

Hosting Media Bias: Evidence from the Universe of French Broadcasts, 2002-2020*

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Abstract

What role do journalists and media owners play in slanting media content? In this paper, we open the black box of news production and investigate whether and how journalists themselves decide to bias the news and shield content production from owner influence. To do so, we build a novel dataset on hosts and guests in all French radio and television shows between 2002 and 2020, covering 6.3 million shows, and identify the political orientation (if any) of all the 309,416 invited guests. First, we use the speaking time share of both politicians and politically engaged non-politician guests (PENOPs) and document substantial variations in political slant across channels and ownership groups; we find that the inclusion of the speaking time of PENOPs strongly modifies the overall picture, an aspect not traditionally monitored in most countries. Next, we use hosts working for different channels and owners to show that, controlling for demand- and supply-driven bias, journalists themselves slant media content. Finally, we document in a difference-in-differences framework how the takeover of the Canal+ Group in 2015 by Vincent Bolloré (the “French Murdoch”) affected the slant of the acquired channels. In particular, we show that by 2019-20 the air time share devoted on CNews to radical-right guests has increased by nearly 15 percentage points compared to a baseline of 7.4 percent in 2013-14. One mechanism for this is the turnover of hosts, who leave more from channels that were more to the left before the takeover.

Keywords: Media bias; Slant; Journalists; Product differentiation; Media ownership

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1 Introduction

In democratic systems, citizens hold their representatives accountable by voting them in or out of office. For such systems to work effectively, people need information. While traditional media, in particular television, remain the most popular platform for news consumption, both programme content and news slant vary tremendously across media outlets, impacting voter information and electoral behavior (see e.g. Della Vigna and Kaplan, 2007; Martin and Yurukoglu, 2017; Bursztyn et al., 2020; Simonov et al., 2020). Hence, it is of key importance to understand the determinants of media bias. While the existing literature has highlighted the role played by consumer preferences (Gentzkow and Shapiro, 2010) as well as the importance of media ownership (Martin and McCrain, 2019; Miho, 2020; Mastroiocco and Ornaghi, 2020), in this paper, we open the black box of news production and investigate whether and how journalists themselves decide to bias the news and shield content production from owner influence.

To do so, we build a novel dataset on the universe of hosts and guests appearing in French radio and television shows from 2002 to 2020, and take advantage of the fact that many journalists appear on multiple channels with distinct owners. Our main sample includes all generalist and news channels, i.e. 14 television channels and 8 radio stations, and covers a wide range of show types including talk shows, interviews, debates, documentaries and newscasts. Overall, we have data on 3 million appearances of 309,416 distinct guests and 72,186 unique hosts (25,714 of which we identify as journalists).

Our empirical analysis proceeds in two steps. First we determine the political leaning of the guests in our sample. To begin with, we use electoral data and government membership to identify politicians among all guests and pinpoint their political party. Then, we elicit the political leaning (if any) of guests who are potentially politically engaged but are not politicians. To do so, we use three distinct data sources: (i) the list of participants to political parties’ summer meetings (that we collect manually from different sources), (ii) the list of contributors to partisan think tanks, and (iii) the signing of op-eds endorsing candidates in elections. Classifying politically-outspoken guests who are not politicians matters for several reasons: first, their speech may be slanted just like that of politicians; second, some of them have significant speaking time; third, their speaking time is nonetheless generally not monitored by regulatory authorities, which provides channels more leeway to slant their shows.¹ We call these guests PENOPs in the remainder of the article, for Politically-Engaged Non

¹A number of celebrities – but also of academics – are indeed outspoken about their political views. E.g., in the U.S., in the 2018 elections, Taylor Swift – the pop music star – endorsed Democratic candidates. Further, even if a number of guests are presented as “experts”, they may slant their discourse; e.g. in France, Agnès Verdier-Molinié is not a professional politician – hence her speaking time is not accounted for by the regulatory authority – but she is the director of a right-wing liberal think tank (called iFRAP) that is registered as a private interest representative with the National Assembly, and whose ideas she defends on TV.

Politicians.

Out of the 309,416 distinct guests in our data, we identify the political slant of 18,073 individuals, but who account for 28.1% of all guest appearances. Politicians account for 25.5% of appearances, and PENOPs for 2.6%. We rely on the Chapel Hill Expert Survey, which studies the positioning of political parties on various ideological and policy issues (Bakker et al., 2015), to group politically outspoken guests into six distinct families: (i) radical left, (ii) greens, (iii) left, (iv) liberals, (v) right, and (vi) radical right depending on their politically affiliated party. Importantly, for both politicians and non-politicians, we allow ideology to vary over time. Producing these data is our first contribution.

Next, in the spirit of Durante and Knight (2012), we measure media slant using the speaking time share of guests. We consider alternatively (i) only political guests (as it is usually done in the literature) and (ii) both politicians and PENOPs, which is a second contribution of our paper, and compute the speaking time shares either only among the politically-classified guests or among all the invited guests – which is a third novelty of our approach that allows us to take into account the propensity of a channel to cover politics. We can then estimate the time share allocated by different channels to “politics” and to different political families, and study how it evolves over time. In our most fined-grained analysis, these measures are built at the show level and we can thus investigate separately the role played by journalists, channels and owners in biasing the content of the media, controlling for time fixed effects as well as for the characteristics of the shows.

Our first set of results is both descriptive and methodological. Using France 2 – the leading French public television channel – as a reference point, we first document large variations in ideological representation across media outlets – although they all serve the same country-wide market – as well as over time. Second, these estimates vary depending on whether we only consider politicians or both politicians and the PENOPs. E.g. while, if we only consider the politicians, CNews/I-Télé devotes overall 1.81 percentage points more speaking time to the radical right than France 2,² this difference is 5.03 percentage points when we consider both politicians and PENOPs. This change is sizeable considering that the second channel in terms of to radical right speaking time, LCI, is only 2.09 percentage points above France 2 over the entire timeperiod. These findings imply that, by only focusing on politicians, the existing literature may have underestimated the importance of media slant.

Third, focusing on the subset of hosts who work for multiple channels owned by distinct owners, we tease out the host-specific media bias from owner-specific and channel-specific slant. While channel fixed effects capture a channel’s tendency to systematically over- or under-represent a given ideological family, host fixed effects measure any discrepancy between the ideology of the average guest on a channel and the average guest of a specific host. While

²i.e. slightly less than BFM TV (1.87 percentage points) and about the same as Radio Classique (1.72)

a number of theoretical papers in the literature highlight the existence of journalist-driven media bias (Dyck and Zingales, 2003; Baron, 2006), to the extent of our knowledge, we are the first to document this bias empirically.³ Specifically, our sample includes 3,966 journalists who work for multiple owners during our time period.⁴ Conditional on owner fixed effects, 65.6% of these journalists have an estimated fixed that is statistically different from zero when we measure bias as the difference in right vs left-wing speaking time shares on their shows.⁵ This share is 59.6% if we focus on the air time share for the radical right only. This implies that the bias observed at the media level is (in part) driven by host-level political preferences. Further, we show that the explanatory power of the journalist fixed effects for political bias is higher than the one of channel or owner fixed effects. Put differently, the host of a show is more informative about its political bias than the owner of the respective media outlet. How hosts are allocated across channels therefore matters to understand media slant.

We next ask how hosts and journalists react to a major change in the editorial line. Either their slant changes over time and comes closer to the new channel-level slant, or they move and sort across media outlets such that their own slant matches better that of their employer. To do study this, we exploit a major takeover that took place in France in 2015 in a difference-in-differences framework. In 2015, the Canal+ group, which owns the generalist television channels Canal+ and C8 and the 24-hour news channel CNews (at the time called I-Télé), was taken over by Vincent Bolloré – a French billionaire called “*the new king of European media*” (Capozzi, 2016) and who is often compared to Rupert Murdoch. According to Reporters Without Borders (2016), Vincent Bolloré “*is an extreme example of the effects of riding roughshod over the independence of news and information. (...) [He] had a record of involving himself in the running of the media outlets he controls, personally interfering in the choice and development of content and the selection of contributors.*” CNews is often described as the “French Fox News,” with hosts and guests making hard line anti-immigration and law-and-order comments since the takeover.

We start by documenting the effect of the takeover on channel-level slant. The implicit assumption of our research design is that, absent the takeover, Bolloré channels’ slant would have followed the same trajectory as the slant of other television channels and radio stations that form our control group. Event-study estimates starting in 2006 provide support for this

³DellaVigna and Hermle (2017) also test for bias by journalists; however, in their empirical framework, journalists work for the same media – and only one media outlet – throughout the period (similarly, Dougal et al. (2012) use the rotation of columnists *within a media* to study the causal effect of the writing of specific journalists on aggregate market outcomes). Hence, they cannot really disentangle the journalist fixed effects from the media outlet fixed effects. On the contrary, the main innovation here comes from the fact that we can exploit the richness of our data to isolate journalist fixed effects using journalists who work for multiple media owners at the same time.

⁴As we will see in the data Section 2.2 below, not all the individuals hosting shows are journalists; when analyzing journalist fixed effects, we focus on the subset of the hosts who are actually journalists.

⁵When considering the right-left difference here, we sum up the traditional right and the radical right on the one hand, and the traditional left and the radical left on the other hand.

assumption as none of the pre-takeover coefficients are statistically significant and are all close to zero. We document that, following the takeover, the right- vs left-wing time share difference has increased by on average 10 percentage points following Bolloré’s takeover. This effect is particularly strong among guests who are politically engaged but are not professional politicians.

Not all channels evolve in the same way, however. Canal+, which was the most left-slanted of the three channels before the change in ownership, becomes slightly more right wing afterwards but, above all, starts to devote much less time to politics. While, before the takeover, politically-involved guests accounted for 19% of the overall guest time share on Canal+, their share declined by 8 percentage points after the takeover. C8 and CNews were to the right of Canal+ before the ownership change and both experienced an increase in the time share of politically-engaged guests after the takeover. The speaking time share difference between the left and the right increased respectively by 14 and 12 percentage points. By 2019-20, due to the change in ownership, the radical-right time share on CNews has increased by nearly 15 percentage points, from a 7.4% base level during the 2013-14 season.

How did journalists react to this major change in editorial line? They might have complied with the new owner’s view, or left (voluntarily or not) the newly acquired channels. We study how the screen time share of hosts who were working for Bolloré channels evolves after the takeover on acquired and control channels. By 2018, on Bolloré channels, only 40% of screen time featured a host who worked for the channel before the takeover, while the corresponding figure for the control channels is about 60%. This implies that the takeover caused journalists to leave the channels they were working for. We find such responses to be largest for Canal+, the channel that granted the most speaking time to the left in 2013-2014 of the three acquired channels. The effect takes more time to manifest for CNews, but is large as well, with many hosts disappearing from the channel. Changes are modest for C8, the channel that was the most to the right. Overall, it suggests that the change in editorial line was mediated by a change in the hosts working for these channels.

Literature review This article first contributes to the literature on media bias, which has been measured in three different ways. The first consists in analyzing the endorsements of candidates or ballot propositions (Ansolabehere et al., 2006; Chiang and Knight, 2011), and relies on the explicit political behavior of media outlets. The other two rely on the implicit political behavior of media outlets. On the one hand, one can analyze the language media outlets use or the sources they cite in their news stories (Groseclose and Milyo, 2005; Gentzkow and Shapiro, 2010).⁶ On the other hand, the agenda-setting approach consists

⁶See also Martin and Yurukoglu (2017). This strand of research is closely related to recent work in political science using computerized text analysis. Diermeier et al. (2012) for example use a text classification algorithm (the Support Vector Machines) to extract the terms that are most indicative of conservative and liberal positions

in analyzing the amount of coverage devoted to various issues (see e.g. Puglisi and Snyder, 2011b; Galvis et al., 2016). Compared to this literature, in this article, we provide a novel measure of media bias based on the choice of the guests in the different news programs. From this point of view, the paper that is the closest to ours is Durante and Knight (2012) who document a shift to the right of the news content on Italian public television following the victory of the center-right in the 2001 national elections (see also Knight and Tribin, 2019b).⁷ They use the speaking time provided to the political actors to measure a station ideology. We go one step further by considering *all the guests* invited on television and radio and determining the political lean of these guests from a number of different sources. This is of particular importance because political actors are not the only guests whose discourse is slanted – for example, celebrities might influence politics, a phenomena often referred to as “celebrity politics” (West and Orman, 2003; Wheeler, 2013; Wood and Herbst, 2007). Besides, channels might prefer to slant the news through non politicians, given their speaking time is not monitored, and consumers may correct less for bias when it comes from “experts” or celebrities.⁸

Further, we consider both news shows and entertainment programs, given entertainment and politics often intersect.⁹ While the literature on celebrity politics is often anecdotal (Marsh et al., 2010), we provide a systematic approach in this article. Next, we study not only the bias of each station but investigate whether it is determined by the station owners or by the journalists themselves. To the extent of our knowledge, we are the first to quantify empirically the role played by journalists in biasing the news.

