Media Competition, Multimarket Contact, and Viewpoint Diversity

Marcel Garz, Jonna Rickardsson
Jönköping International Business School, CEnSE, and MMTC

January 2024

We thank Mart Ots, Helle Sjøvaag, Maiting Zhuang, and seminar participants for helpful comments and suggestions. We also thank Love Börjeson, Torsten Johansson, Martin Malmsten, Christopher Natzén, and the staff at the National Library in Stockholm for their hospitality while accessing the "Svenska dagstidningar" database. We gratefully acknowledge funding by the Swedish Competition Authority (Konkurrensverket, Dnr 406/2019), as well as Stiftelsen Inger, Arne och Astrid Oscarssons Donationsfond. Corresponding author: Jonna Rickardsson, Jönköping International Business School, P.O Box 1026, SE-551 11 Jönköping. Email: jonna.rickardsson@ju.se

Abstract

Media regulators in many Western countries aim to ensure that consumers have access to diverse viewpoints in news coverage. A common argument is that this goal can be best achieved if there are enough independent sources in the market, implying that media policies should foster media competition. However, the effects of competition on viewpoint diversity are theoretically ambiguous, and empirical evidence is scarce. We address this gap by compiling a comprehensive dataset on the Swedish newspaper industry, covering multiple waves of mergers and acquisitions. To address endogeneity concerns, we exploit changes in multimarket contact between companies caused by out-of-market effects of ownership changes. Our results indicate that the consolidation of the industry substantially raised the average number of multimarket contacts, which induced newspaper companies to differentiate their slant more. As a consequence, the diversity of political viewpoints decreased both within companies and at the local market level, leading to reductions in readership. The findings suggest that increasing concentration of media ownership may have negative implications for democratic processes.

Keywords: consolidation; media bias; mergers and acquisitions; newspapers; ownership concentration

JEL classification: D72; L10; L82

1. Introduction

Over the past decades, the concentration of media ownership has been increasing in many countries, especially in newspaper industries (e.g., Noam, 2016). Media regulators have been critically monitoring the consolidation of newspaper companies, not only in terms of prices for readers and advertisers but also regarding the viewpoint diversity[1] of news coverage. If a news market is dominated by a small number of companies, consumers may not find their viewpoints represented in the media, which could undermine democratic processes. For this reason, media policies often aim to foster media competition, based on the assumption that a higher number of competitors implies greater viewpoint diversity (e.g., van der Wurff, 2005; Polo, 2007; Just, 2009).

However, as discussed in the next section, the link between competition and viewpoint diversity is theoretically ambiguous. For example, a profit-oriented newspaper monopolist should cater to the views of the majority of consumers in the market, whereas in duopoly each company will likely target different ends of the ideological spectrum (to soften competition). Depending on a number of factors – such as cost structures, scale effects, revenue sources, and consumer behavior – the monopolist may be able to provide a greater variety of viewpoints than the combined diversity of two profit-maximizing newspapers (e.g., Mullainathan and Shleifer, 2005; Gentzkow, Shapiro, and Stone, 2015; Stühmeier, 2019).

In practice, those theoretical arguments are complicated by the fact that media companies often hold multiple newspapers that target consumers in different geographical areas (e.g., Fu, 2003; Grönlund and Björkroth, 2011). Hence, an empirical investigation of the impact of media competition on viewpoint diversity needs to go beyond traditional measures of market structure and account for multimarket contact between firms, as is often done in studies of regional industries. In the context of hotel chains and airlines, for example, multimarket contact lowers competition due to mutual forbearance, resulting in higher prices and lower product quality (e.g., Fernández and Marín, 1998; Prince and Simon, 2009).

This paper (i) investigates the role of competition for the viewpoint diversity of newspapers in Sweden and (ii) tests the conjecture that multimarket contact induces newspaper companies to soften competition by targeting different segments of the ideological spectrum. The Swedish context offers an ideal empirical setting to conduct this investigation because the consolidation of its newspaper sector mirrors the changes of media industries in other countries. Our conceptualization and method of measuring viewpoint diversity is applicable to any parliamentary democracy where more than two political parties compete and where media policy focuses on external pluralism (i.e., viewpoint diversity at the market level rather than within outlets).

[1] We use the term "viewpoint diversity" to describe the extent by which media outlets or markets provide a variety of political views. In the literature, this concept is also referred to as "plurality of viewpoints", "diversity of opinions", or "ideological diversity".

We construct measures of political viewpoint diversity based on newspaper slant (Gentzkow and Shapiro, 2010). There are currently eight parties represented in Sweden's parliament and our data capture how much slant a newspaper devotes to each of them. We use this information to construct an index that allows us to assess whether the different political viewpoints are equally represented in a newspaper (or local market), or whether the news coverage is disproportionately slanted towards one or a few individual parties.

Estimating the effect of competition between newspaper companies on the diversity of viewpoints could be subject to identification problems. For example, if a market has been traditionally served by a social-democratic newspaper, competitors could enter the market to target consumers with different ideological preferences (e.g., liberal or green). This scenario implies reverse causality, as the initially low diversity in the market induces a change in competition. There are also concerns about omitted variables, such as changes in local advertising or reader demand, which may drive both competition and viewpoint diversity.

To address these concerns, we focus on changes in competition caused by newspapers acquisitions, especially the out-of-market effects of acquisitions on the degree of multimarket contact between newspaper companies. Our empirical strategy can be illustrated by a hypothetical takeover described in Table 1. As shown in the table, before the acquisition, there are three newspaper companies serving a total of two markets. With the acquisition of newspaper X_1 by firm Z, company X exits the market. The acquisition affects the number of overlaps between companies Y and Z; they now compete in two markets rather than one. Estimating how the change in multimarket contact affects the viewpoint diversity of Papers Y_1 and Z_1 in Market 1 may be biased by omitted factors, because the acquisition could have been driven by changes in local market conditions. However, in Market 2, the change in market overlaps between companies Y and Z is less likely associated with unobserved factors shaping the news coverage of Papers Y_2 and Z_2. Hence, isolating variation in overlaps between companies caused by out-of-market effects of acquisitions helps to address identification concerns.

We find that the consolidation of the Swedish newspaper industry increased the multimarket contact between competitors. During our sample period from January 2014 to April 2019, we observe 8 acquisitions that involved 19 newspapers and directly affected one third of 290 local markets. Due to these acquisitions, the average number of market overlaps between companies doubled. We present evidence that the increase in multimarket contact led to lower viewpoint diversity in news coverage, both within newspaper companies and at the local market level. A one standard deviation increase in multimarket contact raised the concentration of viewpoints by 0.06 to 0.20 standard deviations. The effect sizes are generally similar when we use the full and the out-of-market samples, and when we use matching techniques to compare municipalities that experienced out-of-market changes with similar municipalities that did not experience any changes.

We test whether the decrease in viewpoint diversity was driven by increased differentiation of newspaper companies. Specifically, we compute the correlation of slant between pairs of competitors and evaluate whether this correlation was affected by changes in market overlaps. Our results confirm that the similarity in slant between competitors declined when their multimarket contact grew. A one standard deviation increase in overlapping circulation shares induced a 0.14 standard deviation decrease in companies' pairwise correlation of slant. Hence, competitors are more likely to differentiate their slant, the more often they meet in different markets, which arguably allows them to soften competition for readers and potentially advertisers.

Finally, we evaluate whether the changes in competition and news coverage had downstream political implications. Using the same empirical strategy, we do not find any significant effects of the out-of-market implications of newspaper acquisitions on election turnout or voting. However, consistent with the notion that the decreased viewpoint diversity of news coverage caused some readers to cancel their subscriptions, we find small reductions in newspaper readership following the acquisitions. A one standard deviation increase in average multimarket contact was associated with a drop in a municipality's readership rate by 1.8 percentage points (or 3.3%). Hence, the consolidation of the newspaper industry did not invoke any measurable persuasion effects but induced readers to turn away, presumably because they did not find their political views represented in the local news coverage.

In the next section, we proceed with a survey of related literature and describe our contribution to it. Section 3 defines the relevant market and product, while Section 4 presents the data. We report the results in Section 5 and conclude in Section 6.

2. Related literature

Our paper relates to multiple strands of research, including (i) studies on the link between media competition and viewpoint diversity, (ii) the literature on multimarket contact in regional industries, (iii) discussions about the measurement of diversity of political viewpoints, and (iv) studies on the political repercussions of media competition.

First, we contribute to previous studies that investigate the role of media competition for political viewpoint diversity.[2] Theoretical studies posit that competition induces ideological specialization of media outlets: With a higher number of firms in the market it is more profitable to target specific segments of the political spectrum than catering to common interests (Stühmeier, 2019; Perego and Yuksel, 2022). However, if advertising revenues are disproportionately higher than copy sales, media firms may decide to differentiate minimally even as the number of competitors increases (Steiner, 1952; Garcia Pires,

[2] There also studies that investigate the role competition for the diversity in news coverage in terms of genres and topics, rather than political viewpoints (e.g., George, 2007; Lee, 2007; Fan, 2013).

2014; Behringer and Filistrucchi, 2015). In addition, it is not clear a priori whether competition increases ideological diversity at the market level. In a concentrated market, there are less media firms, but each firm may be internally more diverse than firms in a highly competitive market (Garz, Ots, and Sjøvaag, 2023). Hence, it remains an empirical question of whether aggregate market-level diversity is higher with few internally diverse firms or many ideologically specialized media companies.[3] The empirical evidence is very scarce though. Analyzing five newspaper mergers in the US, Ho and Quinn (2009) find that the mergers did not necessarily increase newspapers' viewpoint diversity, but in some cases led to more concentration. In their historical study of US newspapers in the early 20th century, Gentzkow, Shapiro, and Sinkinson (2014) show that competition led to greater market-level diversity. They illustrate that newspapers found greater profitability by differentiating themselves from competitors to soften competition, rather than targeting majority consumers. In contrast to these studies, we analyze viewpoint diversity in a political multi-party system. We further diverge from previous studies by simultaneously evaluating diversity within individual media firms and at the market level. We also add a multimarket perspective and show that overlaps between newspaper companies are likely more important for their differentiation strategies than competition at the local market level.

