covariate enters separately as either the change between two periods or the level in the $t - 1$. The coefficient vector β tells us whether demographic and economic conditions predict newspaper exits. We present the results in figure A.14.

A.14 Newspapers and accountability

Our argument focuses on consumer behavior as the main driver of political polarization after local newspaper exits. An alternative explanation relates to changes in political accountability that occur due to newspaper exits. Potential repercussions for accountability and governance have been documented in prior work Gao, Lee and Murphy (2020); Snyder and Strömberg (2010). Newspaper exits

Figure A.14: Predicting newspaper exit

Note: The plot shows the association between the three control variables listed on the y-axis and the probability of newspaper exit. Controls are either levels in the previous period (left-hand side panels) or changes between the previous and the current period (right-hand side panels). We estimate the base model without fixed effects (top row) and with year fixed effects (bottom row). All controls are standardized.

may lead to changes in local policy, e.g. because constituents cannot sufficiently monitor elected officials. If the decreased monitoring leads to declines in the observed quality of local governance, this may induce constituents to switch away from local incumbent parties, which are primarily the CDU/CSU and the SPD. This mechanism is consistent with our main findings, but does not require more nationalized news consumption.

We provide a test for this mechanism by assessing whether decreased newspaper presence is associated with higher local government debts. While there is no perfect indicator for the quality of governance at the local level, prior work suggests that government deficits and increased borrowing are a consequence of decreased accountability (Gao, Lee and Murphy 2020). Accordingly, we estimate a series of cross-sectional models on the county-level, where we regress municipal debts on the number of newspapers that cover the county. Since debt data is only available from 2010, we do not utilize the panel structure of our newspaper presence data, which ends in 2012. Rather, we rely on debt data from 2010 and newspaper presence in 2009, measured as the number of outlets. We additionally include controls for GDP/capita, unemployment, population, right-leaning party share in the 2009 federal elections as well as state fixed effects.

As shown in table A.5, there is no evidence that newspaper presence is associated with changes in municipal government debts. Across six specifications, we find small and insignificant points estimates. In model three, which includes covariates and state fixed effects, we observe that one additional newspaper is associated with a reduction of a mere 7.4 Euros in government debt per capita. This change corresponds to 0.01 standard deviations. Taken together, the results presented in table A.5 provide little evidence towards a mechanism whereby changes in political accountability underlie our results concerning political polarization.

Table A.5: Association between county-level newspaper presence and per-capita municipal debts

	DV: Municipal debts in 2010 (Euro/capita)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Number of outlets	-15.474 (34.380)	41.896 (40.428)	-7.397 (34.441)			
Number of outlets (log)				-83.043 (138.302)	135.715 (151.171)	38.272 (127.035)
Covariates	No	Yes	Yes	No	Yes	Yes
State FE	No	No	Yes	No	No	Yes
DV mean	1567.41	1567.41	1567.41	1567.41	1567.41	1567.41
DV SD	1214.35	1214.35	1214.35	1214.35	1214.35	1214.35
Effect in SD	-0.01	0.03	-0.01	-0.07	0.11	0.03
N	401	401	401	401	401	401
R ²	0.001	0.091	0.482	0.001	0.090	0.482

Notes: The tables contains results from regressing municipal debt per capita (measured at the county level) on the number of outlets that cover a given county. The independent variable is either the number of newspapers, or the logarithm of the number of newspaper. The latter definition accounts for potential non-linearities in the estimated relationship. Controls are GDP/capita, unemployment, population and right-leaning party vote shares in the 2009 federal elections. All right-hand side variables are measured in 2009, while the outcome is measured in 2010. ***p < .01; **p < .05; *p < .1

A.15 Additional data on reasons for switching to *Bild*

Several characteristics of the *Bild* make it more likely that former readers of local newspapers switch to the outlet. First, the tabloid is highly popular and readily available throughout the country. The *Bild* circulation rate of 1.2 million daily copies is larger than the rates of the remaining three competitors combined (as of 2020, see Statista 2020). Due to its popularity, *Bild* is not only available through subscription, but is often offered at local vendors. Next to popularity and availability, the affordability of *Bild* is another incentive that should attract former local newspaper readers.