From this point of view, our article also contributes to the literature that investigates the forces driving media bias. According to the supply-side approach, news media with a political agenda impose slant to manipulate political outcomes. Theoretically, Besley and Prat (2006) examine the case for government capture of the media sector in the context of a political agency model, and document the government ability to exercise capture and hence influence political outcomes (see also Louis-Sidois and Mougins, 2020). Balan et al. (2014) and Anderson and McLaren (2012) present a supply-side model of bias whereby owners aim to influence outcomes.¹⁰ Empirically, Larcinese et al. (2011) and Puglisi and Snyder (2011a) document

in legislative speech records from the 101st to 108th Congresses of the US Senate. See also Gabel and Huber (2000).

⁷On government control of public media, see also Djankov et al. (2003) and Simonov and Rao (2020), as well as Knight and Tribin (2019a) who investigate the impact of the closure of one of the main opposition television channel in Venezuela.

⁸Investigating whether this is actually the case will be the object of future research.

⁹See e.g. Durante et al. (2019) who have documented the political impact of commercial television – with all-entertainment content – in Italy, and Barone et al. (2015).

¹⁰For an advertising-driven model of media bias, see Ellman and Germano (2009) and Germano and Meier (2013). DiTella and Franceschelli (2011) provide evidence of the role played by government advertising in Argentinean newspapers’ government corruption coverage. Petrova (2011) empirically shows that advertising played a key role in the emergence of an independent press.

the importance of such supply-side factors, and Martin and McCrain (2019), exploiting the acquisition of a set of U.S. local television stations by the Sinclair Broadcast Group, reveal a rightward shift in the ideological slant of coverage following the ownership change. Our findings on the impact of changes in media ownership are consistent with their results. We complement this literature by investigating the mechanisms through which owners slant the news. In particular, we study whether they do so by changing hosts or the political leaning of the guests.

On the demand side, Mullainathan and Shleifer (2005) analyze models with a demand for slant, with newspapers acting on purely profit maximization motives (see also Gabszewicz et al., 2001, who analyze the newspapers’ location game).¹¹ In Gentzkow and Shapiro (2006), even absent biased consumers, slant arises through a reputation game whereby newspapers strive for quality reporting.¹² Gentzkow and Shapiro (2010) estimate a model of newspaper demand in which a consumer’s utility from reading a newspaper depends on the match between newspaper slant and consumer ideology and provide evidence that slant is highly related to consumer ideology.¹³

Finally, two theoretical papers highlight the role played by journalists themselves in slanting the news: Dyck and Zingales (2003) and Baron (2006).¹⁴ Baron (2006) – assuming that journalists themselves may have ideological preferences¹⁵ – shows the role played by their willingness to promote their world view. Whether the political preferences of journalists impact slant in reporting is an empirical question. To the best of our knowledge, there is no empirical evidence on whether and how journalists themselves drive media bias¹⁶, and doing so is one of the contributions of this paper. Furthermore, we are the first to investigate the extent to which a change in media ownership triggers a reallocation of hosts across channels.

The rest of the paper is organized as follows. Section 2 describes the institutional setting, presents the novel data set we build for this study and provides summary statistics. Section 3 studies the relative role of journalists and owners in shaping media slant. Section 4 studies how ownership impacts media slant, and Section 5 provides a number of robustness checks. Finally, Section 6 concludes.

¹¹See also Bernhardt et al. (2008) who develop a demand model that incorporates consumer demand for slant and analyze the political process.

¹²In their model, Bayesian consumers infer that news reports which conform to their prior beliefs are from high-quality news sources. See also Chan and Suen (2008).

¹³On the contrary, they find little evidence that the identity of a newspaper’s owner affects its slant.

¹⁴See also Sobbrío (2014) who provides a model of the market for news where profit-maximizing media outlets choose their editors from a population of rational citizens and the bias in news reports is the result of the slanted endogenous information acquisition strategy of the editors.

¹⁵Survey research in the United States has shown that an overwhelming fraction of journalists are liberal (see e.g. Povich, 1996).

¹⁶See Xu (2021) for evidence of whether firm-journalist connections lead to media bias.

2 Institutional background, Data and Descriptive statistics

In this section, we first present a brief overview of the media landscape, the electoral system and political parties in France. We then describe the novel show-level data that we built for this article, and provide descriptive statistics.

2.1 The media and political landscapes

2.1.1 The broadcast media industry

As of today in Metropolitan France, there are 30 national digital terrestrial television channels – 7 public channels, 18 free national private channels, and 5 national pay channels – whose list is provided in the online Appendix Table B.1 (see also Section B for more details). Watching television remains the preferred mode of news consumption in France. On average in 2021, the French spent three hours and thirty nine minutes watching TV each day (Médiamétrie Press Releases, 2022).

Regarding radio, stations can be split into three main categories: local stations, music-only stations, and national non-music stations. In this article, we focus on this last group, which includes 11 stations and accounts for 54.9% of the total audience.¹⁷ Of these 11 stations, six are state owned (France Inter, France Bleu, France Info, France Culture, France Musique and Radio France International) and five are private (Europe 1, RMC, RTL, BFM Business and Radio Classique).

Regulatory environment As in most countries, broadcast media in France are subject to government regulation (Cagé and Huet, 2021). The CSA¹⁸, created in 1989, is the regulatory agency in charge of delivering frequencies, and also oversees mergers and acquisitions in the media market, edicts rules regarding diversity and pluralism, labels whether programs are appropriate for young audiences, and can also impose sanctions in case of behaviors such as hate speech or discrimination.¹⁹

Of particular importance for us here, in an effort to balance speaking time across different political parties, the CSA imposes rules on the time dedicated to politicians.²⁰ The CSA requires that a third of the speaking time be dedicated to the President of the Republic, the government and their collaborators. The remaining two thirds should be dedicated to all the political parties (including the government party), depending on electoral results, number of

¹⁷The figures are drawn from Mediametrie and correspond to the last quarter of 2020, Monday to Friday, between 5am and midnight.

¹⁸This acronym stands for *Conseil Supérieur de l'Audiovisuel*, and translates to Superior Audiovisual Council. Since January 1st, 2022, the CSA is called the Arcom: *Autorité de régulation de la communication audiovisuelle et numérique*, i.e. Regulatory authority for audiovisual and digital communication.

¹⁹The CSA can be considered as the French equivalent of the US Federal Communications Commission.

²⁰Television channels and radio stations are asked to measure the speaking time given to the government and to each party and report it to the CSA at the end of each quarter.

elected officials, popularity in the polls and contribution to the public debate.²¹ In effect, these rules are not meant to be implemented very precisely but are rather general guidelines, and we indeed document in this article important differences in the speaking time devoted by different stations to the political parties.

Furthermore, these rules only account for politicians. By contrast, commentators, columnists, experts, etc. are not taken into account – as we will see, including non-political actors modify the extent of the estimated bias. Additionally, speaking times add up irrespective of whether the show was broadcast during “prime time” or in the middle of the night. Anecdotal evidence suggest that some channels may broadcast several times during the night interviews of politicians belonging to parties they under-represent.²² We will show that weighting the speaking time of parties by audience also modifies the results.

Stricter pluralism rules apply during presidential and parliamentary electoral campaigns, however.²³ For this reason, we present robustness checks in which we drop electoral campaign periods and show that our main findings are robust to doing so in Section 5 below.

2.1.2 The political system

Unlike the United States, France has a multiparty electoral system, with a variety of parties ranging from the radical left to the radical right (Bekkouche et al., 2022). Online Appendix Table B.3 lists the main parties and their corresponding ideology. Ideology refers to the party’s ideological family as categorized in the Chapel Hill Expert Survey (CHES).²⁴

The six political families are: (i) the Radical left, which includes among other parties the Communist party and La France Insoumise (LFI); (ii) the Greens, which accounts for the party Europe Ecologie-Les Verts (EELV); (iii) the Left, which includes the Socialist party and politicians classified as “other left”; (iv) the Liberals, a category that gathers centrist parties like the Modem and La République en Marche (LREM); (v) the Right, with parties such as Les Républicains (LR) and the Union des démocrates et indépendants (UDI), as well as politicians classified as “other right”; and (vi) the Radical right, which includes the Rassemblement National (RN, former Front National), Debout La France (DLF), as well as a number of smaller parties.

²¹See the CSA website for additional details: <https://www.csa.fr/web/index.php/Proteger/Garantie-des-droits-et-libertes/Proteger-le-pluralisme-politique>.

²²<https://www.arretsurimages.net/articles/quotas-31-fois-yannick-jadot-sur-lci>.

²³See online Appendix Section B.4 for a precise description of these rules.

²⁴For reference, the left-right placement on a 0 to 10 scale is reported in the last three columns. “L-R general” corresponds to the general left-right placement. The last two columns of the table correspond to the placement on the left-right scale for economics and social issues respectively.

2.2 Data and descriptive statistics

2.2.1 Data on shows, hosts and guests

To build our novel dataset of television and radio shows broadcast, we rely on data archived by the French Audiovisual National Institute (INA)²⁵ that include the names of all hosts and participants in television and radio shows in France from 2002 to 2020.

Television channels and radio stations Regarding television, our main sample includes the 14 generalist or news channels, i.e. TF1, France 2, France 3, Canal+, France 5, M6, the European cultural channel ARTE, C8/D8, TMC, and France 4 (the latter four feature substantial share of entertainment and fiction programs), the 24-hour news channels BFM TV, I-Télé/CNews, and LCI, and the news channel LCP/Public Sénat whose focus is more on Parliament politics. These 14 channels account together for respectively 90.7 and 70.4 percent of viewership in 2002 and 2020.²⁶

Regarding radio, our data include all the public and private national radio stations that are not fully dedicated to music, i.e. the following 3 public stations: France Inter, France Info, and France Culture, and 5 private ones: RTL, RMC, Europe 1, Radio Classique, and BFM Business.²⁷

Shows The INA documented all the shows that were susceptible to have hosts, guests, or both. Our dataset includes newscasts, shows about news and politics, talks shows, as well as some entertainment programs and documentaries if they have hosts or guests. It excludes fictions, music programs, games and sports. Although the literature has documented that fictions could shape values and social attitudes (see e.g. Jensen and Oster, 2009; La Ferrara et al., 2012; DellaVigna and Ferrara, 2015), our measure of slant, computed using guest speaking time, would not be appropriate to measure the slant of such shows, and the impact they may have on viewers.

Appendix Figure C.1 presents descriptive statistics regarding the daily time coverage of the shows in the INA dataset. Panel (a) reports the distribution of the daily coverage in hours

²⁵This acronym stands for Institut National de l’Audiovisuel. It is a repository of all French radio and television audiovisual archives. For previous research using the INA data, see Cagé et al. (2020b,a). The data can be consulted show by show via the interface on <http://inatheque.ina.fr/>.

²⁶Not including in our sample are the four entirely pay television channels: Paris Première, Canal+ Cinéma, Canal+ Sport, and Planète+. We also exclude TF1 Séries et Films, 6ter, RMC Découverte, RMC Story, and Chérie 25 that were created in 2012 or after; furthermore, these channels are entirely dedicated to entertainments or documentaries. For the same reason, we exclude W9, TFX, NRJ 12 and CStar that were created in the late 2000s and are dedicated exclusively to entertainment programs (these channels do not broadcast regular shows with guests). We also exclude L’Equipe, a channel fully dedicated to sports, and Guilli that is fully dedicated to youth programs. Finally, we do not include franceinfo TV that only appeared in 2016.

²⁷We do not have data for France Musique (2.2% audience share), which emphasizes classical music; Radio France International (0.6% audience share), which focuses on international news, and France Bleu(5.8%) that mostly focuses on local news.

(an observation is a day-channel). The average daily number of hours covered is smaller for television than for radio, which reflects the greater time dedicated to fiction shows on television, which are not included in our dataset. Panels (b), (c) and (d) show the evolution of our data coverage separately for each channel. For most channels, the shows included in our sample account for more than half of the day. Not surprisingly, the data coverage is greater for the news channels (BFM TV, CNews, and LCI) as they air no fictions. The coverage of three radio stations, BFM Radio, France Culture and Radio Classique, sharply increases in 2008.