Second, we contribute to the comprehensive literature in industrial organization on multimarket contact. According to this literature, the more often competing firms meet in different markets, the larger are the benefits of tacit collusion. Firms prefer to avoid aggressive competitive moves if they anticipate retaliation in multiple markets (Evans and Kessides, 1994). A large number of studies show that multimarket contact induces price coordination; for instance, in the case of airlines (e.g., Zhang and Round, 2011; Ciliberto and Williams, 2014; Ciliberto, Watkins, and Williams, 2019), hotels (e.g., Fernández and Marín, 1998; Silva, 2015), hospitals (e.g., Schmitt, 2018), gas stations (e.g., Balaguer and Ripollés, 2021), and the cement industry (e.g., Jans and Rosenbaum, 1996). If average multimarket contact is high, sequential pricing allows companies in regional industries to maintain a higher price level than in the single-market case. Fu (2003) and Waldfogel and Wulf (2006) provide empirical evidence of those price effects in the newspaper and radio broadcasting sectors, respectively. A few studies also show that multimarket contact lowers the incentives for companies to invest in product and service quality, because competitors could respond with quality upgrades or price reductions in other jointly targeted markets (e.g., Prince and Simon, 2009; Lin and McCarthy, 2023; Wilson, 2023). We add to this literature by providing evidence of another form of coordination between firms, product differentiation induced by multimarket contact. Our results indicate that newspaper companies may soften competition by choosing a different mix of slant than their competitors, especially when there is a high degree of market

[3] Similar arguments can be found in the literature on media competition and media slant (e.g., Mullainathan and Shleifer, 2005; Anand, Di Tella, and Galetovic, 2007; Gentzkow, Shapiro, and Stone, 2015). For empirical studies see Anderson and McLaren (2012), Galvis, Snyder, and Song (2016), and Qin, Strömberg, and Wu (2018).

overlap. Unlike findings in US-focused studies, our results reveal that this differentiation does not enhance local-level diversity but decreases it.

Third, our methodology adds to the discussion about the measurement of viewpoint diversity in news coverage. Media regulators in Western countries typically evaluate the concentration of competitors' audience shares to assess whether a market is sufficiently diverse (e.g., Just, 2009; Rennhoff and Wilbur, 2014). Audience shares can be easily computed based on readily available data, but with this approach it is not feasible to investigate diversity within media companies. This is a major shortcoming because outlets held by the same owner do not necessarily offer the same viewpoints (Gentzkow and Shapiro, 2010; Garz and Rickardsson, 2023). Assessing the internal diversity of specific companies and outlets would traditionally require costly content analyses (Hellmann, 2001; van der Wurff, 2005). As a compromise, Ho and Quinn (2009) propose to collect information about editorial positions – in their case about US Supreme Court cases – to create a time-varying, outlet-specific measure of viewpoint diversity. In contrast, we create a diversity index based on automated, language-based analysis of media content. This approach facilitates measurements of diversity at a low cost, both at the market level and within media companies. It also facilitates measuring changes in diversity at a relatively high frequency (e.g., from month to month), which can be particularly useful to assess the effects of mergers and acquisitions. In addition, the approach is well-suited for countries with multiple political parties, where assessments of viewpoint diversity are inherently more complicated than in two-party systems.

Fourth, our findings complement research on media competition and downstream political outcomes. Gentzkow, Shapiro, and Sinkinson (2011) and Drago, Nannicini, and Sobbrio (2014) find that newspaper entry in the US and Italy, respectively, increased voter turnout, whereas the results of Cagé (2020) indicate the opposite in the case of French newspapers. Piolatto and Schuett (2015) offer a theoretical discussion of why the impact of media competition on political participation depends on the context. Results by Ellger et al. (2023) suggest that closures of local newspapers in Germany increased electoral polarization during the past decades. In contrast to these studies, we do not find a significant relationship between competition and political outcomes. A likely explanation is that we analyze changes in multimarket contact, which affect competition to a smaller extent than the direct effects of entry and exit of media outlets. However, our results indicate that increasing multimarket contact led to a reduction in readership rates, which is consistent with the notion that consumers turn away when their political preferences are not well-aligned with slant of news coverage (e.g., Durante and Knight, 2012; Knight and Tribin, 2019; Martin and McCrain, 2019).

3. Relevant market and product

We investigate the market for subscribed newspapers in Sweden. Using a national delivery system, these newspapers are directly delivered to subscribers' homes in the morning. The outlets have a strong focus

on local news, typically offering coverage pertaining to one or multiple municipalities. Since there are hardly any true national outlets in the country, Swedish local newspapers also offer coverage of national and foreign events. In 2019, 59% of the population aged 15 or older read a newspaper daily, which is more than twice the EU average (European Commission, 2020). The country affords a generous system of newspaper subsidies designed to maintain a high number of independent sources (e.g., Ots, 2009). According to the data we describe below, the market consisted of a maximum of 40 newspaper companies, on average owning 3.3 newspapers each.

The relevant criterion to evaluate competition between these companies are the 290 municipalities which they regularly cover in their news stories. For example, if Firm X normally produces news stories about municipalities 1, 2, and 3, and Firm Y about municipalities 2, 3, and 4, then these companies compete for readers and advertisers in municipalities 2 and 3 but not 1 and 4. Following Napoli et al. (2019), this definition of competition abstracts from actual newspaper circulation. That is, a newspaper can potentially be read anywhere in Sweden, but it is not considered a competitor for other newspapers outside of its home market. Our approach of defining competition is independent of the medium, as it equally applies to a newspaper's print edition, its website, and social media accounts.[4]

Subscribed newspapers in Sweden could potentially face competition from other types of media. However, this is not the case when considering coverage of individual municipalities as the relevant product (Swedish Competition Authority, 2003): First, in many municipalities, there are free newspapers that are distributed to all households within a geographic area, but these newspapers are completely ad-financed and hardly contain any journalistic content. Second, there are four national evening tabloids in Sweden that are individually sold at the newsstand. These tabloids do not regularly produce news stories about individual municipalities though. Third, local radio and television newscasts normally do not target any individual municipalities but operate more broadly at the level of Swedish regions. We can also rule out significant competition from online sources because news coverage of individual Swedish municipalities is only offered by the websites and social media accounts of the newspapers under consideration.

4. Data and variables

We compile a panel dataset at the municipality-month level to investigate the role of competition and multimarket contact for viewpoint diversity in newspaper coverage at the local market level. As detailed below, the dataset includes information on newspapers, owners, and markets. All data refer to the time

[4] Previous studies of Swedish newspapers define a newspaper's market as the municipality where this newspaper has the highest circulation (e.g., Asplund, Eriksson, and Strand, 2005; 2008). We discard this approach as it does not capture cross-market dependencies between newspaper companies.

from January 2014 to April 2019, a sample period determined by the availability of data on newspaper content.

4.1 Newspapers and owners

We use publicly available information (i.e., including newspapers' websites, press releases, and news reports) to compile data on media ownership and changes in ownership. In cases where newspapers are held by multiple companies, we determine the majority owner. In total, we identify 40 independent media companies. By 2019, this number decreased to 30, due to market exits and acquisitions of companies. We observe eight changes in ownership that took place at various points during our period of investigation. As detailed in Table A1 in the Online Appendix, these transactions involved 19 different newspapers.

To determine the scope of newspapers' local coverage, we manually inspect their front pages and local sections. Many newspapers divide their local sections by the municipalities that are part of their product portfolios (i.e., the municipalities for which they regularly produce news stories). Other newspapers include a table of content on their front page, which indicates the targeted municipalities (see Figure A1 for examples). These product choices are fairly stable over time, likely because of the investments necessary to produce journalistic content about a specific municipality, such as local knowledge and networks between journalists and their sources. During the relevant time, only three outlets adjusted the scope of their local coverage by making small changes to their selections of covered municipalities. In January 2014, each newspaper company on average targeted 14 municipalities. Eight companies regularly produced news stories for only one municipality. The maximum number of targeted municipalities was 49 (Sveagruppen Tidnings AB); see Figure A2 for details. The average number of targeted municipalities reached a value of 18 towards the end of our sample period, due to the various newspaper acquisitions, with a maximum number of 67 covered municipalities (Mittmedia).

We complement this information with data on newspapers' subscriptions sales, as provided by the Swedish Press and Broadcasting Authority. The data refer to each newspaper's annual municipality-specific circulation, as most readers take out their subscription on a yearly basis.

4.2 Local market characteristics and multimarket contact

Information on local market characteristics come from Statistics Sweden. Specifically, we obtain each municipality's population size (number of inhabitants), mean age (in years), mean yearly income (in 100 SEK), the share of employed citizens of all inhabitants, the share of the population with a higher education degree, and the share of foreign-born people. We use voting data from the Swedish Election

Authority related to the 2014 and 2018 national elections to measure political preferences in the municipalities.

To assess competition between newspaper companies at the local market level, we compute the municipality-specific Herfindahl-Hirschman index of subscription sales (HHI^{sales}). As shown in Figure A3, local concentration is rather high, with an average HHI^{sales} of 77.75. In approximately one fifth of municipalities, a single newspaper company accounts for all subscriptions sales.

As mentioned above, most newspaper companies target multiple municipalities, which implies that competing firms often meet each other in several markets. Following the literature (e.g., Evans and Kessides 1994; Ciliberto and Williams, 2014; Schmitt, 2018), we define multimarket contact as the average number of non-home market overlaps per company in a given market. That is, we compute the average number of multimarket contacts avg_mmc by dividing the sum of non-home market contacts ($mmc - 1$) of all pairs i and j of newspaper companies present in municipality m by the total number of companies $C_{m,t}$ in that municipality and month t:

$$avg\_mmc_{m,t} = \frac{1}{C_{m,t}} \sum_{i=1}^{C_{mt}} \sum_{j=1, j \neq i}^{C_{mt}} 1\left[i, j \in C_{m,t}\right] \times \left(mmc_{i,j,t} - 1\right) \left(\frac{a_{i,j,t}}{\bar{a}}\right) \quad (1)$$

Considering that municipalities and competitors are likely more important for a firm the larger they are, we weight the numerator of this fraction by the combined number of subscriptions of each pair of firms $a_{i,j,t}$, which we normalize by the sample-wide average of pairwise combined subscriptions $\bar{a}$.[5] To ease the interpretation of the regression results, we divide the measure by 100. Higher values of $avg\_mmc_{m,t}$ imply that the companies targeting a municipality on average meet each other more often in other municipalities.