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A.16 Details on consumption results

Table A.6: Education of newspaper readers (in percentages)

Education level	General population	Bild	FAZ	SZ
Student	4.61	2.14	2.53	2.07
Lower Secondary School	40.24	52.88	8.11	14.37
Secondary School	29.09	31.44	14.84	18.45
High School	12.04	7.18	21.69	21.80
University Graduate	14.02	6.36	52.83	43.30

Notes: The table shows the relative share of education levels among the German general population and three newspapers as of 2013. The data stem from SE (2021).

Table A.7: Estimates for the national news consumption outcome

Election rel. to exit	Estimate	SE	Estimate (in SD)	SD of DV	P	N
National news consumption (absolute)						
-2	0.005	0.010	0.047	0.113	0.578	1368
-1	0.003	0.010	0.029	0.111	0.738	1767
1	0.013	0.009	0.116	0.111	0.140	1769
2	0.019	0.007	0.173	0.111	0.004	1771
National news consumption (relative)						
-2	-0.002	0.004	-0.032	0.054	0.697	1368
-1	-0.003	0.005	-0.059	0.056	0.464	1767
1	0.007	0.004	0.118	0.056	0.122	1769
2	0.014	0.003	0.247	0.056	0.000	1771
Estimates including covariates						
Election rel. to exit	Estimate	SE	Estimate (in SD)	SD of DV	P	N
National news consumption (absolute)						
-2	0.009	0.010	0.081	0.113	0.351	1363
-1	0.006	0.010	0.052	0.111	0.559	1762
1	0.014	0.009	0.125	0.111	0.111	1765
2	0.020	0.007	0.177	0.111	0.004	1768
National news consumption (relative)						
-2	-0.001	0.004	-0.014	0.054	0.865	1363
-1	-0.002	0.005	-0.036	0.056	0.661	1762
1	0.007	0.004	0.117	0.056	0.124	1765
2	0.014	0.003	0.244	0.056	0.000	1768

Note: The plot shows the estimated effect (τ) of a newspaper exit on two outcomes: absolute levels of national newspaper consumption, and the relative share of national outlets among all newspapers that individuals consume. The first column indicates the election relative to the time when newspaper exit occurs. Elections labeled -1 and -2 are prior to exit, while elections labeled 1 and 2 are after exit occurs.