We use another data source, Plurimedia, to benchmark INA data coverage. Plurimedia is a company that collects metadata on scheduled television shows before they are broadcast, and sells them to websites and magazines publishing television schedules. The data set includes all shows, 24 hours a day, for all the television channels from September 2009 to December 2020. For each show, the data provide information on the channel, date, scheduled start time, length and title. It also includes information on the host(s) of the show, and on the guest(s) if they are known and announced in advance.²⁸ Plurimedia data are less detailed than INA data, which identifies shows segments, and precisely matches guests, whether or not they are in the studio, to show segments. Similarly, INA data also contain information on hosts in charge of specific segments within a larger shows, Plurimedia data do not.

Building on Plurimedia show classification, we devise twelve show categories: (i) newscasts, (ii) shows about news and politics (interviews, in-depth analysis of specific news topics, etc.), (iii) talk shows about politics (debates, news commentary with pundits or commentators), (iv) entertainment talk shows (which also include infotainment talk shows such as late shows), (v) entertainment shows (reality TV, home makeover shows, cooking shows, etc.), (vi) sports shows, (vii) youth shows (cartoons, educational programs), (viii) games, (ix) performance shows (concerts, plays, etc.), (x) fiction, (xi) documentaries, and (xii) other shows (weather forecast, lottery, undetermined night-time programs, etc.). Figure 1 depicts the time share of each television program category for the fourteen television channels of our sample using Plurimedia data. News casts, shows about news and politics, and talk shows²⁹ account for about a third of the total screen time. Panel (b) focuses on these categories. The time share dedicated to newscasts has decreased from about 15% to less than 10% between 2009-10 and 2019-20, and is now similar to that of political talk shows, which accounted for less than 5% of the total screen time in 2009-10.³⁰ This stylized fact motivates our decision to study a

²⁸For this reason, there are no guests associated to newscasts, as news show producers do not know what the news will be until very late before the show airs.

²⁹Many entertainment talk shows are *infotainment* shows. They also discuss recent news and political events, and regularly invite politicians or activists. Such shows include *Le petit journal* or *Touche pas à mon poste*.

³⁰In most of the analysis, we work at the “season” level. A season refers to a twelve-month period ranging from September 1st to August 31st.

broad range of shows, rather than only newscasts.³¹

Guests For all the shows, the INA data provide the identity of the participants. Taking part in a show here refers to either being a guest in the studio, being interviewed elsewhere (press conference for instance) or being recorded making a statement which was aired during the show. The appearance and identity of guests is manually documented by INA employees. Appendix Figure C.3 depicts the number of appearances, the number of distinct guests and the screen time of guests for each season. There is a gradual increase in the number of appearances in the first seasons, which reflects the entry of new channels (C8, France 4, BFM TV, and CNews). For two television channels (BFM TV and France 4) and five radio stations (BFM Radio, RMC, Europe 1, Radio Classique, and RTL), there is a decline in the number of documented guests after 2018, due to budget cuts at the INA.³² Hence, in the robustness section 5.1 below, we show that our findings are robust to only considering the 15 television channels and radio stations that are fully documented over all our time period, and to only considering the time period September 1st, 2006 to August 31st, 2018.

Between 2002 and 2020, 309,416 distinct guests appeared, accounted for 3,010,895 appearances on the 22 television channels and radio stations we consider. The top 5 guests in terms of appearances are François Hollande (President, 2012-2017), Nicolas Sarkozy (President, 2007-2012), Manuel Valls (Prime Minister under François Hollande), François Fillon (Prime Minister under Nicolas Sarkozy) and Marine Le Pen (head of the National Rally). These five guests account for 2.12% of all appearances.

Next, we compute the screen time of each guest. We start by teasing out main shows from sub-shows. By sub-shows we mean shows that are actually segments within a main show. In total, there are three levels of shows (main shows, sub-shows, and subsub-shows).³³ For each level of show, we compute the *gross* and the *net* length of the show. The gross length of the show is simply the difference between the end and start time. The net length of the show is the gross length of the show, minus the length of lower level shows.³⁴ Participants can be

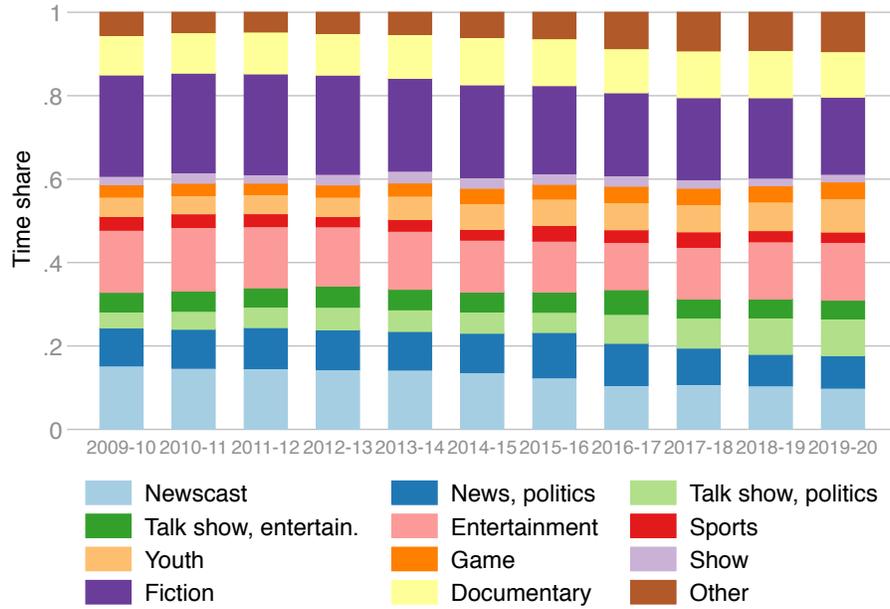
³¹In the online Appendix, we match shows in Plurimedia data with shows in INA data, and determine for each category the time share of shows that are in both datasets. Figure C.2 contrasts the coverage of shows by type across Plurimedia and INA data. While newscasts, shows about news and politics, and talk shows are nearly all included in INA data, only a subset of entertainment, sports, youth programs and documentaries are covered. Most of the difference between INA and Plurimedia data coverage can be explained by fiction shows. Overall, the figure shows that INA data provides a broad coverage of shows that have hosts and guests, which makes it ideal to measure political slant using guest speaking time shares. Notably, while most studies in the media bias literature only focus on news shows, we cover a much broader range of programs, whose total length far exceeds that of newscasts only.

³²A number of retirements have not been replaced, which led to the fact that these channels stopped being (thoroughly) documented.

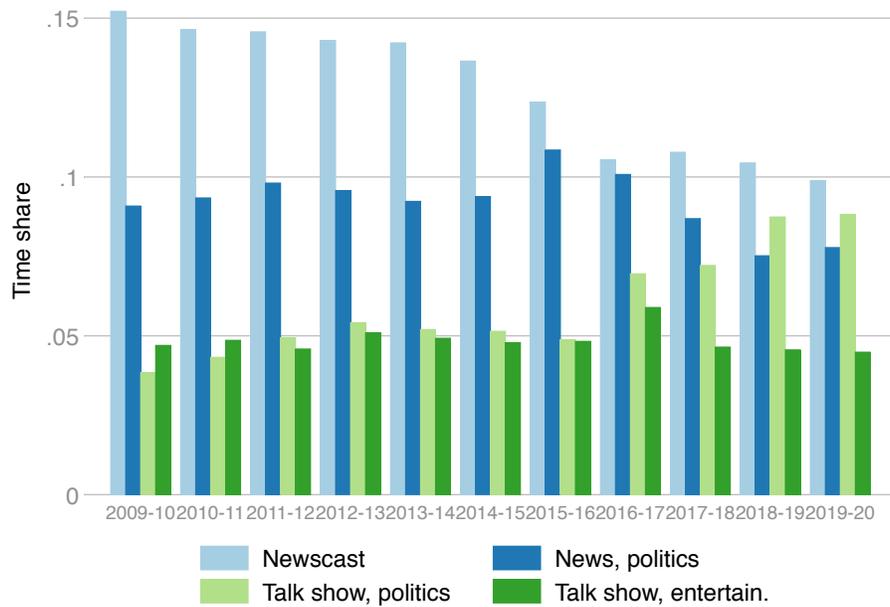
³³For instance, the main show would be a morning show from 7am to 9am. Sub shows would include two newscasts, from 7:00 to 7:10am and from 8:00 to 8:10, interviews, a stock market analysis segment, a press review, a weather forecast segment, etc. Subsub-shows could be segments within a newscast: a segment on a bill, a segment on the latest statement of a minister, a segment on an armed conflict, etc.

³⁴For instance, the gross length of a main show from 7:00am to 9:00am would be 120 minutes. Its net

(a) Time share of each show type, all channels



(b) Focusing on newscasts, news shows and talk shows



Notes: The figure depicts the time share of each program type using Plurimedia data. Each bar corresponds to a semester. The data cover the time period ranging from September 30th 2009 to December 31st 2020 and include the following television channels: TF1, France 2, France 3, Canal +, France 5, M6, Arte, C8, TMC, LCP, France 4, BFM TV, CNews and LCI.

Figure 1: Types of television shows

matched to a main show, as well as to lower level shows. In the latter case, it indicates that the guest only appeared during a specific segment of the show. If the guest is matched to the main show, we use the net length of the main show, as the guest was probably not appearing on screen during specific segments. When several guests are matched to the same show, which is common for talk shows, we divide the net length of the show by the number of participants. We implicitly assume that each guest was given the same screen time, which we acknowledge is imperfect. We then winsorize the top percentile of speaking time length.

In addition to the name of each guest, our data includes a short description of the guest’s profession for 88.4% of the appearances and 55% of the guests. This variable is not time-varying, but several professions can be listed. For instance, David Douillet, a judo Olympics champion who then became Minister of Sports in a right-wing government is listed as “Judoka, politician. France.” Using keyword lists, we classify guests into professional groups, some of them belonging to several groups (e.g. the example above fits both the politics category and the sport category). Figure C.4 reports the appearance share of the main professional groups. About 15% of appearances are not classified, in part because 11.6% of appearances have no description. The main categories are politics, media/publishing, and entertainment.

We complement the data on guests with complimentary sources to classify them based on their political leaning. We describe the data sources and the procedure later in this section.

Hosts For each of the programs in our dataset, we have information on the host(s) of the show, with 6,334,975 show-host observations during our time period. Each host is identified by a unique identifier, based on her first name and last name (as well as additional information to avoid homonyms). We have 67,735 unique “hosts” broadly defined. Included in this category are the journalists and presenters themselves, as well as non-journalists – including actors, singers, politicians, academics, etc. – when they are in charge of hosting a show.³⁵ Overall, journalists represent 37% of the hosts, but 82% of the 6,384,560 show-host observations. Appendix Figure C.6 provides a summary plot of the profession of the non journalist hosting shows as a share of the number of appearances: 82.2% of them are artists; sports persons and academics each account for around 2%, followed by politicians.

In our main specification, we isolate the journalists and presenters from the other non-journalist hosts. At the end of the day, we have 24,730 unique journalists/presenters in our dataset (including the columnists and commentators; Appendix Figure C.8 plots this

length would be 120 minutes, minus the length of newscasts, of weather forecast segments, of the stock market segment, etc.

³⁵For example Nicolas Canteloup, a famous comedian who – among other things – has participated in the program “*Vivement dimanche prochain*” on France 2 and hosts the “*Revue de presque*” on Europe 1; the politician Daniel Cohn-Bendit who had a daily column in Europe 1 breakfast show and hosted on the same station the “*Dany Football Club*”. Another example is the one of Luc Ferry, philosopher and politician who served as the Minister of Education between 2002 and 2004, and who hosts “*Les mots de la philo*” on Radio Classique and participates in the “*Ferry - Juillard*” program on LCI.

number per season). On average, each journalist/presenter appears 212 times in our data, an appearance here corresponding to the broadcast of a show on a given day, with a lot of heterogeneity depending on the journalists. The median journalist presents 3 distinct programs during our time period (2002-2020), and a quarter of them host only one show (online Appendix Figure C.7).