Figure 1 shows the industrywide development of multimarket contacts over time. Accordingly, the number of market overlaps between companies has been steadily increasing during our investigation period, a trend mostly driven by newspaper acquisitions. The reason is that a takeover allows the acquiring company to add the municipalities targeted by the acquired paper to its own product portfolio, which typically raises the company's number of market overlaps with competitors. To a small extent, changes in multimarket contact were also caused by the entry and exit of newspaper companies, as well as modifications in newspapers' sets of targeted municipalities; see Table A2 for an overview.

[5] We verify that our results are robust to using an unweighted version of avg_mmc (i.e., Equation 1 without the term $a_{i,j,t}/\bar{a}$); see Table A7.

4.3 Viewpoint diversity

We use data on the political slant of the newspapers to measure how diverse (or concentrated) their coverage is. Text-based indices of slant capture media bias both in the form of "filtering" (what topics and facts are reported) and "distortion" (how an issue is reported).[6] Hence, these indices are ideal to quantify the provision of political viewpoints in newspaper coverage (Garz, Ots, and Sjøvaag, 2023).

Specifically, we use the data on the slant of Swedish newspapers compiled for our companion paper (Garz and Rickardsson, 2023), which have been comprehensively validated and are publicly available at https://doi.org/10.7910/DVN/PBBYPO. These data capture newspapers' slant by comparing their language with the language used by Sweden's political parties. The slant index is based on the full texts of the universe of newspaper articles between January 2014 and April 2019 (ca. 8 billion words), and the transcripts of all speeches given by members of the eight parties represented in the Swedish parliament during the same period (ca. 25 million words). It was constructed by first identifying two- and three-word phrases that are indicative of the ideology of each individual party (i.e., phrases that are particularly often used by one party but hardly ever by the other parties), and then counting how often these phrases are used by the newspapers.

The publicly available index of slant $x_{n,p,t}$ measures the number of phrases indicative of party p's ideology used by newspaper n in month t, relative to the total number of phrases used by that newspaper in the same month. Using this information, we create a market-level measure of slant by computing the average slant over the relevant papers in a given municipality:

$$x_{m,p,t} = \sum_{n \in S(m,t)} x_{n,p,t} / |S| \tag{2}$$

where $S(m,t)$ is the set of newspapers targeting municipality m in month t. We do not weight this measure by readership because we are interested in the type of slant that is locally available, independent of realized consumption.

As shown in Figures A4 and A5, the market-level measure of slant is positively correlated with local vote shares. Table A3 shows that the relationship between local slant and local voting holds in a regression framework, both with and without municipality and party/ideology fixed effects. That is, local consumer preferences predict the viewpoints collectively provided by the newspaper(s) in a municipality even when we account for general differences in the popularity of parties and variation in preferences for the overall extent of slant across markets, which supports the validity of the slant measure.

[6] See Gentzkow and Shapiro (2010) for the original method and Beattie (2020), Garz, Sörensen, and Stone (2020), and Djourelova (2023) for examples of subsequent applications.

To assess the viewpoint diversity of market-level news coverage, we compute the Herfindahl-Hirschman index of slant in each municipality and month.[7] This index considers the sum of squared proportions of market-level slant:

$$HHI_{m,t}^{slant} = \frac{\left(\sum_p {x_{m,p,t}}^2\right) - \frac{1}{P}}{1 - \frac{1}{P}} \times 100 \quad (3)$$

where $P = 8$ is the number of political parties. Equation (3) measures the concentration of political viewpoints at the local market level on a scale from 0 to 100. A score of 0 reflects maximal diversity, depicting a market where slant is evenly distributed across all eight parties. Conversely, a score of 100 indicates complete alignment of slant with a single party, signifying the highest level of viewpoint concentration.

The sample mean of HHI^{slant} is 15.8 (cp. Table A4). While regulators have developed rules of thumb of how to interpret concentration indices of market shares[8], some illustrations are necessary to interpret the index when it is used to measure the concentration of newspaper slant. In Figure 2, we compare the distribution of slant in two markets: Panel A shows the market with the highest observed viewpoint concentration in the sample (Jönköping municipality in February 2018, HHI^{slant} = 18.4), while Panel B shows the market with the lowest observed concentration (Vårgårda municipality in April 2016, HHI^{slant} = 14.7). In Panel C, we add the distribution of votes to the Swedish Parliament (HHI = 19.5). This comparison produces several stylized facts. First, consumers in either market arguably had access to diverse viewpoints in their newspaper coverage, considering that the concentration of newspaper slant was lower than the concentration of vote shares, even in the market with the most concentrated slant. Second, in the market with the lowest concentration of slant (Panel B), parties with low vote shares in parliament tended be overrepresented in the news coverage, while parties with high vote shares (e.g., Moderate Party, Social Democrats) were somewhat underrepresented – relative to their size in parliament. This observation is compatible with democratic theory in journalism research, according to which minority and opposition parties should receive disproportionately more media attention, to compensate for the visibility advantage that government and mainstream parties have (Ferree et al., 2002). Third, the relatively small range of HHI^{slant} (min. = 14.7, max. = 18.4) suggests that the differences in viewpoint diversity across markets were fairly small, which is in line with findings that editorial practices in Sweden are relatively homogeneous and consistently applied throughout the newspaper industry (Nord

[7] For robustness checks, we also compute the relative standard deviation (RSD) of the mix of slant in each municipality and month, $RSD_{m,t} = \frac{\sum_{p=1}^{n}(x_{m,p,t} - \mu_{m,t})^2}{\mu_{m,t}} \times 100$, where μ denotes the mean phrase usage over all parties. We prefer to use the Herfindahl-Hirschman index as the baseline measure of concentration of viewpoints because the index is more commonly used in competition-related research.

[8] For example, a market with an HHI between 15 and 25 is often considered to be "moderately" concentrated (Federal Trade Commission, 2010).

and von Krogh, 2021). Those differences could still be consequential, as the comparison of Panels A and B suggests. For instance, consumers in Panel A were exposed to approx. twice the slant towards the Social Democrats than consumers in Panel B, which may have implications for public opinion and democratic processes.

5. Estimation and results

5.1 Market-level diversity

As Figure 1 shows, the increase in average multimarket contact over time was paralleled by a trend towards a higher concentration of viewpoints in newspaper coverage. We also observe a positive correlation between both variables across markets, implying that the concentration of viewpoints tended to be higher in municipalities with higher average multimarket contact (cp. Figure A6). We formally investigate this relationship by estimating versions of the following model:

$$HHI_{m,t}^{slant} = a_1 avg\_mmc_{m,t} + a_2 HHI_{m,y}^{sales} + a_3 X_{m,y} + \varphi_m + \tau_t + \varepsilon_{m,t} \quad (4)$$

where we regress the index of concentration of viewpoints on average multimarket contact in municipality m and month t. We control for a municipality's Herfindahl-Hirschman index of subscription sales (HHI^{sales}) in year y, as this variable could be a confounding factor in the relationship of interest. The variable vector X optionally controls for population size, mean income, average age, share of employed, share with higher education degree, and the share of foreign-born people in a municipality, while φ_m and τ_t are municipality and time fixed effects, respectively. We estimate the model using a monthly frequency in consideration of the quality of measurement of our main variables at that level. With a higher frequency (e.g., weekly or daily), the index of concentration of viewpoints exhibits excess volatility, as the underlying slant measure is based on smaller amounts of newspaper text. With a lower frequency (e.g., quarterly or yearly), we would throw away information about the timing of changes in multimarket contact. We use OLS to estimate Equation (4) and cluster the standard errors by municipality.

As discussed in the introduction, there are identification concerns when estimating this model. We mitigate these concerns by focusing on the out-of-market effects of changes in competition on multimarket contact. For that purpose, we present estimates of models using a sample that excludes all municipalities where we observe any acquisitions, entry, exit, or change in targeting. This restriction allows us to exclusively rely on indirect variation in multimarket contact. With the out-of-market sample (ca. 62% of municipalities; cp. Table A5), it is less likely that changes in multimarket contact were driven by changes in consumer preferences or advertising potential, as might be the case in municipalities where acquisitions, entry, exit, or change in targeting took place.

However, a complication that might arise with the out-of-market sample is that municipalities with a change in multimarket contact could be different from municipalities without a change. For instance, out-of-market effects are more likely in places targeted by large newspaper companies, because these companies often overlap with competitors. In fact, as Table A6 shows, "treated" municipalities (i.e., those with changes in multimarket contact) tend to have a population with lower average income and lower shares of highly educated, foreign-born and employed inhabitants than "untreated" municipalities (i.e., those without changes in multimarket contact).

We therefore create a control group of "untreated" municipalities that are more similar to the "treated" municipalities in the out-of-market sample by applying Mahalanobis matching on pre-treatment observables (e.g., Rubin, 1980). Using one-to-one matching with replacement, we compute the Mahalanobis distance between each pair of treated and untreated municipalities and select those untreated municipalities where this distance is minimal, up to the number of treated municipalities. This procedure results in a control group of untreated municipalities that do not exhibit any significant mean differences in observables when compared to the group of treated municipalities; see Table A6.

Results of estimating Equation (4) with the different samples are reported in Table 2. Columns (1) and (2) show estimates based on the full sample, both with and without controls and fixed effects. In both cases, the coefficient on multimarket contact is significant and positive, which implies that higher levels of market overlap are associated with more one-sided newspaper slant. According to the point estimate in Column (2), an increase in average multimarket contact by one unit raises the concentration index by 0.120 points. A one standard deviation rise in multimarket contact corresponds to an increase in the concentration index by 0.06 standard deviations.[9] We obtain similar result when we use the out-of-market sample (Column 3) and a slightly larger coefficient when we employ the matched control group (Column 4), which offers some reassurance that the estimates based on the full sample are not noticeably biased by endogeneity or omitted variables.[10] The size of the coefficient when using the out-of-market sample with the matched control group in Column (4) implies that a one standard deviation increase in multimarket contact is associated with a 0.09 standard deviations increase in the concentration of viewpoints.

The Herfindahl-Hirschman index of subscription sales is also positively correlated with the index of viewpoint concentration. That is, the more concentrated the subscription sales in a municipality, the more one-sided the slant in that municipality. However, the coefficient on the Herfindahl-Hirschman index of subscription sales is insignificant in most specifications, which suggests that the average

[9] We calculate this value by multiplying the coefficient of 0.120 by the standard deviation of the multimarket contact variable of 0.194 and divide this product by the standard deviation of the concentration index of 0.379.
[10] Table A7 shows that the results hold when we use the relative standard deviation to measure the concentration of viewpoints, as well as an unweighted measure of average multimarket contact.

multimarket contact may be a more relevant factor for the concentration of viewpoints than local competition.