References

- Blotevogel, Hans Heinrich. 1984. "Zeitungsregionen in Der Bundesrepublik Deutschland: Zur Räumlichen Organisation Der Tagespresse Und Ihren Zusammenhängen Mit Dem Siedlungssystem." *Erdkunde* pp. 79–93.
- Bräuninger, Thomas, Marc Debus, Jochen Müller and Christian Stecker. 2020. *Parteienwettbewerb in den deutschen Bundesländern*. Wiesbaden: Springer Fachmedien Wiesbaden.
- Bundesverband Deutscher Zeitungsverleger. 2011. "Die Deutschen Zeitungen in Zahlen Und Daten – Auszug Aus Dem Jahrbuch Zeitungen 2011/12."
- Dalton, Russell J. 2008. "The Quantity and the Quality of Party Systems: Party System Polarization, Its Measurement, and Its Consequences." *Comparative Political Studies* 41(7):899–920.
- Gao, Pengjie, Chang Lee and Dermot Murphy. 2020. "Financing Dies in Darkness? The Impact of Newspaper Closures on Public Finance." *Journal of Financial Economics* 135(2):445–467.
- GLÉS. 2016. "Langfrist-Panel 2009-2013-2017." GESIS Datenarchiv, Köln. ZA5322 Datenfile Version 1.1.0, <https://doi.org/10.4232/1.12627>.
- GLÉS. 2019. "Vorwahl-Querschnitt (GLÉS 2009)." GESIS Datenarchiv, Köln. ZA5300 Datenfile Version 5.0.2, <https://doi.org/10.4232/1.13228>.
- Hallin, Daniel C. and Paolo Mancini. 2004. *Comparing Media Systems: Three Models of Media and Politics*. Cambridge University Press.
- Lelkes, Yphtach, Gaurav Sood and Shanto Iyengar. 2017. "The Hostile Audience: The Effect of Access to Broadband Internet on Partisan Affect." *American Journal of Political Science* 61(1):5–20.
- Leupold, Anna, Ulrike Klinger and Otfried Jarren. 2018. "Imagining the City." *Journalism Studies* 19(7):960–982.
- Levendusky, Matthew S. 2013. "Why Do Partisan Media Polarize Viewers?" *American Journal of Political Science* 57(3):611–623.
- Nic, Newman, Richard Fletcher, Antonis Kalogeropoulos, David AL Levy and Rasmus Kleis Nielsen. 2018. *Reuters Institute Digital News Report 2018*. Reuters Institute for the Study of Journalism.
- OECD. 2010. The Evolution of News and the Internet. Technical report.
- Rademacher, Christian. 2018. "Local Party Systems in Germany Lokale Parteiensysteme in Deutschland."
- Roßteutscher, Sigrid, Rüdiger Schmitt-Beck, Harald Schoen, Bernhard Weißels, Christof Wolf, Simon Henckel, Ina Bieber and Philipp Sherer. 2017. "German Longitudinal Election Study."
- Schupp, Jürgen. 2012. "Das Sozio-oekonomische Panel (SOEP)." *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz* 55(6-7):767–774.
- SE, Marktforschung Axel Springer. 2021. "Media-Analyse Agma Media-Micro-Census." <https://www.ma-reichweiten.de/>.
- Statista. 2014. "Facebook - Nutzer in Deutschland 2014."

- <https://de.statista.com/statistik/daten/studie/70189/umfrage/nutzer-von-facebook-in-deutschland-seit-2009/>.
- Statista. 2020a. “Anzahl der DSL-Anschlüsse in Deutschland von 2001 bis 2019.” <https://de.statista.com/statistik/daten/studie/196001/umfrage/anzahl-der-dsl-anschluesse-in-deutschland-seit-2001/>.
- Statista. 2020b. “Paid circulation of daily and Sunday newspapers in Germany in selected years from 1975 to 2019.” <https://www.statista.com/statistics/410995/daily-and-sunday-papers-circulation-germany/>.
- Statistische Ämter des Bundes und der Länder. 2019. “Bruttoinlandsprodukt, Bruttowertschöpfung (Kreise).” <http://www.statistikportal.de/de/vgrdl/ergebnisse-kreisebene/bruttoinlandsprodukt-bruttowertschoepfung-kreise>.
- Stieler, Sylvia. 2009. *Strukturwandel in der Zeitungswirtschaft: aktuelle Herausforderungen in der Wertschöpfungskette und Folgen für die Beschäftigung*. Number 2009,6 in “Informationsdienst / IMU-Institut” überarb. endbericht ed. Stuttgart: IMU-Inst.
- Vogel, Andreas. 2014. *Talfahrt der Tagespresse: eine Ursachensuche der Auflagenrückgang der Regionalzeitungen*. Friedrich-Ebert-Stiftung.
- Volken, Andrea, Pola Lehmann, Sven Regel, Krause Werner, Tobias Burst, Theres Matthieß, Nicolas Merz, Bernhard Weßels and Lisa Zehnter. 2020. “The Manifesto Data Collection. Manifesto Project (MRG/CMP/MARPOR). Version 2020a.” *Wissenschaftszentrum Berlin* (<https://manifestoproject.wzb.eu/>).