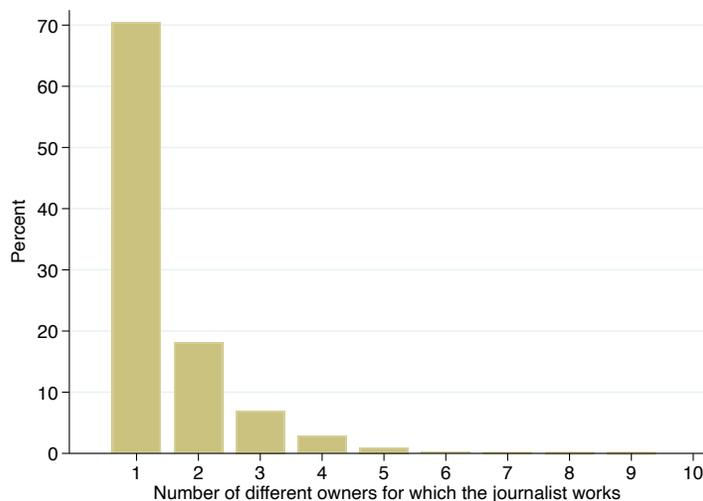
Some of these journalists always work for the same channel during our period of interest, while others appear on multiple channels, sometimes during the same time period.³⁶ Figure C.11 plots the distribution of the number of distinct channels that journalists appear on. 50% percent of the hosts in the dataset only appear on one channel; 22% on two, 11% on three. For instance, Emmanuel Chain was a presenter on M6 between 1987 and 2003, simultaneously a presenter on Canal J from 1993 to 1996, then presenter on Canal+ in 2003-2004, and again on M6 in 2004, before joining TF1 in 2010. Appendix Figure C.12 plots the number of distinct channels journalists appear on, but within a given season. While the exact figures vary from one season to the other, we see that on average, in a given season, four fifth of the journalists only work for one channel, while 20% appear on two channels or more.

A journalist may work for different channels, but not necessarily for different *owners*. Our goal is to isolate the part of the slant driven by journalists themselves. In the empirical analysis below, we use channel and day fixed effects to control for audience characteristics (demand-driven slant) and owner fixed effects to account for the owner’s influence on media content (supply-driven slant). We therefore focus on journalists working on channels belonging to different owners. Figure 2 reports the distribution of the number of journalists depending on the number of owners for which they work. More than two-thirds of journalists in our dataset work for two owners or more (see online Appendix Figure C.13 to see these numbers by season).³⁷

Finally, we complement the INA information with additional data on the journalists that we collect from two sources: on the one hand, “LesBiographies.com”, a media-focused biographical and monographic online reference database that we scrape and, on the other hand, Wikipedia. More details on the data collection are provided in the online Appendix Section A.3. Online Appendix Table D.1 reports summary statistics on journalists; below, we relate these characteristics with the propensity of the journalists to bias the news. A third of the journalists in our dataset are women, and 18% of them are born in the Paris metropolitan area.

³⁶For example, Léa Salamé hosting a program on both France Inter and France Télévisions

³⁷For example, Guillaume Durand who, during the 2005-2006 season, hosted a program (daily interview) on CNews/I-Télé – owned by the “Groupe Canal Plus” at the time –, and the three-monthly program “*Campus, le magazine de l’écrit*” on France 2 (public television). In 2010-2011, he simultaneously co-hosted with Michael Darmon “*En route vers la présidentielle*” on CNews/I-Télé (“Groupe Canal Plus”), hosted “*Conversation inédites face aux français*” twice a month on France 2, and presented the Radio Classique morning show (Radio Classique been owned by LVMH). Another example is the one of Augustin Trapenard who, in the 2014-2015 season, both co-hosted the television program “*Le grand journal*” on Canal + (“Groupe Canal Plus” and then “Groupe Bolloré”) and presented the radio program “*Boomerang*” on France Inter (public radio station).



Notes: The figure reports the distribution of the number of journalists depending on the number of different owners for which they work. The data covers the time period ranging from January 1st 2002 to December 31st 2020. It includes the following 16 television channels: TF1, France 2, France 3, Canal+, France 5, M6, ARTE, C8/D8, TMC, RMC Story, France 4, BFM TV, I-Tél é/CNews, LCI, franceinfo TV, LCP/Public Sénat, and 10 radio stations: France Bleu, France Inter, France Info, France Culture, and Mouv', RTL, RMC, Europe 1, Radio Classique, and BFM Business.

Figure 2: Distribution of the number of different owners for which the journalists work (2002-2020)

The highest degree reported is a PhD for 8% of the journalists, 8 report to have graduated from a journalism school, and 5% from the ENA. Note however that these numbers might not be representative as we have information on education and origin only for a subset of journalists which might be endogenous to reporting biases and the popularity of a journalists .

2.2.2 Estimating the political leaning of the guests

To measure the political leaning of the guests (if any), we use a number of additional data sources that we briefly describe here. Details on data construction are provided in the online Appendix Section A.1.

Identifying the politicians First, to identify the politicians and determine their party, we collect data on the identity of all the candidates running at the following elections: European elections (2009, 2014, 2019); local, i.e. both mayoral and cantonal elections (2001, 2008 ,2014); Senatorial elections (2008, 2011, 2014, 2017); and National Assembly elections (2002, 2007, 2012, 2017). For all the candidates, we collect their reported party affiliation. In addition, we rely on information from the *Project Arcadie*³⁸ to track the political affiliation of elected

³⁸www.projetarcadie.com.

members of Parliament during their legislative term (a number of elected MPs indeed change political parties during their mandate). Finally, we use data on the names of the government members (including the ministers, secretaries of state, cabinet members, etc.), and consider that people in office under a President of a given party have views of that said party.³⁹

Each data source provides us with a political party membership for a certain period. For the electoral data, this corresponds to the period beginning at the start of the election campaign (i.e. three months before the election) and finishes at the end of the mandate. We order the data sources according to their level of granularity and the importance of the political information they provide; e.g., we consider that competing in a national election with a political party label is generally more revealing than simply appearing on a list for mayoral elections (that can bring together several political families).⁴⁰

In total, using fuzzy matching procedures, we identify 18,073 politicians with their respective party affiliation, accounting for 26.8% of all appearances. For the 3,000 politicians with the highest number of appearances on television and radio – who jointly account for 90% of all the appearances of politicians – we further verify manually that their political affiliation is correct. For the 700 most frequent politicians whose political affiliation has changed between 2002 and 2020, we similarly verify manually that the temporal dimension of their political affiliation is accurate.⁴¹

Classifying non politicians Politicians are not the only participants whose discourse may be slanted. In particular, some guests may be politically involved even if they never run for elections or participate in a government. Identifying the political leaning of politically engaged non politicians (PENOPs) is particularly challenging empirically, and doing so is one of the contributions of this paper.

To identify the PENOPs, we collect data from three different sources: (i) the summer universities of the political parties, (ii) the list of the contributors to politically-involved think tanks, and (iii) the signing of op-eds in support of candidates. Once more, we only briefly describe the data and methodology here and provide all the necessary details in the online Appendix.

First, we regard the summer universities of French political parties, which are a unique feature of the French context. French parties hold regular summer universities for their

³⁹There was no cohabitation in France during our period of interest.

⁴⁰The order we consider is the following: (i) membership of a parliamentary group; (ii) legislative elections; (iii) senatorial elections; (iv) members of government; (v) European elections; (vi) regional elections; (vii) cantonal elections; and (viii) municipal elections. If, for a political figure, we are missing information for a few months, we extend the last known political affiliation in order to fill in the gaps and to have complete information during the period. See online Appendix Section A.1 for more details.

⁴¹For example, Bernard Kouchner served as a Minister under the conservative President Jacques Chirac, then joined the Socialist party before joining the conservative government under President Nicolas Sarkozy, and then leaving office as an independent politician.

supporters, with “intellectuals” and pundits close to the party. We retrieve the programmes of these universities online or from archival data and manually enter from these lists the names of all participants, which are then affiliated to their respective political party. We gather information on 9,569 contributors, 3,942 of which match to our guest data set.

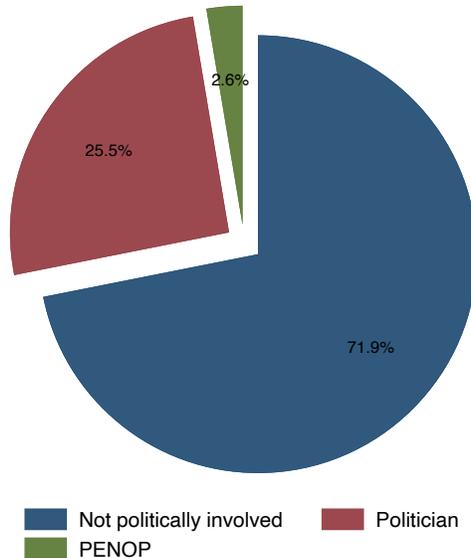
Our second metric to elicit the political leaning of PENOPs is their participation in politically-involved think tanks. Here, we proceed in three steps. As there does not exist an official registry of think tanks in France, we first build an exhaustive list of 70 think tanks from several sources. We then map each think tank, (when relevant) to political families using four criteria: management, funding, stated goal and community on Twitter.⁴² Finally, we rely on the present and past versions of the think tanks’ websites (using Wayback Machine), to retrieve the list of the contributors at any moment of time. Overall, we compile a list of 9,569 contributors to 23 politically affiliated think tanks, of which 4,430 appear on French TV and radio.

Finally, we identify all op-eds in favour of presidential election candidates published before the first round during our period of interest. For each of these op-eds, we collect the name of the signatories. Overall, we have information on 470 intellectuals or artists (273 of which appear on radio or TV) who supported a candidate at the presidential election, and consider it as an endorsement of the respective party.

Unlike what we have done for the professional politicians, the three sources of information that allow us to identify the political affiliation of the PENOPs are less informative. Therefore, we cannot assign a political family as categorically as running for office allows us to do. We thus use a fuzzy approach by applying a mixture of Gaussian distributions to define both the political affiliation and its duration. The political axis is a continuous value on which the political families are positioned according to the Chapel Hill survey left-right general score (Jolly et al., 2022) that ranges between zero and ten. The time axis is split with a monthly granularity. The Gaussians we use are standard across the political axis, with a standard deviation of one. Across the time axis, we use an asymmetric Gaussian kernel with a sharp attack and a long tail – allowing us to have a neat political affiliation close to the event that provides the information (e.g. the date of the publication of an op-ed in support of a candidate) – and that is smoothly decreasing after. Once the mixtures are created with all our events (summer universities, think tank and op-eds), we categorize politically and temporally all the guests using our six political families (if the guests turned out to be politically engaged). Note importantly that we indeed allow our measure of guest ideology to be time-varying.

Overall, Figure 3 provide summary statistics on the guests depending on whether they

⁴²For the latter, we observe which of the Twitter accounts we know to be politically polarized retweet these think tanks (Hervé, 2021). More details are provided in the online Appendix Section A.1.2. Online Appendix Table D.2 lists the different think tanks for which we collected data, and their political affiliation when they can be considered as politically involved.



Notes: The Figure depicts the share of appearances of guests that fall in a political category. The data covers the time period ranging from January 1st 2002 to December 31st 2020. It includes the following 14 television channels: TF1, France 2, France 3, Canal+, France 5, M6, ARTE, C8/D8, TMC, France 4, BFM TV, I-Télé/CNews, LCI, LCP/Public Sénat, and 8 radio stations: France Inter, France Info, France Culture, and RTL, RMC, Europe 1, Radio Classique, and BFM Business.

Figure 3: Political classification of the guests, 2002-2020

are politically affiliated. In total, we can classify 18,073 individuals that account for 825,055 appearances (28.1%) in our data. We find that 25.5% of guest appearances are appearances of politicians, and 2.6% are appearances of PENOPs.⁴³ Online Appendix Figures C.16, C.17, C.18 and C.19 plot these differences respectively for public television channels, private TV generalist channels, private TV news channels, and radio stations. Not surprisingly, the relative share of not-politically involved guests tend to be much higher on generalist than on news channels.

2.3 Measuring media bias

From our measure of the political leaning of the guests, we can thus determine the slant of the shows and of the channels.

In the spirit of Durante and Knight (2012), we measure the slant of a show as the share of the speaking time devoted to a given ideology (through an invited guest) in the total length of the show. We do it first considering only the politicians (as is usually done in the existing literature) and then also taking into account the PENOPs. Our first measure is based on the speaking time of each political party among the total speaking time of all the politically-

⁴³See online Appendix Figure C.14 for more descriptive statistics on the classification of the guests – some guests indeed appear both as professional politicians in our data and as contributors to think tanks or participants in summer universities.

classified guests. Our second measure – that allows us to approximate the importance given to politics by each media outlet – is based on the speaking time of each political party among all the guests.

2.3.1 Only considering the politicians

Figure 4 depicts the evolution of the time share of each political group over time. Speaking time is aggregated at the season level, that is from September 1st to June 30th.⁴⁴ In sub-figure 4a, only the politicians are included. It appears clearly that after the Left wins the 2012 Presidential elections, right-wing politicians' speaking time share shrinks while left-wing politicians' speaking time increases. Then, following the election in 2017 of a Liberals president (Emmanuel Macron), his political family rapidly gains speaking time (LREM is classified as Liberals in the Chapel Hill surveys). This is due to the regulatory environment described above: the CSA requires a third of the speaking time to be dedicated to the President of the Republic, the government and their collaborators.