5.2 Differentiation between companies

We proceed by analyzing the relationship between multimarket contact and the concentration of viewpoints within newspaper companies.[11] For that purpose, we convert the relevant variables from the local market level to the company level by taking averages over the municipalities targeted by each newspaper company. We compute the slant x of company i pertaining to party p in month t by weighting the slant of the newspapers n owned by that company with the newspapers' circulation shares $a_{n,t}$ of the company's total circulation. Formally, $x_{i,p,t} = \sum_{n \in S(i,t)} (x_{n,p,t} a_{n,t})/|S|$, where $S(i,t)$ is the set of newspapers n held by company i. To isolate out-of-markets effects, we compute a version of the company-level measure of concentration of slant that excludes acquired papers, papers that exited or entered the market, and papers that changed their set of targeted municipalities. Using i to index newspaper companies, we estimate a regression model equivalent to Equation (4):

$$HHI_{i,t}^{slant} = b_1 avg\_mmc_{i,t} + b_2 HHI_{i,y}^{sales} + b_3 X_{i,y} + b_4 N_{i,t} + \varphi_i + \tau_t + e_{i,t} \quad (5)$$

where X includes circulation-weighted averages of market characteristics and N captures the number of newspapers held by a company.

Results shown in Table 3 confirm the positive relationship between average multimarket contact and the concentration of viewpoints in news coverage. Again, we obtain similar effects sizes when we use either the full (Columns 1 and 2) or out-of-market sample (Columns 3 and 4), and results do not differ much between models that do and do not control for market characteristics. According to the most restrictive specification in Column (4), a one unit increase in a company's multimarket contact raises this company's Herfindahl-Hirschman index of slant by 0.943 points. This value implies that a one standard deviation increase in multimarket contact increases the within-company concentration of viewpoints by 0.20 standard deviations. We do not find a statically significant relationship between the average Herfindahl-Hirschman index of subscription sales over the municipalities targeted by a newspaper company and its concentration of slant, which again suggests that individual markets are likely less important for viewpoint diversity than multimarket contacts.

As a next step, we investigate whether the mixes of slant between pairs of companies correlate less, the greater the degree of market overlaps between these companies – a pattern that would be indicative of

[11] It could be argued that this exercise should be conducted at the level of the individual newspaper rather than the company. However, newspapers held be the same owner do not truly compete with each other, and there is no variation in multimarket contact within newspaper companies, as market overlaps are determined at the company level.

companies' efforts to soften competition by differentiating on slant. To implement this test, we compute the time-varying correlation coefficient ρ of slant between all pairs of newspaper companies i and j whose targeting overlaps in at least one municipality:

$$\rho_{i,j,t} = \frac{\sum(x_{i,p,t} - \mu_{i,t})(x_{j,p,t} - \mu_{j,t})}{\sqrt{\sum(x_{i,p,t} - \mu_{i,t})^2 (x_{j,p,t} - \mu_{j,t})^2}} \quad (6)$$

where $x_{i,p,t}$ and $x_{j,p,t}$ denote each company's average slant (weighted by the circulation shares of the newspapers they hold), whereas μ refers to the mean phrase usage over all parties p. The resulting measure ranges between -0.015 and 0.999, with a sample mean of 0.823 (SD = 0.155). The large average correlation is mostly driven by national differences in the popularity of parties and their corresponding representation in newspapers' mix of slant[12], and because companies targeting similar geographic areas face similar consumer preferences.

We regress this measure of differentiation on the degree of market $overlap$ between companies i and j in month t:

$$\rho_{i,j,t} = c_1 overlap_{i,j,t} + c_2 X_{i,j,t} + \pi_{i,j} + \tau_t + \epsilon_{i,j,t} \quad (7)$$

where $\pi_{i,j}$ and τ_t are company-pair and time fixed effects, respectively. We use two measures of market $overlap$ between companies: (i) the share of municipalities jointly targeted by each company pair relative to the total number of municipalities targeted by this pair and (ii) the share of the pair's subscribers in jointly targeted municipalities divided by the combined total number of subscribers of that company pair. The second measure is an analogue to the circulation-weighted version of average multimarket contact defined in Equation (1), whereas the first measure mirrors the unweighted index of multimarket contact. The variable vector X optionally controls for the combined total number of competitors of the pair, their combined number of newspapers, and the combined average Herfindahl-Hirschman index of subscription sales, as well as mean population size, age, income, share of citizens with higher education degree, share of employed citizens, and share of foreign-born inhabitants in the targeted municipalities of the company pair. We estimate Equation (7) by OLS and cluster the standard errors by company-pair.

Results are presented in Table 4. As Columns (1) and (2) show, we do not find that variation in the share of overlapping municipalities is a significant predictor of the differentiation of slant between company pairs. However, as the estimates in Columns (3) and (4) indicate, companies tend to have significantly different mixes of slant, the higher their overlapping circulation share. According to the point estimate of -0.082 in Column (4), a one standard deviation increase in this share corresponds to a decrease in the pairwise correlation of slant by 0.14 standard deviations. Hence, the results confirm the conjecture that

[12] For example, the Social Democrats generally have higher vote shares than the Moderate Party, and hence newspapers provide overall more slant related to the former than the latter. See also Figures A4 and A5.

newspaper companies are more inclined to differentiate their slant and target separate segments of the political spectrum, the greater the circulation-weighted overlap with their competitors.

5.3 Readership and voting

This subsection investigates the implications of the consolidation of the newspaper industry for readership and voting. Columns (1) and (4) of Table 5 show results of regressing the municipalities' readership rate on average multimarket contact. In line with the frequency of measurement of newspaper circulation, these regressions use yearly data but are otherwise analogous to the specification described by Equation (4). The estimates indicate that an increase in multimarket contact is associated with significant reductions in readership. For example, the coefficient of -0.095 in Column (4) implies that a one standard deviation increase in multimarket contact corresponds to a reduction in readership by 1.8 percentage points, which is equivalent to a 3.3% decrease compared to the mean readership rate. The drop in readership is consistent with the notion that newspapers' increased differentiation of political viewpoints caused a fraction of consumers to cancel their subscriptions because they did not find their views represented in the news coverage.

It is conceivable that the drop in readership comes with a reduction in citizens' exposure to political information, which could induce them to lose interest in politics and forego their right to vote (e.g., Feddersen and Pesendorfer, 1996). Elections in Sweden are held simultaneously for the national parliament, regional councils, and municipal councils. During our sample period, general elections took place twice in Sweden (i.e., in September 2014 and 2018), which allows to evaluate whether turnout decreased in municipalities that experienced an increase in multimarket contact between election dates. As the estimates in Table 5 show, we do not find any significant relationship between multimarket contact and participation in the elections (Columns 2 and 5).

Another possibility is that a concentration of viewpoints in news coverage induces a concentration of voting. If consumers are exposed to more one-sided views, persuasion effects could lead to more one-sided political preferences. Columns (3) and (6) of Table 5 show regressions of the Herfindahl-Hirschman index of vote shares on multimarket contact. The estimates do not indicate a significant relationship. As shown in Figure A7, except for a small, yet positive and significant coefficient for the Christian Democrats, we do not find significant out-of-market effects on parties' vote shares either.

6. Conclusion

This study investigates the role of competition between newspaper companies for viewpoint diversity in their coverage. For that purpose, we compile data on the Swedish newspaper industry between

January 2014 and April 2019, including information about outlets, owners, and local market characteristics. We use the data to construct measures of multimarket contact, both at the local market level and between newspaper companies. In addition, we exploit rich corpora of newspaper text and parliamentary speeches to capture the political viewpoint diversity in news coverage. To tackle concerns about endogeneity and omitted variables, we focus on changes in competition resulting from newspaper acquisitions. Specifically, we isolate variation in multimarket contact outside of those municipalities where the acquisitions took place.

Our results indicate that the consolidation of the industry during our sample period led to an increase in multimarket contact between newspaper companies. In turn, the increase in multimarket contact induced companies to differentiate on slant, likely to soften competition. As a consequence, the concentration of viewpoints in news coverage increased both at the local market level and within companies. We find no evidence that the changes in news coverage caused by the consolidation of the industry affected turnout or political preferences. However, our results indicate small reductions in newspaper readership, which is compatible with the conjecture that readers chose to avoid coverage that does not match their political views.

These findings reinforce concerns that increasing concentration of media ownership has negative implications for media pluralism, and possibly for democracy (e.g., Hayes and Lawless, 2015; Djourelova, Durante, and Martin, 2023). It is necessary to emphasize that the effect sizes we estimate are relatively small though: A one standard deviation rise in multimarket contact increased the concentration of viewpoints by less than 0.1 standard deviations at the local market level and by 0.2 standard deviations within companies. That is, while the increase in ownership concentration during the sample period was considerable (i.e., the number of owners decreased from 40 to 30 and average multimarket contact nearly doubled), the mean Herfindahl-Hirschman index of viewpoint concentration only increased from approximately 15.7 points to 15.8 points. Overall, the level of viewpoint concentration in news coverage was fairly below the concentration of votes in parliament (HHI = 19.5), even after the mergers and acquisitions that took place. Hence, there is a fair chance that consumers still find their views represented in local newspaper coverage. It seems advisable though to remain watchful and evaluate future developments, especially if the trend towards ownership concentration continues.

References

Anand, B., Di Tella, R., Galetovic, A. (2007). Information or Opinion? Media Bias as Product Differentiation. *Journal of Economics & Management Strategy*, 16, 635–682.

Anderson, S. P., & McLaren, J. (2012). Media Mergers and Media Bias with Rational Consumers. *Journal of the European Economic Association*, 10, 831–859.

Asplund, M., Eriksson, R., & Strand, N. (2005). Prices, Margins and Liquidity Constraints: Swedish Newspapers, 1990–1992. *Economica*, 72, 349–359.

Asplund, M., Eriksson, R., & Strand, N. (2008). Prices, Margins and Liquidity Constraints: Swedish Newspapers, 1990–1992. *Journal of Industrial Economics*, 56, 333–346.

Balaguer, J., & Ripollés, J. (2021). Does Multimarket Contact Affect Prices in the Retail Fuel Industry? First Empirical Evidence. *Energy Economics*, 93.

Beattie, G. (2020). Advertising and Media Capture: The Case of Climate Change. *Journal of Public Economics*, 188.