Hence, in sub-figure 4b, we perform the same analysis but drop the mandatory speaking time share of the government. The general picture is different, with an overall decrease over time of the speaking time share of the two main political families, and an increase since 2017 of the speaking time share of the Liberals, but to a lower extent. The speaking time share of the radical left, the greens and the radical right consistently remains below 10%. We will show below that our results are robust to ignoring the mandatory speaking time share of the government, given media outlets have no choice but to respect this obligation.

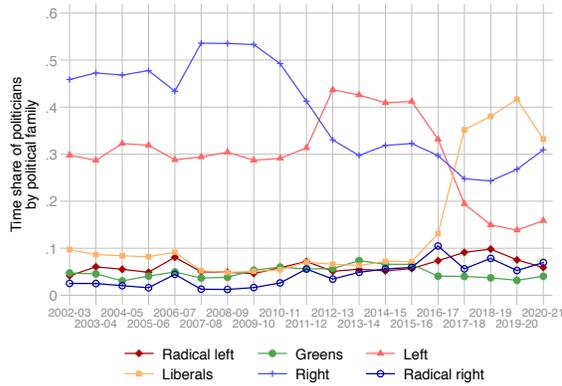
In both pictures, small bumps can be observed for the radical right in presidential-election years (2007, 2012 and 2017), as channels have to give an equal speaking time to candidates in the weeks prior elections (again due to the regulatory environment). In the online Appendix Figure E.3, we drop these electoral periods when the speaking time is regulated by the government. Yet, doing so only slightly changes the overall picture.

2.3.2 Taking into account both the politicians and the PENOPs

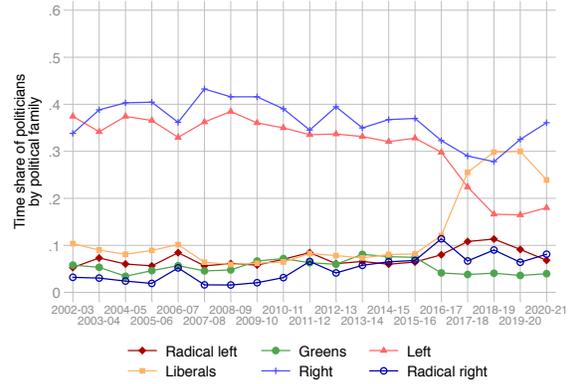
The above measures are only based on the speaking time share of the politicians. However, channels can also invite non-politician guests with a political stance. Doing so has the advantage for the outlets that it escapes speaking-time regulation.

We see from sub-figures 4c and 4d that including the PENOPs in our measure of slant changes the overall picture to a great extent (further, as we will see below, channels tend

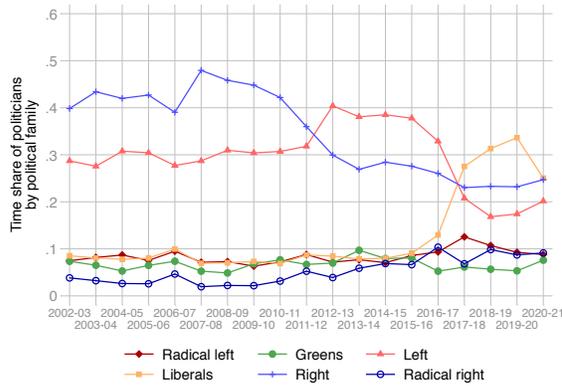
⁴⁴Because programs broadcast during the Summer most often strongly differ from the usual programs, with for example a lot of reruns, we decided to drop the Summer from our preferred analysis. In the online Appendix Section E.2, we show that our main results are unchanged when we include the summer period. See e.g. online Appendix Figure E.1 for the equivalent of Figure 4 but with the Summer included.



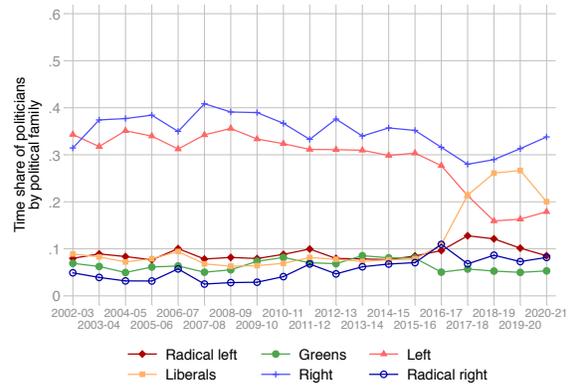
(a) Only politicians – All time periods



(b) Only politicians – Dropping mandatory speaking time for government



(c) All politically-classified guests – All time periods



(d) All politically-classified guests – Dropping mandatory speaking time for government

Notes: The data covers the time period ranging from January 1st 2002 to December 31st 2020. It includes the following 14 television channels: TF1, France 2, France 3, Canal+, France 5, M6, ARTE, C8/D8, TMC, France 4, BFM TV, I-Télé/CNews, LCI, LCP/Public Sénat, and 8 radio stations: France Inter, France Info, France Culture, and RTL, RMC, Europe 1, Radio Classique, and BFM Business. Speaking time is aggregated at the season level, that is from September 1st to June 30th (see online Appendix Figure E.1 for a similar figure including the Summer).

Figure 4: Evolution of the speaking time of the guests, depending on their political affiliation

to slant content more using PENOPs than politicians). In particular, it increases the relative speaking time share of the radical parties. (In Section 3.1 below, when analysing the determinants of media bias, we provide similar descriptive evidence for each media outlet.)

2.3.3 Are some political families overrepresented?

The observed differences in the speaking time share devoted for different political ideologies may reflect different demand for political content either due to audience preferences or the importance of a given ideology at a certain time. To address this, we use two different benchmarks: (i) the number of elected politicians of different parties (measured as the sum of the number of MPs and the number of senators), and (ii) the “popularity” of the parties as reflected in the polls as well as in the electoral results. Given the French majoritarian voting system, both benchmarks have potential shortcomings in representing political preferences of the audience. While radical parties tend to be under-represented among elected politicians, they might be overrepresented in election polls. To measure speaking time shares on the media side, we use all politically-classified guests (i.e. both politicians and PENOPs) and dropping the mandatory speaking time for government.

Online Appendix Figure C.20 plots the difference (in percentage points) between the speaking time share devoted to each political family (as reported in Figure 4d) and the share of elected politicians represented by each political family. When using elected politicians as a benchmark, the fact that left-wing and right-wing political families benefit from more speaking time does not reflect a positive slant of the French media industry (considered overall) towards these families; On the contrary, the speaking time share of the Right and the Left is consistently lower than their share of elected national politicians (of course, as we will see in Section 3 below, this varies depending on the media outlets). The only exception is 2018, following the election of a Liberal President, whose political family also obtained the majority of the seats at the National Assembly but – once the mandatory speaking time for the government is dropped – only benefits from a relatively low speaking time share.

The picture is quite different if we use the popularity of different political families as measured in the polls. For this analysis, we build a dataset of all polls for the presidential and legislative elections in France since 2002 and aggregate them at the level of the political families. Online Appendix Figure C.21 shows that, when focussing on polls for the presidential elections, the radical-right family seems to be under-represented in the media. This has also been the case in recent years for the radical left, but to a lower extent. On the contrary, the Left is the political family that benefits the most from media coverage compared to its relative popularity as measured in the polls.

2.3.4 Weighting the speaking time shares by the audience of the shows

For now – and as is usually done in the literature – we have considered the speaking time shares devoted to each political family as if it was similar for a guest to be invited during a prime time show or in the middle of the night. Yet, it is obviously not the case, and channels may play around with the respect of pluralism by providing broadcast time to some political families at times when the audience is high, while doing the reverse for some other families.

Hence, we next investigate how weighting the speaking time share by the audience of the shows affects the descriptive evidence presented above. To do so, we collect audience data from Mediametrie. Online Appendix Figure C.22 presents the result when we weight the speaking time by the average audience of the time slot. While the overall patterns are relatively similar to the ones documented in Figure C.22, it seems that the main left-wing and right-wing parties, as well as the Liberal political family since its victory in the 2017 elections, seem to benefit from an “audience bonus” relatively to the radical and smaller parties. This is true whether we consider only the politicians, or both the politicians and the PENOPs.

2.4 Additional data sources and information

Finally, we briefly describe the additional data we collect for this article.

Media ownership For each of the channels in our sample, we collect detailed information on their owner(s). The ownership information mainly comes from the CSA, and we also rely on the Orbis database (Bureau Van Dijk).⁴⁵ Finally, we complement this information with a careful review of all the changes in ownership documented in *La correspondance de la presse*, a daily publication specialized in the media sector. During our period of interest, a number of different ownership changes took place: (i) the Bouygues Group bought AB group’s shares in TMC in May 2009; (ii) Direct 8 was sold by Vincent Bolloré to the Canal Plus Group in September 2011; (iii) Vincent Bolloré took control of the Canal Plus Group (Canal +, C8, CNews) in April 2015; and (iv) Altice bought BFM TV and RMC from Alain Weill in July 2015. We describe the time line of these changes in the online Appendix Section B.3.

Audience characteristics Finally, we collect data on the characteristics of the viewers/listeners of each channel, in particular their political preferences. More precisely, we rely on survey data from the 2013, 2018, 2019 and 2020 *Digital News Report* (Reuters Institute, 2013, 2018).⁴⁶ For each year, we compute the average ideology of the viewers of the

⁴⁵Orbis is a firm-level database that encompasses firms’ financial statements and ownership structure.

⁴⁶Similar data has been used by Kennedy and Prat (2019) and Cagé et al. (2020b) but focusing on the online news consumption; here, we consider media consumption offline. The choice of the survey years was driven by whether or not the questionnaires include questions about political ideology. The sample includes 1,016 individuals for France for the year 2013, 2,006 for 2018, 2,005 for 2019, and 2,038 for 2020. Among the

different channels, and compare it to the one reported overall by all the surveyed individuals. Online Appendix Figure C.24 reports the results. We find that the individuals who report consuming public radio or public television tend to be consistently on the left of the overall population, as well as viewers of Canal+, while viewers of BFM, LCI and TF1 are consistently on the right.

3 Do journalists themselves bias the news? Measuring the relative importance of owners and hosts in slanting media content

In this section, we first measure the political slant of television channels and radio stations, and then investigate whether journalists themselves slant the news. To do so, we estimate the following model at the show level:

$$\text{political slant}_{s,h,c,o,t} = X_s\beta + \lambda_h + \gamma_c + \alpha_o + \theta_t + \epsilon_{s,hc,o,t} \quad (1)$$

where s indexes the shows, h the journalists hosting the show, c the channels, o the owners of the channels, and t the week of the show as well as the day of the week. An observation here is thus a show s broadcast on a given date t on a channel c and hosted by journalist h . λ_h , γ_c , α_o and θ_t are respectively host fixed effects, channel fixed effects, owner fixed effects, and week and day-of-the-week fixed effects. X_s is a vector of show-level characteristics, in particular their genre (including television news, magazines, interviews, talk shows, documentaries, etc.),⁴⁷ the number of journalists hosting the show, the frequency of the show (daily, weekly, monthly or other), and the length of the show. Standard errors are clustered at the journalist level.

Our dependent variable of interest, $\text{political slant}_{s,h,c,o,t}$, is a measure of the political slant of the show. We use alternatively the speaking time shares calculated in all appearances or only in appearances of guests with a political lean, and either only the politicians or both the politicians and the PENOPs.

survey questions, respondents are asked whether they watch public television, Canal+, I-Tele, LCI, BFM TV, TF1, and M6, and whether they listen to public radio or private radio: “Which of the following brands have you used to access news ***offline*** in the last week (via ***TV, radio, print, and other traditional media***)?” Please select all that apply.” Online Appendix Figure C.23 reports the average viewership/ audience of the different channels. They are also asked about their “political ideology”: “Some people talk about ‘left’, ‘right’ and ‘centre’ to describe parties and politicians. (Generally socialist parties would be considered ‘left wing’ whilst conservative parties would be considered ‘right wing’). With this in mind, where would you place yourself on the following scale?”, with a 1 (Very left-wing) to 7 (Very right-wing) scale.

⁴⁷Note that, in the regression analysis, we drop very specific events such as the official interventions or interviews of the President of the Republic – in the case of the presidential interviews for example, a number of journalists from different channels tend to be invited to interview – on a given channel – the President at a special occasion, while the journalists may not officially work for the channel.

3.1 Measuring the slant at the channel level: Descriptive evidence

Before turning to the empirical estimation, we plot descriptive evidence similar to the one presented in Figure 4 above, but depending on the media outlets. Figure 5 depicts the time share of each political group depending on the channels. Clear differences appear between media outlets, that we will explain in the next sub-section. E.g., whether we consider only the politicians (sub-Figure 5b) or both the politicians and the PENOPs (sub-Figure 5d), it appears clearly that the television channels ARTE and France 4 devotes overall more speaking time to the overall left (i.e. the radical left, the greens and the “traditional” left) than the radio stations Radio Classique and BFM Radio, and the television channel TF1.

Strong differences also appear when we consider the time share devoted to the radical right. If we consider both the politicians and the PENOPs (sub-Figure 5d), we see e.g. that the 24-hour news channels LCI, CNews/I-Télé and BFM TV and the news radio station France Info devote more speaking time to radical-right guests than other channels. This effect is mainly driven by the professional politicians, however. If we only consider the PENOPs, on average during our time period, the radical-right speaking time share is higher on the four radio stations France Inter, BFM Radio, France Culture and Radio Classique than on other outlets.

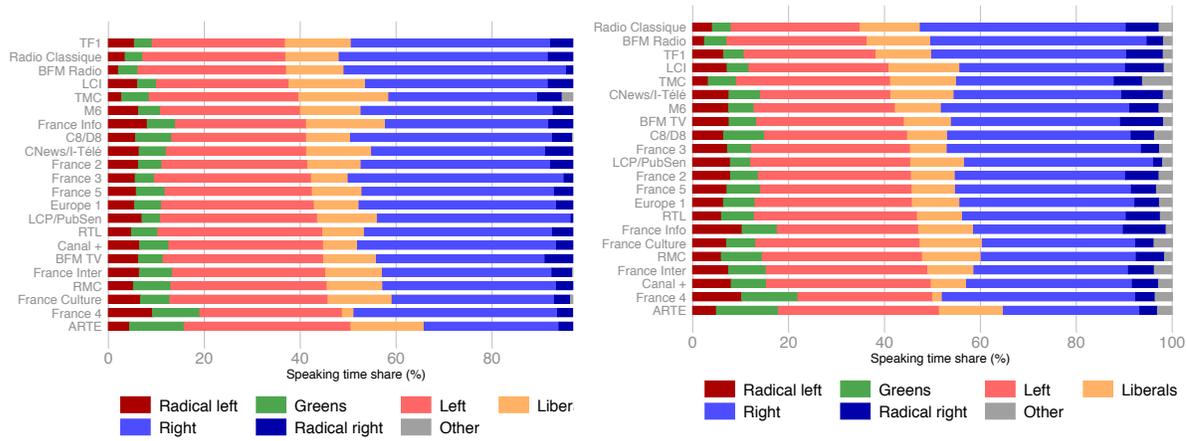
These differences between the different television channels and radio stations can reflect a number of different factors. First, channels may want to cater to the preferences of their audience (even if, as we will see, all the stations serve the same national market), but the bias may also come from the preference of the owners of the channel and/or from the journalists themselves who may shield content production from owner influence. Hence, we now turn to the econometric analysis so as to disentangle the different mechanisms at play behind the slant.

3.2 Measuring the slant at the channel level: Empirical estimation

We start by documenting the political slant of each radio station and television channel, i.e. by focusing on the channel fixed effects γ_c . Our goal is to determine whether some channels systematically grant more speaking time to given political parties compared to others, everything else equal.⁴⁸

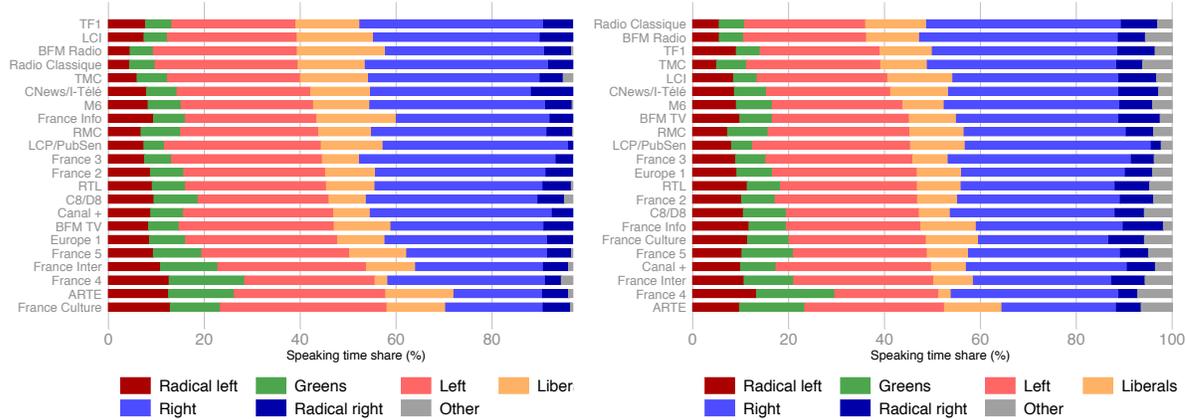
In our preferred approach, France 2, the leading public television channel, is set as the reference. Hence, for each c , we interpret γ_c as a measure of media bias of channel c relative to

⁴⁸Alternatively, we can perform the analysis at the channel level and estimate the following model: political slant $_{c,o,t} = \gamma_c + \theta_t + \epsilon_{c,o,t}$, where c index the channels, o the owners and t the date. When we do so, for each channel and day, we compute the daily speaking time share of each political family (from the radical left to the radical right) at the channel level. We also compute the difference in speaking time share between the right (radical right and “traditional” right) and the left (radical left, greens and “traditional” left). Results are presented in the online Appendix Section C and D.



(a) Only politicians – All time periods

(b) Only politicians – Dropping mandatory speaking time for government



(c) All politically-classified guests – All time periods

(d) All politically-classified guests – Dropping mandatory speaking time for government

Notes: The data covers the time period ranging from January 1st 2002 to December 31st 2020. It includes the following 14 television channels: TF1, France 2, France 3, Canal+, France 5, M6, ARTE, C8/D8, TMC, France 4, BFM TV, I-Télé/CNews, LCI, LCP/Public Sénat, and 8 radio stations: France Inter, France Info, France Culture, and RTL, RMC, Europe 1, Radio Classique, and BFM Business (see online Appendix Figure E.2 for a similar figure including the Summer).

Figure 5: Speaking time of the political families, depending on the channels, 2002-2020

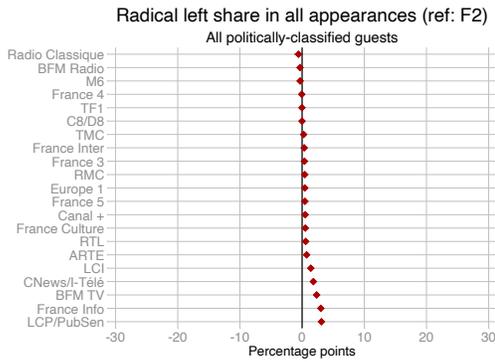
France 2, i.e. whether a channel systematically gives more or less speaking time to politicians from a given party compared to France 2. Importantly, all the channels in our sample serve the same market. They are all French channels operating at a national level, meaning that their potential viewers (listeners) do not differ in terms of demographics or political leaning. Hence, differences in slant across channels may reflect differences in *targeted* audience, but they are not driven by differences in *potential* audience. In other words, media outlets may decide to serve a specific (political) segment of the market to differentiate themselves from their competitors (see e.g. Anand et al., 2007; Gabszewicz et al., 2001).

Figure 6 presents the results when the speaking time shares are calculated in appearances of guests among all the guests, and both the politicians and the PENOPs are included.⁴⁹ Sub-figures 6a, 6b, 6c, 6d, 6e, and 6f report the point estimates respectively for the radical left, the greens, the left, the liberals, the right, and the radical right. Overall, we find that the speaking time shares of all the political families tend to be relatively higher on France Info and on LCP/Public Sénat, and more generally on all the 24-hour news channel than on other channels, due to the fact that these channels devote more times to politics (and so invite relatively more guests with a political affiliation).

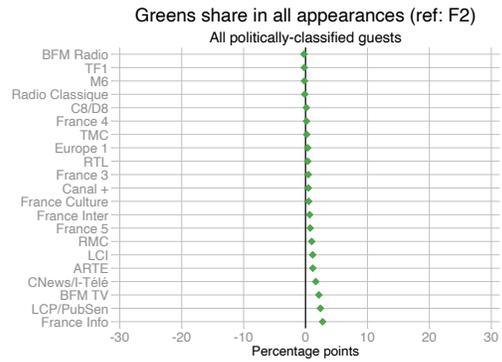
The picture is different if we compute the speaking time shares of the different political families only among the politically-classified guests. From Figure 7, it appears clearly that, on average during our time period, the radical right benefits from much more speaking time on CNews/I-Télé than on other channels (sub-figure 7f). It is particularly striking given that, on average, there is much less heterogeneity between stations regarding the speaking time share devoted to the radical right than regarding the speaking time shares devoted to the other political families. Importantly, a significant part of the heterogeneity between channels comes from the PENOPs. Online Appendix Figure C.27 reports estimates similar to the ones presented in Figure 7 but only including the professional politicians. If we focus on the radical right, we see that, compared to France 2, CNews/I-Télé “only” devotes 1.81 percentage points more than France 2 to the speaking time of the radical right, i.e. slightly less than BFM TV (1.87) and about the same as Radio Classique (1.72). On the contrary, when we consider both the politicians and the PENOPs (sub-Figure 7f), the difference between CNews/I-Télé and France 2 during our time period is, everything else equal, of 5.03 percentage points (and the second channel devoting the most speaking time to the radical right, LCI, is “only” 2.09 percentage points above France 2).

Changing media bias Importantly, the slant of a given channel may evolve over time, to begin with – as we will see below – because of ownership changes. Hence, we also estimate media bias for each channel at the annual level. Online Appendix Figures C.29 and C.30

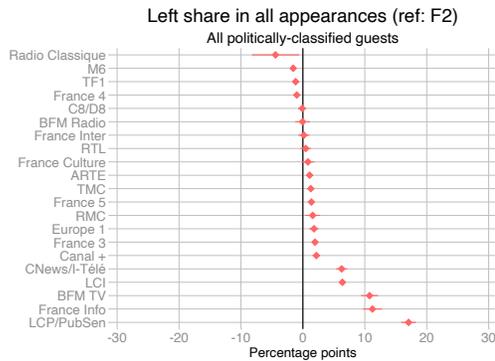
⁴⁹See online Appendix Figure C.27 for the results when only the politicians are included, and Figure C.28 for only the PENOPs.