Behringer, S., & Filistrucchi, L. (2015). Hotelling Competition and Political Differentiation with More Than Two Newspapers. *Information Economics and Policy*, 30, 36–49.

Cagé, J. (2020). Media Competition, Information Provision and Political Participation: Evidence from French Local Newspapers and Elections, 1944–2014. *Journal of Public Economics*, 185.

Ciliberto, F., Watkins, E., & Williams, J. W. (2019). Collusive Pricing Patterns in the US Airline Industry. *International Journal of Industrial Organization*, 62, 136–157.

Ciliberto, F., & Williams, J. W. (2014). Does Multimarket Contact Facilitate Tacit Collusion? Inference on Conduct Parameters in the Airline Industry. *RAND Journal of Economics*, 45, 764–791.

Djourelova, M. (2023). Media Persuasion through Slanted Language: Evidence from the Coverage of Immigration. *American Economic Review*, 113, 800–835.

Djourelova, M., Durante, R., & Martin, G. (2023). The Impact of Online Competition on Local Newspapers: Evidence from the Introduction of Craigslist. *Review of Economic Studies*, forthcoming.

Drago, F., Nannicini, T., & Sobbrio, F. (2014). Meet the Press: How Voters and Politicians Respond to Newspaper Entry and Exit. *American Economic Journal: Applied Economics*, 6, 159–188.

Durante, R., & Knight, B. (2012). Partisan Control, Media Bias, and Viewer Responses: Evidence from Berlusconi's Italy. *Journal of the European Economic Association*, 10, 451–481.

Ellger, F., Hilbig, H., Riaz, S., & Tillmann, P. (2023). Local Newspaper Decline and Political Polarization in Multi-Party Systems. *British Journal of Political Science*, forthcoming.

European Commission (2020). Standard Eurobarometer 92. Brussels.

Evans, W. N., & Kessides, I. N. (1994). Living by the "Golden Rule": Multimarket Contact in the U.S. Airline Industry. *Quarterly Journal of Economics*, 109, 341–366.

Fan, Y. (2013). Ownership Consolidation and Product Characteristics: A Study of the US Daily Newspaper Market. *American Economic Review*, 103, 1598–1628.

Feddersen, T. J., & Pesendorfer, W. (1996). The Swing Voter's Curse. *American Economic Review*, 86, 408–424.

Federal Trade Commission (2010). Horizontal Merger Guidelines. U.S. Department of Justice and the Federal Trade Commission, August 2010.

Fernández, N., & Marín, P. (1998). Market Power and Multimarket Contact: Some Evidence from the Spanish Hotel Industry. *Journal of Industrial Economics*, 46, 301–315.

Ferree, M. M., Gamson, W. A., Gerhards, J., & Rucht, D. (2002). Four Models of the Public Sphere in Modern Democracies. *Theory and Society*, 31, 289–324.

Fu, W. (2003). Multimarket Contact of US Newspaper Chains: Circulation Competition and Market Coordination. *Information Economics and Policy*, 15, 501–519.

Galvis, A. F., Snyder Jr., J. M., & Song, B. K. (2016). Newspaper Market Structure and Behavior: Partisan Coverage of Political Scandals in the United States from 1870 to 1910. *Journal of Politics*, 78, 368–381.

Garcia Pires, A. J. (2014). Media Diversity, Advertising, and Adaptation of News to Readers' Political Preferences. *Information Economics and Policy*, 28, 28–38.

Garz, M., Ots, M., & Sjøvaag, H. (2023). Political Viewpoint Diversity in the News: Market and Ownership Conditions for a Pluralistic Media System. *The International Journal of Press/Politics*, forthcoming.

Garz, M., & Sörensen, J., & Stone, D. F. (2020). Partisan Selective Engagement: Evidence from Facebook. *Journal of Economic Behavior & Organization*, 177, 91–108.

Garz, M., & Rickardsson, J. (2023). Ownership and media slant: Evidence from Swedish newspapers. *Kyklos*, 76, 18-40.

Gentzkow, M., & Shapiro, J. M. (2010). What Drives Media Slant? Evidence from U.S. Daily Newspapers. *Econometrica*, 78, 35–71.

Gentzkow, M., Shapiro, J. M., & Sinkinson, M. (2011). The Effect of Newspaper Entry and Exit on Electoral Politics. *American Economic Review*, 101, 2980–3018.

Gentzkow, M., Shapiro, J. M., & Sinkinson, M. (2014). Competition and Ideological Diversity: Historical Evidence from US Newspapers. *American Economic Review*, 104, 3073–3114.

Gentzkow, M., Shapiro, J. M., & Stone, D. F. (2015). Media Bias in the Marketplace: Theory. In S. Anderson, D. Strömberg, and J. Waldfogel (eds.): *Handbook of Media Economics*. North Holland.

George, L. M. (2007). What's Fit to Print: The Effect of Ownership Concentration on Product Variety in Daily Newspaper Markets. *Information Economics and Policy*, 19, 285–303.

Grönlund, M., & Björkroth, T. (2011) Newspaper Market Concentration, Competitive Pressure and Financial Performance: The Case of Finland. *Journal of Media Business Studies*, 8, 19–50.

Hayes, D., & Lawless, J. L. (2015). As Local News Goes, So Goes Citizen Engagement: Media, Knowledge, and Participation in US House Elections. *Journal of Politics*, 77, 447–462.

Hellman, H. (2001). Diversity – An End in Itself? *European Journal of Communication*, 16, 181–208.

Ho, D. E., & Quinn, K. M. (2009). Viewpoint Diversity and Media Consolidation: An Empirical Study. *Stanford Law Review*, 61, 781–868.

Jans, I., & Rosenbaum, D. I. (1996). Multimarket contact and pricing: Evidence from the U.S. cement industry. *International Journal of Industrial Organization*, 15, 391–412.

Just, N. (2009). Measuring Media Concentration and Diversity: New Approaches and Instruments in Europe and the US. *Media, Culture & Society*, 31, 97–117.

Knight, B., Tribin, A. (2019). The Limits of Propaganda: Evidence from Chavez's Venezuela. *Journal of the European Economic Association*, 17, 567–605.

Lee, Y.-C. (2007). Effects of Market Competition on Taiwan Newspaper Diversity. *Journal of Media Economics*, 20, 139–156.

Lin, H., & McCarthy, I. M. (2023). Multimarket Contact in Health Insurance: Evidence from Medicare Advantage. *Journal of Industrial Economics*, 71, 212–255.

Martin, G. J., & McCrain, J. (2019). Local News and National Politics. *American Political Science Review*, 113, 372–384.

Mullainathan, S., & Shleifer, A. (2005). The Market for News. *American Economic Review*, 95, 1031–1053.

Napoli, P. M., Weber, M., & McCollough, K. (2019). An Approach to Assessing the Robustness of Local News Provision. In S. A. Eldridge II and B. Franklin (eds.): *The Routledge Handbook of Developments in Digital Journalism Studies*. Routledge.

Noam, E. (2016). *Who Owns the World's Media? Media Concentration and Ownership around the World*. Oxford University Press.

Nord, L., & von Krogh, T. (2021). Sweden: Continuity and change in a more fragmented media landscape. In J. Trappel and T. Tomaz (eds.): *The Media for Democracy Monitor 2021: How leading news media survive digital transformation*. Nordicom.

Ots, M. (2009). Efficient servants of pluralism or marginalized media policy tools? The case of Swedish press subsidies. *Journal of Communication Inquiry*, 33, 376–392.

Perego, J., & Yuksel, S. (2022). Media Competition and Social Disagreement. *Econometrica*, 90, 223–265.

Piolatto, A., & Schuett, F. (2015). Media Competition and Electoral Politics. *Journal of Public Economics*, 130, 80–93.

Polo, M. (2007). Regulation for Pluralism in Media Markets. In P. Seabright, & J. von Hagen (eds.): *The Economic Regulation of Broadcasting Markets*. Cambridge University Press.

Prince, J. T., & Simon, D. H. (2009). Multimarket Contact and Service Quality: Evidence from On-Time Performance in the U.S. Airline Industry. *Academy of Management Journal*, 52, 336–354.

Qin, B., Strömberg, D., & Wu, Y. (2018). Media Bias in China. *American Economic Review*, 108, 2442–2476.

Rennhoff, A. D., & Wilbur, K. C. (2014). Market-Based Measures of Viewpoint Diversity. *Information Economics and Policy*, 26, 1–11.

Rubin, D. B. (1980). Bias Reduction Using Mahalanobis-Metric Matching. *Biometrics*, 36, 293–298.

Schmitt, M. (2018). Multimarket Contact in the Hospital Industry. *American Economic Journal: Economic Policy*, 10, 361–387.

Silva, R. (2015). Multimarket Contact, Differentiation, and Prices of Chain Hotels. *Tourism Management*, 48, 305–315.

Steiner, P. (1952). Program Patterns and the Workability of Competition in Radio Broadcasting. *Quarterly Journal of Economics*, 66, 194–223.

Stühmeier, T. (2019). Media market concentration and pluralism. *Journal of Economics & Management Strategy*, 28, 247–259.

Swedish Competition Authority (2003). Konkurrens och samarbete inom medierna. Konkurrensverkets rapportserie: 2003:2.

van der Wurff, R. (2005). Competition, Concentration and Diversity in European Television Markets. *Journal of Cultural Economics*, 29, 249–275.

Waldfogel, J., & Wulf, J. (2006). Measuring the Effect of Multimarket Contact on Competition: Evidence from Mergers Following Radio Broadcast Ownership Deregulation. *Contributions to Economic Analysis & Policy*, 5, 1–23.

Wilson, K. (2023). Local Competition, Multimarket Contact, and Product Quality: Evidence from Internet Service Provision. *Review of Industrial Organization*, forthcoming.

Zhang, Y., & Round, D. K. (2011). Price Wars and Price Collusion in China's Airline Markets. *International Journal of Industrial Organization*, 29, 361–372.

Tables and Figures

Table 1: Example of effects of a newspaper acquisition on market overlaps

	Before		After	
Market 1 (in-market)	Y_1	X_1	Y_1	Z_1
Market 2 (out-of-market)	Y_2	Z_2	Y_2	Z_2

Note: The table illustrates the implications of a hypothetical takeover for the involved media companies. In the example, there are (initially) three media companies and two markets. With the acquisition of newspaper X_1 by company Z from company X, the latter exits the market. The acquisition affects the number of overlaps between companies Y and Z, in both Markets 1 and 2.

Table 2: Multimarket contact and concentration of local newspaper slant

	(1)	(2)	(3)	(4)
	All	All	Out-of-market	Out-of-market / matched control group
Avg. multimarket contact (circ.-weighted)	0.416***	0.120***	0.145***	0.180***
	(0.048)	(0.043)	(0.036)	(0.056)
HHI of subscription sales	0.001	0.002***	0.002	
	(0.001)	(0.001)	(0.002)	
Time fixed effects	No	Yes	Yes	Yes
Municipality fixed effects	No	Yes	Yes	Yes
Market controls	No	Yes	Yes	No
Adj. R^2	0.044	0.692	0.759	0.756
Observations	18560	18560	11584	4672

Notes: OLS estimates, using data at the municipality-month level. The dependent variable is the Herfindahl-Hirschman index of slant over all newspapers in a given municipality. The out-of-market sample only includes municipalities that did not experience any newspaper acquisitions, entries, exits, and change in targeting. The matched control group sample only includes municipalities that are similar to the treated municipalities, based on propensity score matching on observables. The market controls include population size, mean income, average age, share of employed, share with higher education degree, and the share of foreign born. Standard errors (in parentheses) are clustered by municipality.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Multimarket contact and within-company concentration of newspaper slant

	(1) All	(2) All	(3) Out-of-market	(4) Out-of-market
Avg. multimarket contact (circ.-weighted)	0.698***	0.822***	0.791***	0.943***
	(0.161)	(0.172)	(0.146)	(0.171)
Avg. HHI of subscription sales	0.721	1.281	-0.137	0.968
	(1.047)	(3.097)	(1.170)	(2.086)
Number of newspapers	-0.021**	-0.013	-0.026***	-0.016
	(0.008)	(0.012)	(0.008)	(0.013)
Time fixed effects	Yes	Yes	Yes	Yes
Owner fixed effects	Yes	Yes	Yes	Yes
Market controls	No	Yes	No	Yes
Adj. R^2	0.482	0.483	0.529	0.532
Observations	2208	2208	1344	1344

Notes: OLS estimates, using data at the company-month level. The dependent variable is the Herfindahl-Hirschman index of a newspaper company's slant. The market controls include the mean population size, age, income, share of citizens with higher education degree, share of employed citizens, and share of foreign-born inhabitants in newspaper companies' targeted municipalities. Standard errors (in parentheses) are clustered by newspaper company.
* p < 0.10, ** p < 0.05, *** p < 0.01

Table 4: Multimarket contact between company pairs and differentiation of slant

	(1)	(2)	(3)	(4)
	Dependent variable: Pearson's correlation coefficient between avg. slant of company pairs			
Share of overlapping municipalities	-0.032	-0.077		
	(0.082)	(0.097)		
Overlapping circulation share			-0.074***	-0.082***
			(0.023)	(0.030)
Combined total number of competitors	-0.011***	-0.009**	-0.010***	-0.008**
	(0.004)	(0.004)	(0.004)	(0.004)
Combined number of newspapers	0.002	0.004	0.002	0.004
	(0.002)	(0.003)	(0.002)	(0.002)
Combined avg. HHI of subscription sales	-0.155	0.166	-0.156	0.073
	(0.197)	(0.533)	(0.194)	(0.545)
Time fixed effects	Yes	Yes	Yes	Yes
Company pair fixed effects	Yes	Yes	Yes	Yes
Market controls	No	Yes	No	Yes
Adj. R^2	0.617	0.618	0.617	0.618
Observations	4132	4132	4132	4132

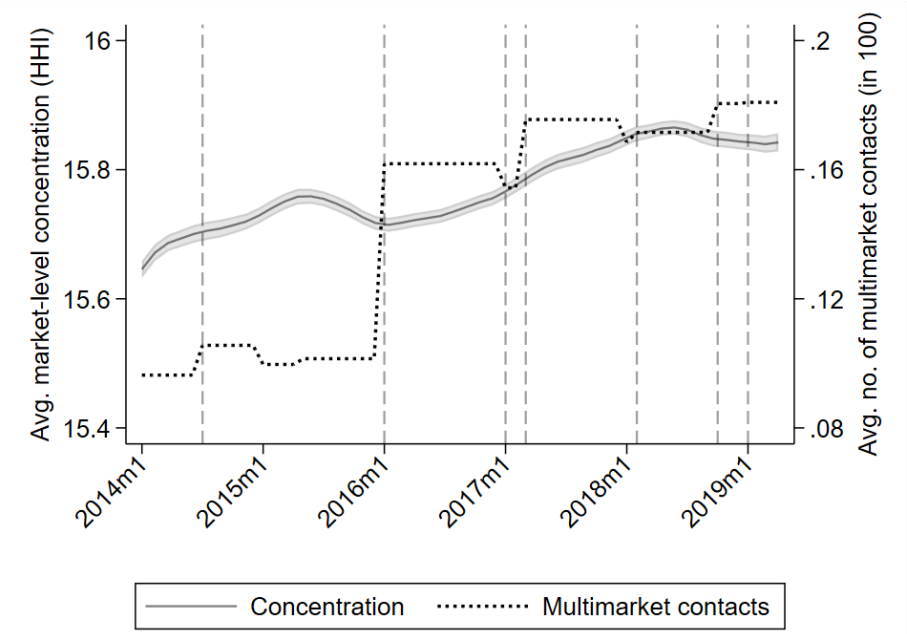
Notes: OLS estimates, using monthly data on all unique pairs of competing newspaper companies (84 company pairs, up to 64 months). The share of overlapping municipalities refers to the number of municipalities jointly targeted by each company pair, relative to the total number of municipalities targeted by this pair. The overlapping circulation share is defined as the companies' number of subscribers in jointly targeted municipalities divided by the combined total number of subscribers of that company pair. The market controls include the mean population size, age, income, share of citizens with higher education degree, share of employed citizens, and share of foreign-born inhabitants in the targeted municipalities of the company pair. Standard errors (in parentheses) are clustered by company pair.
* p < 0.10, ** p < 0.05, *** p < 0.01

Table 5: Multimarket contact, readership, and voting

	Out-of-market			Out-of-market / matched control group		
	(1)	(2)	(3)	(4)	(5)	(6)
	Readership	Turnout	HHI of vote shares	Readership	Turnout	HHI of vote shares
Avg. multimarket contact (circ.-weighted)	-0.071***	0.002	0.791	-0.095***	0.002	-1.070
	(0.025)	(0.008)	(1.597)	(0.022)	(0.008)	(1.590)
HHI index of subscriptions	-0.001	0.000	0.011			
	(0.001)	(0.000)	(0.057)			
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	No	No	No
Adj. R^2	0.958	0.970	0.869	0.951	0.962	0.890
Observations	1086	362	362	438	146	146

Notes: OLS estimates, using data at the municipality-year level (Columns 1 and 4) and municipality-specific data on the 2014 and 2018 Swedish general elections (Columns 2, 3, 5, and 6). Readership captures the share of households in a municipality with a newspaper subscription. Turnout is the municipality-specific logged percent of eligible voters participating in the 2014 and 2018 elections. HHI of vote shares is the municipality-specific Herfindahl-Hirschman index of parties' vote shares in the 2014 and 2018 elections. The out-of-market sample only includes municipalities that did not experience any newspaper acquisitions, entries, exits, and change in targeting. The matched control group sample only includes municipalities that are similar to the treated municipalities, based on propensity score matching on observables. The market controls include population size, mean income, average age, share of employed, share with higher education degree, and the share of foreign born. Standard errors (in parentheses) are clustered by municipality.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

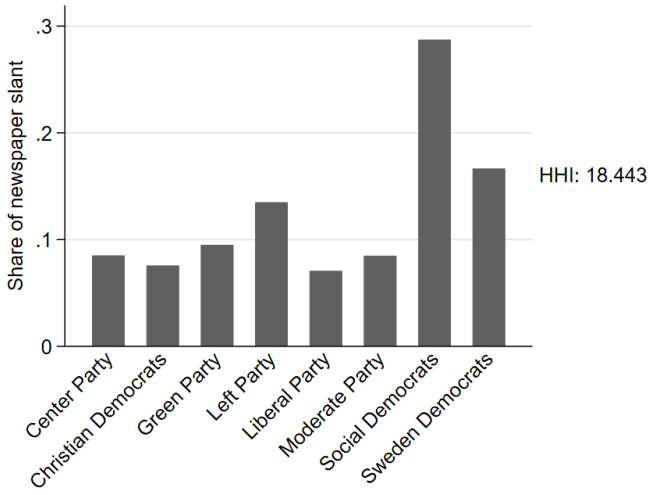
Figure 1: Multimarket contact and concentration of viewpoints in newspaper coverage over time



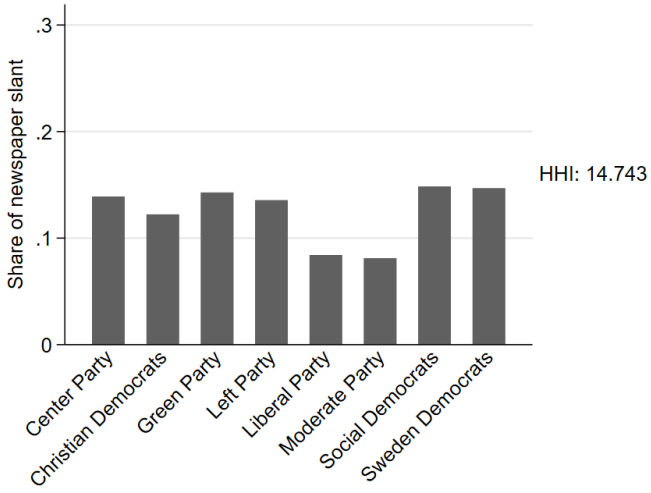
Notes: The measure of ideological concentration is the Herfindahl-Hirschman index of slant over all newspapers targeting a municipality (see Equation 3), plotted as a local polynomial smooth with 99% confidence interval. Larger values indicate less diverse news coverage. The measure of multimarket contact is the average circulation-weighted sum of company overlaps per company in a municipality (see Equation 1). The dashed vertical lines indicate newspaper acquisitions.