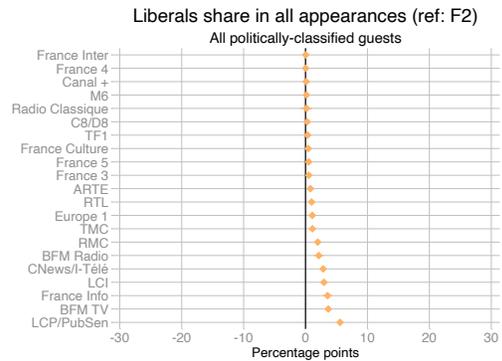
(a) Radical left



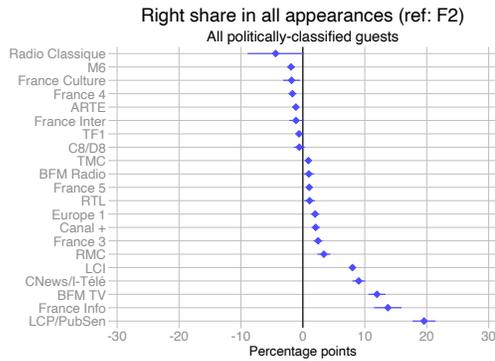
(b) Greens



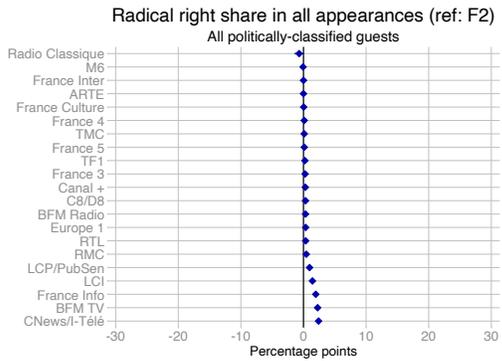
(c) Left



(d) Liberals



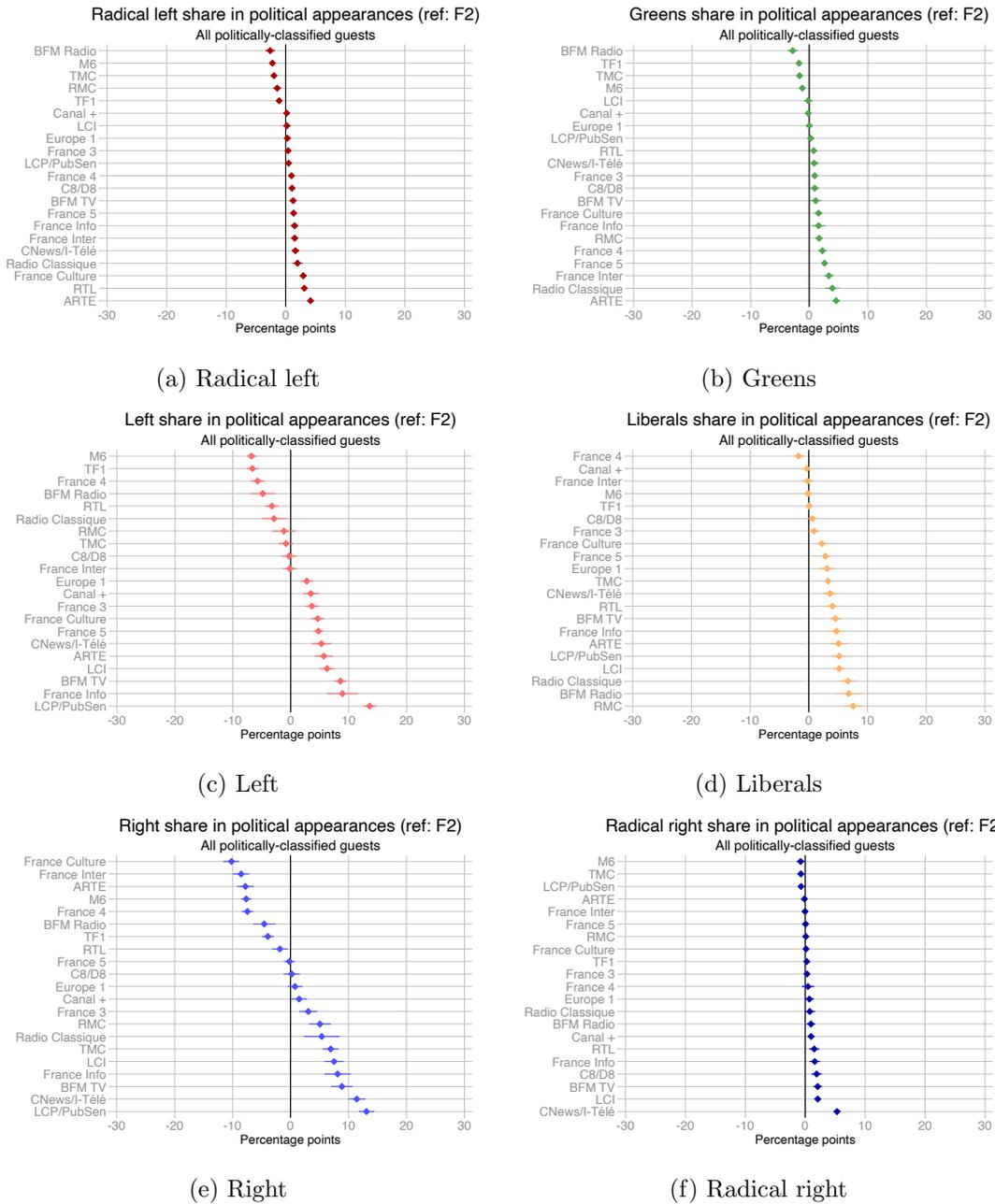
(e) Right



(f) Radical right

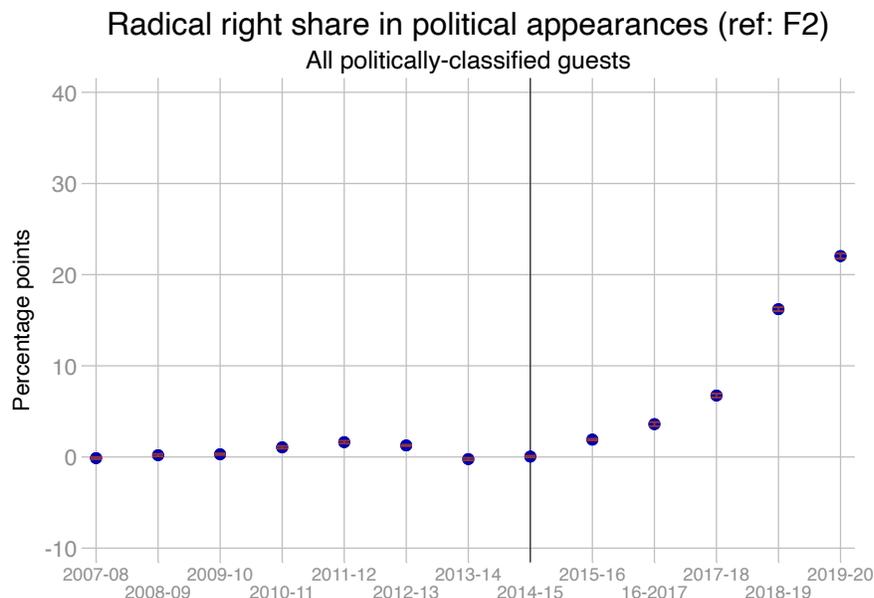
Notes: each sub-figure plots the channel fixed effects obtained when estimating the following model: political slant_{s,c,t} = X_sβ + γ_c + θ_t + ε_{s,c,t} (see the text for details). In Figure 6a, political slant_{s,c,t} is the speaking time share of the radical left, the one of the greens in Figure 6b, the left in Figure 6c, the liberals in Figure 6d, the right in Figure 6e, and the radical right in Figure 6f. Channels are sorted according to these estimates. Speaking time shares calculated in appearances of guests among all the guests, and both the politicians and the PENOPs are included. The omitted channel (reference point) is France 2. The data covers the time period ranging from January 1st 2002 to December 31st 2020.

Figure 6: Channel-level slant – Speaking time shares calculated in appearances of guests among all the guests (including both politicians and PENOPs), 2002-2020



Notes: each sub-figure plots the channel fixed effects obtained when estimating the following model: political slant_{s,c,t} = X_sβ + γ_c + θ_t + ε_{s,c,t} (see the text for details). In Figure 7a, political slant_{s,c,t} is the speaking time share of the radical left, the one of the greens in Figure 7b, the left in Figure 7c, the liberals in Figure 7d, the right in Figure 7e, and the radical right in Figure 7f. Channels are sorted according to these estimates. Speaking time shares calculated in appearances of politically-classified guests, and both the politicians and the PENOPs are included. The omitted channel (reference point) is France 2. The data covers the time period ranging from January 1st 2002 to December 31st 2020.

Figure 7: Channel-level slant – Speaking time shares calculated in appearances of politically-classified guests (including both politicians and PENOPs), 2002-2020



Notes: The figure plots the channel fixed effects obtained for CNews/I-télé when estimating the following model: political slant $_{s,c,t} = X_s\beta + \gamma_c + \theta_t + \epsilon_{s,c,t}$ independently for each season (see the text for details). Speaking time shares are calculated in appearances of politically-classified guests, and both the politicians and the PENOPs are included. The omitted channel (reference point) is France 2.

Figure 8: The changing slant of CNews/I-télé – Evolution of the relative speaking time share devoted to radical-right guests (including both politicians and PENOPs) in appearances of politically-classified guests (compared to France 2)

report the results respectively for the private and public television stations, with the exception France 2 that is consistently used as a reference point, as well as the private and public radio stations.

Because in Section 4 below, we will document the impact of the takeover of the Canal+ group by Vincent Bolloré, it is of interest here to focus on the changing media bias of CNews/I-télé, the 24-hour television channel of the group. Figure 8 reports the results for the speaking time share devoted on the channel to the radical right (the speaking time shares are calculated in appearances of politically-classified guests, including both the politicians and the PENOPs).⁵⁰ While, between 2007-08 and 2014-15, the coverage of the radical right was roughly similar on CNews/I-télé than on France 2, we observe a clear move of CNews/I-télé towards the radical right beginning in 2015-16, i.e. at the time of the takeover. This move has been reinforced over the years; in 2019-20, the speaking time share of the radical right, everything else equal, was more than 20 percentage-point higher on CNews than on France 2. In Section 4 below, we investigate the extent to which this changing slant might be explained by Vincent Bolloré’s own political preferences.

⁵⁰See online Appendix Figure C.31 for a similar illustration but only with the politicians.

3.3 Measuring the slant at the host level

One of the contributions of this article is to measure the extent to which media bias is driven by journalists themselves. To do so, we estimate equation (1) and rely on the fact that, as described in Section 2.2, a number of journalists work on different channels owned by different owners during our period of interest (either during the same season or from one season to the other). Controlling for date fixed effects, channel fixed effects – capturing audience characteristics and demand-driven bias –, and owner fixed effects – capturing supply-driven bias –, host fixed effects λ_h account for the role played by the journalists themselves in the choice of guests.

In our preferred specification, the sample we use includes 3,966 journalists who work for multiple owners during our time period. We show below that the overall picture is unchanged if we rather focus on the sub-sample of journalists who work for multiple owners *during the same season*. We interpret increases in the explanatory power of the model when adding host fixed effects and these fixed effects being statistically significant as a sign that hosts themselves are biased. Of course, the sample of journalists working for multiple owners is a selected sample; in the online Appendix Table D.3, we show for example that there is a lower share of women among these journalists. However, one might expect these journalists to also be the ones who are the most likely to be able to bias the news toward their own preferences.

Explanatory power of the models Table 1 reports the R-squared and Adjusted R-squared of the estimation of model (1). In this table, we compute the speaking time share of the different political families using the appearances of guests with a political lean, and consider both the politicians and the PENOPs. (Online Appendix Table D.4 reports the results of the estimation when the speaking time share is measured taking into account all the appearances (i.e. including the non-political guests); in Table D.5, only the politicians are included.) In the upper Table 1a, we present these estimates for the right-left difference, in the middle Table 1b for the radical right, and in the bottom Table 1c for the radical left. Column (1) only controls for the show characteristics, the week and the day-of-the-week fixed effects. In Column (2) we add the channel fixed effects, in Column (3) the owner fixed effects, and in Column (4) the journalist fixed effects.

When we only control for the show characteristics and the date fixed effects, the R-squared of the estimation is equal to 0.025 for the right-left difference. Introducing channel fixed effects improves the explanatory power of the model by 0.01 percentage points, and further controlling for owner fixed effects does not affect it. On the contrary, introducing journalist fixed effects increases the explanatory power of the model by 0.019 percentage points, from 0.035 to 0.054. In other words, even after controlling for the slant of the shows that is due to demand- and supply-driven bias (with channel and owner fixed effects), the preferences of

Table 1: Explanatory power of the journalist fixed effects – Sample of journalists working for multiple owners between 2002 and 2020, Speaking time shares calculated in appearances of guests with a political lean (including both politicians and PENOPs)

(a) Right-Left difference				
	(1)	(2)	(3)	(4)
Show characteristics	✓	✓	✓	✓
Week FE	✓	✓	✓	✓
DoW FE	✓	✓	✓	✓
Channel FE		✓	✓	✓
Owner FE			✓	✓
Journalist FE				✓
Observations	429,810	429,810	429,810	429,514
Clusters (journalists)	3,966	3,966	3,966	3,670
R-squared	0.025	0.035	0.035	0.054
Adjusted R-squared	0.023	0.032	0.033	0.043
(b) Radical right				
	(1)	(2)	(3)	(4)
Show characteristics	✓	✓	✓	✓
Week FE	✓	✓	✓	✓
DoW FE	✓	✓	✓	✓
Channel FE		✓	✓	✓
Owner FE			✓	✓
Journalist FE				✓
Observations	429,810	429,810	429,810	429,514
Clusters (journalists)	3,966	3,966	3,966	3,670
R-squared	0.031	0.035	0.036	0.058
Adjusted R-squared	0.029	0.033	0.034	0.047
(c) Radical left				
	(1)	(2)	(3)	(4)
Show characteristics	✓	✓	✓	✓
Week FE	✓	✓	✓	✓
DoW FE	✓	✓	✓	✓
Channel FE		✓	✓	✓
Owner FE			✓	✓
Journalist FE				✓
Observations	429,810	429,810	429,810	429,514
Clusters (journalists)	3,966	3,966	3,966	3,670
R-squared	0.024	0.026	0.027	0.043
Adjusted R-squared	0.021	0.024	0.024	0.032

Notes: The table reports the estimated R-squared when estimating equation (1) with show characteristics and week and dow-of-the-week fixed effects (Column (1)), and channel fixed effects (Column (2)), and owner fixed effects (Column (3)), and journalists fixed effects (Column (4)). An observation is a journalist-show. The data covers the time period ranging from January 1st 2002 to December 31st 2020. It includes the following 16 television channels: TF1, France 2, France 3, Canal+, France 5, M6, ARTE, C8/D8, TMC, France 4, BFM TV, I-Télé/CNews, LCI, LCP/Public Sénat, and 10 radio stations: France Inter, France Info, France Culture, and RTL, RMC, Europe 1, Radio Classique, and BFM Business. The upper table 1a reports the results for the right-left difference in the speaking time shares, the middle table 1b for the radical right speaking time, and the bottom table 1c for the radical left speaking time. Speaking time shares are calculated in appearances of guests with a political lean; both politicians and PENOPs are included.

journalists themselves seem to play an important role. This is consistent with the predictions of Dyck and Zingales (2003) and Baron (2006).