Figure 2: Example distributions of newspaper slant and vote shares

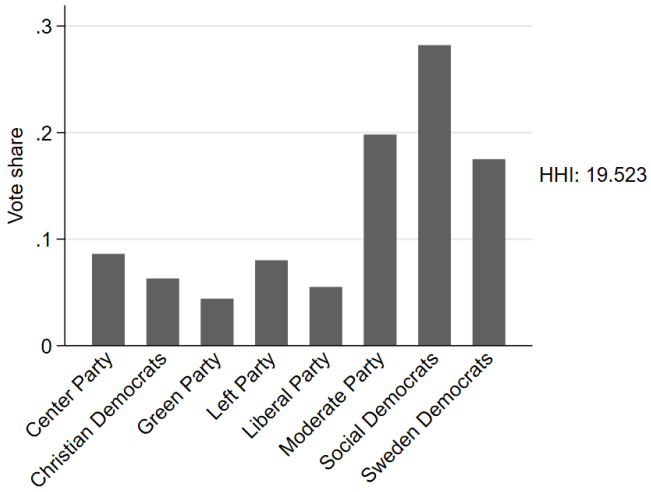
A: Market with highest observed concentration of slant (Jönköping municipality in February 2018)



B: Market with lowest observed concentration of slant (Vårgårda municipality in April 2016)



C: 2018 parliamentary vote shares



Supplementary information for "Media Competition, Multimarket Contact, and Viewpoint Diversity" by Marcel Garz and Jonna Rickardsson

Table A1: Ownership changes between January 2014 and April 2019

Date	Number of newspapers	Previous owner	New owner
Jul 2014	1	Pukslagaren i Helsingborg	Bonnier
Jan 2016	10	Promedia	Mittmedia
Jan 2017	1	Nya Wermlands-Tidningen	NTM-koncernen
Jan 2017	1	Socialdemokraterna	Nya Wermlands-Tidningen
Mar 2017	1	Värmlands Folkblad Drift AB	NTM-koncernen
Feb 2018	1	Swepress Media	NTM-koncernen
Oct 2018	3	Eskilstuna-Kurirens stiftelse	NTM-koncernen
Jan 2019	1	Hörlings Lidköpingspress AB	Nya Wermlands-Tidningen

Table A2: Newspapers and municipalities directly affected by changes in competition

	Affected newspapers		Affected municipalities	
Cause of change	Number	Percent	Number	Percent
Acquisition	19	14.5	76	26.2
Local targeting	3	2.3	6	2.1
Entry	1	0.8	8	2.8
Exit	7	5.3	22	7.6
Total	27	20.6	109*	37.6

Notes: * refers to the number of distinct municipalities affected at least once during the period of investigation (3 municipalities are affected twice).

Table A3: Municipality-level slant and municipal voting

	(1)	(2)	(3)	(4)
Vote share (2014 elections)	0.176***	0.031***		
	(0.004)	(0.005)		
Vote share (2018 elections)			0.181***	0.038***
			(0.004)	(0.005)
Municipality fixed effects	No	Yes	No	Yes
Party fixed effects	No	Yes	No	Yes
Adj. R^2	0.202	0.963	0.204	0.963
Number of parties	8	8	8	8
Number of municipalities	290	290	290	290
Observations	2320	2320	2320	2320

Notes: OLS estimates (log-log specification), using data at the municipality-party level. Dependent variable: average share of ideological expressions among all expressions of the newspapers targeting a given municipality (cp. Equation 2). Standard errors (in parentheses) are clustered by municipality.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Summary statistics of market-level data

	Mean	SD	Min.	Max.
Concentration of political viewpoints in news coverage				
- Herfindahl-Hirschman index (HHI) of slant	15.77	0.38	14.74	18.44
- Relative standard deviation (RSD) of slant	35.81	4.15	21.91	58.66
Avg. multimarket contact (circ.-weighted)	0.14	0.19	0.00	0.59
Avg. multimarket contact (unweighted)	0.13	0.13	0.00	0.41
Share of out-of-market municipalities	0.62	0.48	0.00	1.00
Herfindahl-Hirschman index (HHI) of subscription sales	77.75	18.95	31.37	100.00

Notes: N = 18,560 (290 municipalities, 64 months). Out-of-market municipalities are those that did not experience any newspaper acquisitions, entry or exit, and changes in targeting.

Table A5: In- and out-of-market changes in competition

	Number of municipalities		
	In-market	Out-of-market	Total
Change in multimarket contact: no	32	132	164
Change in multimarket contact: yes	77	49	126
Total	109	181	290

Notes: 109 municipalities experienced an in-market change in competition during the study period, which had implications for the average multimarket contact in 77 cases. 181 municipalities did not experience any direct changes in competition, but 49 of those experienced a change in average multimarket contact.

Table A6: Comparison of municipalities in out-of-market sample

	Treated (N = 49)	All untreated (N = 132)		Matched untreated (N = 24)	
	Mean	Mean	*p*-value (diff.)	Mean	*p*-value (diff.)
HHI index of subscription sales	80.83	77.59	0.303	82.30	0.712
Number of inhabitants	23953.25	34765.74	0.364	25917.08	0.821
Mean age (years)	50.32	49.81	0.206	50.16	0.758
Mean income	1641.08	1828.10	0.006	1649.96	0.881
Share with higher education degree	0.14	0.17	0.077	0.15	0.959
Share of foreign-born	0.12	0.16	0.003	0.12	0.722
Share of employed	0.55	0.58	0.000	0.56	0.227
HHI of 2014 vote shares	22.02	21.86	0.800	22.53	0.553
HHI of 2018 vote shares	19.92	19.78	0.768	20.84	0.112

Notes: Treated municipalities are those that experienced a change in average multimarket contact during the investigation period, whereas untreated municipalities did not. The sample of matched municipalities is based on one-to-one Mahalanobis matching (with replacement) on the variables listed in the table.

Table A7: Multimarket contact and concentration of local newspaper slant (alternative measures of multimarket contact and concentration)

	Out-of-market		Out-of-market / matched control group	
	(1)	(2)	(3)	(4)
	RSD	HHI	RSD	HHI
Avg. multimarket contact (circ.-weighted)	1.306***		1.777***	
	(0.401)		(0.654)	
Avg. multimarket contact (unweighted)		0.189***		0.294***
		(0.064)		(0.100)
HHI of subscriptions	0.019	0.002	0.022	0.002
	(0.018)	(0.002)	(0.020)	(0.002)
Time fixed effects	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes
Market controls	Yes	Yes	Yes	Yes
Adj. R^2	0.766	0.759	0.772	0.758
Observations	11584	11584	4672	4672

Notes: OLS estimates, using data at the municipality-month level. The dependent variable is the concentration of slant over all newspapers in a given municipality. The out-of-market sample only includes municipalities that did not experience any newspaper acquisitions, entries, exits, and change in targeting. The matched control group sample only includes municipalities that are similar to the treated municipalities, based on propensity score matching on observables. The market controls include population size, mean income, average age, share of employed, share with higher education degree, and the share of foreign born. Standard errors (in parentheses) are clustered by municipality.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

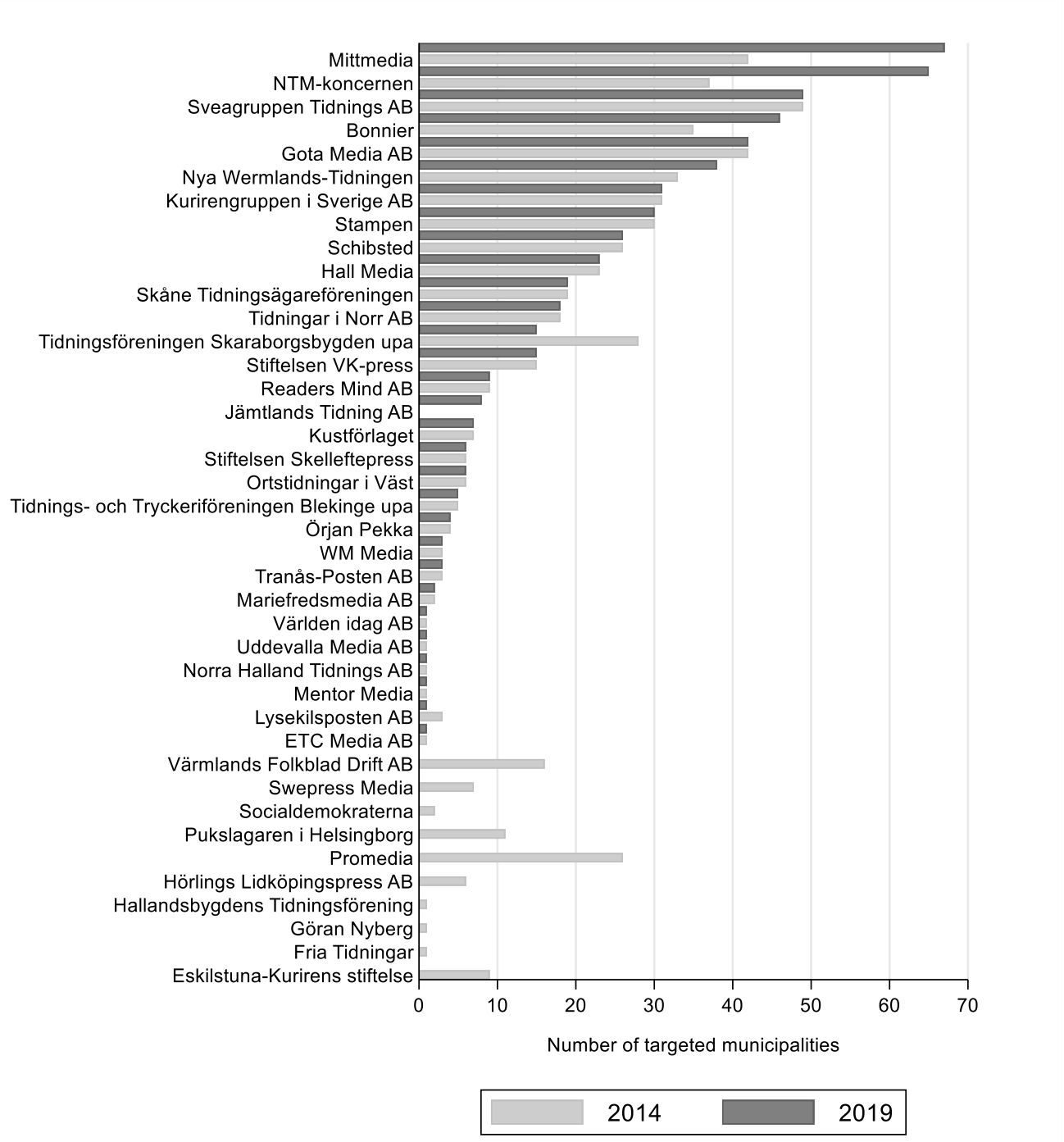
Figure A1: Examples of newspapers' targeted municipalities

A: Smålänningen

B: Värnamo Nyheter

Notes: The figure shows snippets of the cover pages of two newspapers: *Smålänningen* regularly produces news stories about the municipalities Ljungby, Älmhult, and Markaryd, whereas *Värnamo Nyheter* targets the municipalities Värnamo, Gislaved, Gnosjö, and Vaggeryd.

Figure A2: Newspaper companies' presence in local markets



Notes: The graph shows the total number of municipalities targeted by each newspaper company (i.e., the municipalities for which they regularly produce news stories).

Figure A3: Newspaper concentration in municipalities

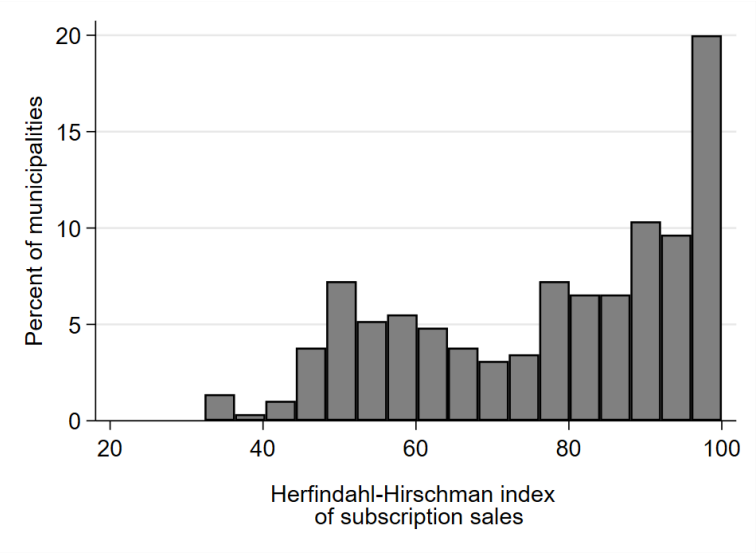


Figure A4: Correlation between municipality-specific slant and 2014 vote shares

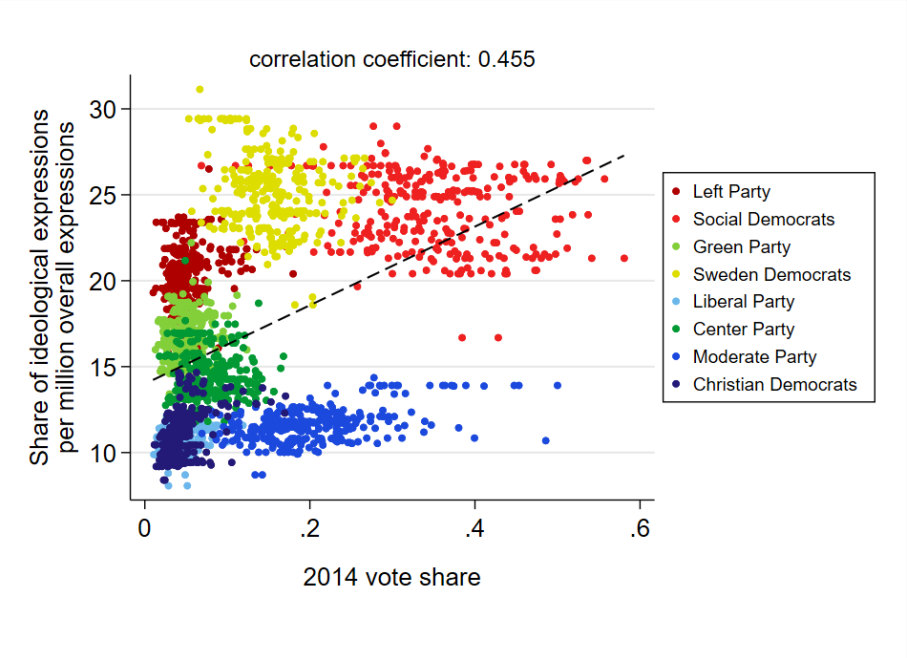


Figure A5: Correlation between municipality-specific slant and 2018 vote shares

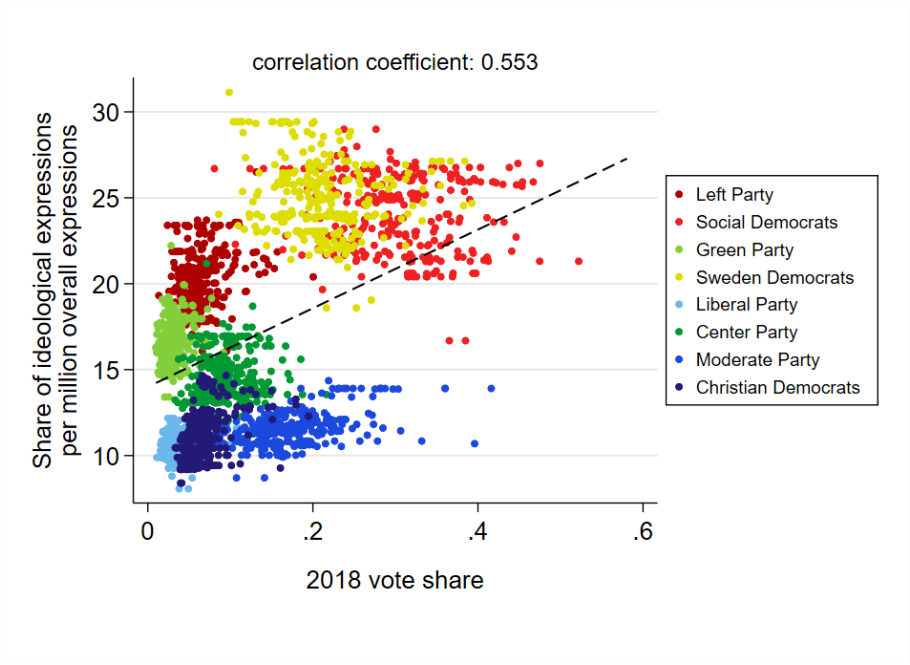
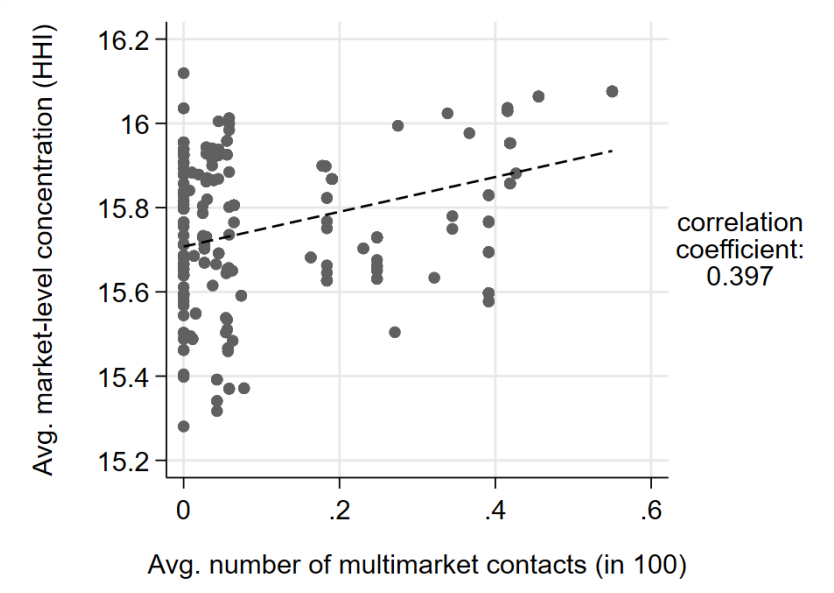
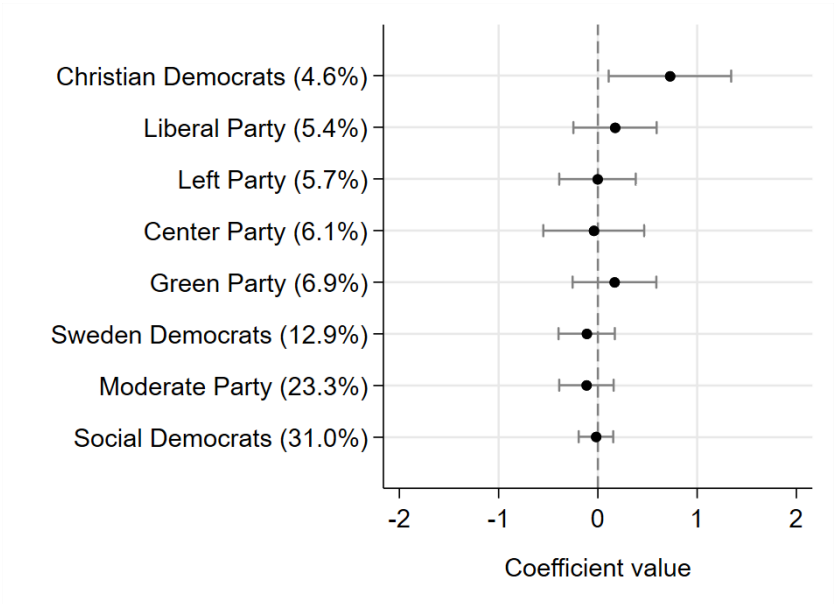


Figure A6: Concentration of news coverage and multimarket contact across municipalities



Notes: The measure of ideological concentration is the Herfindahl-Hirschman index of slant over all newspapers targeting a municipality (see Equation 3) averaged over the study period. Larger values indicate less diverse news coverage. The measure of multimarket contact is the circulation-weighted sum of company overlaps per company in a municipality (see Equation 1) averaged over the study period. Each marker represents a municipality. The dashed line shows the linear fit.

Figure A7: Out-of-market effects of newspaper consolidation on vote shares



Notes: The graph shows coefficients of regressing logged vote shares on average multimarket contact, using municipality-specific data on the 2014 and 2018 Swedish general elections. The regressions include time fixed effects, municipality fixed effects, population size, mean income, average age, share of employed, share with higher education degree, and the share of foreign born. The regressions use the out-of-market sample with the matched control group. The 99% confidence intervals are based on standard errors that are clustered by municipality. The values in parentheses denote parties' vote shares in the 2014 national elections.