Journalist fixed effects We next quantify the journalist fixed effects. Figure 9 plots the estimated fixed effects for the journalists when we estimate equation (1). We only report the fixed effects that are statistically significant at the 5% level (this is the case for 2,601 journalists out of the 3,965 journalists included in the regression⁵¹ for the right-left difference, and for 2,362 journalists for the radical right). The upper Figure 9a reports these estimates for the right-left difference and the bottom Figure 9b for the far right. The speaking time shares are calculated using the appearances of guests with a political lean, and we consider both the politicians and the PENOPs (as in Table 1).

While the shape of the distribution is roughly similar for our two measures of political slant, the magnitude of the effect does vary, and there are much more differences between journalists in explaining the right-left difference than the radical-right bias. We see from these figures that, even after controlling for channel and owner fixed effects, journalists differ in their propensity to invite guests with different political leanings.

Of course, the choice of the hosts is not exogenous – owners may favour hosts who are well-known for their political bias to slant the news in a certain direction. As we will see in the next section, a change in ownership can trigger a change in hosts. But the findings of Table 1 demonstrates that journalists themselves slant the news, beyond the preferences of the owners.

4 How do owners slant the news? Evidence from Vincent Bolloré’s takeover of the Canal+ Group

4.1 Identification strategy

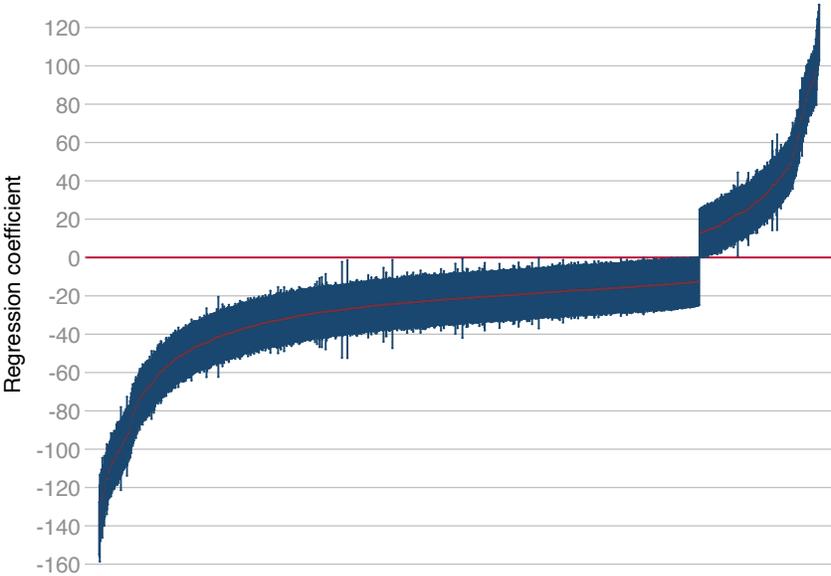
We now study how a change in ownership affects media bias. To do so, we focus on the takeover by Vincent Bolloré of the channels of the Canal Plus group (Canal +, C8 and CNews) in April 2015. As highlighted in the introduction, Vincent Bolloré indeed has *“a record of involving himself in the running of the media outlets he controls, personally interfering in the choice and development of content and the selection of contributors”* (Reporters Without Borders, 2016). We compare the channels that experienced a takeover to other channels that experienced no takeover over the period in a difference-in-differences framework.

More precisely, we estimate the following model:

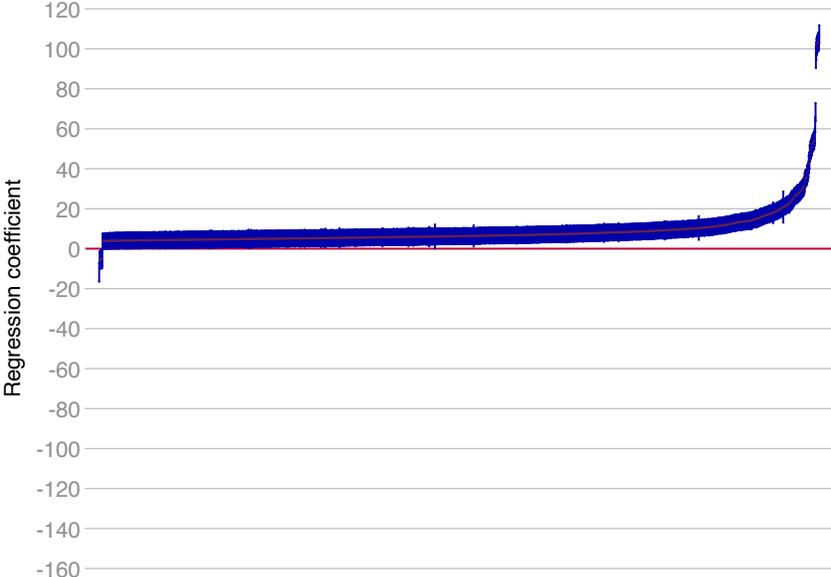
⁵¹3,966 journalists are included overall but one is omitted for the sake of comparison.

Figure 9: Fixed effect coefficients for journalists – Sample of journalists working for multiple owners between 2002 and 2020, Speaking time shares calculated in appearances of guests with a political lean (including both politicians and PENOPs)

(a) Right-left difference



(b) Far right



Notes: The Figure plots the estimated fixed effects for the journalists when we estimating Equation 1. We only report the fixed effects that are statistically significant at the 5% level. The data covers the time period ranging from January 1st 2002 to December 31st 2020. It includes the following 16 television channels: TF1, France 2, France 3, Canal+, France 5, M6, ARTE, C8/D8, TMC, France 4, BFM TV, I-Télé/CNews, LCI, LCP/Public Sénat, and 10 radio stations: France Inter, France Info, France Culture, and RTL, RMC, Europe 1, Radio Classique, and BFM Business. The upper Figure 9a reports these estimates for the right-left difference, the bottom Figure 9b for the far right.

$$\text{political family time share}_{c,t} = \mathbf{1}(\text{Bolloré take over}_c) \times \mathbf{1}(\text{After}_t) + \gamma_c + \delta_t + X'_{c,t}\beta + \epsilon_{c,t} \quad (2)$$

where political family time share $_{c,t}$ is the time share of a given political family on channel c at time t . In the main specification, we weight the speaking time of a given guest by the average audience at the time of the day they are aired.⁵²

$\mathbf{1}(\text{Bolloré take over}_c)$ is an indicator variable for whether the channel is affected by Vincent Bolloré’s takeover, and $\mathbf{1}(\text{After}_t)$ is an indicator variable equal to 0 before the takeover and to 1 once it has taken place. γ_c are channel fixed effects and δ_t are season fixed effects. $X'_{c,t}$ are channel-level controls, controlling for the total screen time of guests on this channel as well as for TMC and C8 ownership before 2009 and 2012 respectively. Standard errors are clustered at the channel level. In terms of timing, we use a sample ranging from September 2005 to August 2020.

4.2 Results

Table 2 reports the difference-in-differences estimates from Equation 2. The outcome variable is the share of politically-classified guests in Column (1), the time share difference between right-wing guests and left-wing guests in Column (2), the time share of left-wing guests (that include here the radical left, the greens, and the “traditional” left) in Column (3), and the time share of the right-wing guests (that includes the radical right and the “traditional” right) in Column (4). All these outcome variables are expressed in percentage points and vary between 0 and 100. The bottom row of each table reports the value of the outcome variable on Bolloré’s channels during the 2013-14 season (i.e. during the last season before the takeover).

Outcome variables in Panel (a) are based on all politically-classified guests, whether or not they are professional politicians. After the takeover, on average, the speaking time difference between the right and the left has increased by 10.6 percentage points on Bolloré channels, relative to other channels. The bottom row indicates that, in 2013-14, the channels gave 14 additional percentage points of speaking time to the left than to the right. This difference in favor of the left was expected, as a left wing government was in power at the time and CSA rules demand that the ruling party be granted a third of the speaking time. The effect of the Bolloré takeover brings the right-wing time share nearly on par with the left-wing share, even though the right is not in power as of today.

⁵²Specifically, we use radio and television audience curves to weight the speaking time. The weights account for how many people have turned on the television or the radio to listen to *any* station. The weights are thus the same for all the television channels and radio stations. The idea here is to give more weight to guests who speak during peak hours than to those who speak in off-peak hours.

Panels (b) and (c) report the corresponding estimates, but measure outcome variables using only professional politicians (b) or only politically engaged non-politicians (PENOPs) (c). While the takeover causes the right-left gap to increase by 8 percentage points among professional politicians (an increase that is not statistically significant, however), it increases by 17 percentage points among PENOPs (significant at the 10% level). In other words, the change in slant is much larger among the PENOPs, whose speaking time is not monitored by the CSA.

Table 3 presents similar estimates, but with a breakdown between the three Bolloré channels. There is substantial heterogeneity across channels regarding the share of guests who are politically classified. In relative terms, Canal+ was the channel that was the most to the left before the takeover: in 2013-14, it granted the most speaking time to the left and the least to the right. After the takeover, its share of politically-engaged guests declined by 8 percentage points, from a 19% base level. By contrast, the share of politically-classified guests more than doubled on C8, which was the channel giving the most speaking time to the right and the least to the left. The speaking time of politically-classified guests on CNews increased by about 15% following the takeover. Taken together, these results suggest that the channels that became more political are those that represented right-wing politicians the most before the ownership change, potentially catering to a more right-wing audience relative to Canal+.

Table 4 reports estimates with each political family time share as outcome variables. Both on C8 and CNews, the time share of the radical right nearly doubled following Bolloré’s takeover.⁵³ The time share of the right increased by 3 percentage points (from a baseline level of 27%) on Canal+. Taken together, these results suggest that channels that were already more to the right moved even further right (C8 and CNews), while Canal+ – that was the most to the left before the takeover – moved to the right. It might reflect demand constraints, with the average Canal+ viewer being more left-wing or moderate than typical CNews and C8 viewers.

These increases on the right of the political spectrum were compensated by decreases in the left-wing politicians time shares on both C8 and CNews. Only the radical left faces an increase or no change in its time share following the change in ownership. These channels therefore become more polarized – with more radical-right voices, less left-wing voices and, if anything, a slight increase in radical-left guests –, a finding that is consistent with many shows centering around fierce debates between speakers with strongly opposed opinions. On Canal+, the increase in the share of right-wing politicians was compensated by a decrease in the share of green politicians.

Figure 10 reports event-study estimates and graphically illustrates the large increase in the radical-right speaking time share following Bolloré’s takeover. First, we detect no statis-

⁵³For additional evidence on the radical-right shift of C8 in recent years, see Sécail (2022)

tically significant pre-trend, which lends support to our identifying assumption, the absence of diverging pre-trends. Second, we document a gradual increase, starting during the 2016-2017 season, of the time share dedicated to radical-right guests. Among the three channels acquired by Bolloré, this increase is particularly striking on CNews (bottom panel). Compared to a pre-takeover time share of 7.4 percent, the time share of radical-right guests had increased by nearly 15 percentage points on CNews by 2019-2020 due to the takeover, a +200% increase.

4.2.1 Robustness

When estimating the impact of Bolloré's takeover, we use as a benchmark all the television channels and radio stations not owned by Bolloré (either before or after the takeover). A potential concern, however, is that other television channels may have been impacted by the Bolloré's takeover as well through a spillover effect. For instance, radical-right guests may attract viewers and other channels, to keep attracting viewers in competitive environment, might start inviting more radical-right guests as well. In that case, we would underestimate the true effect of the takeover. Alternatively, other channels may want to differentiate their programs from Bolloré's by inviting less radical-right guests (which will be the case in an horizontal differentiation framework). In that case, we would overestimate the effect of the takeover.

For this reason, as a robustness check, we estimate our specification using only radio stations as a control group. The underlying idea is that Bolloré's television channels are not direct competitors of radio stations. E.g. while audience peaks in the evening for television, it peaks in the morning for radio. Our sample consists in the three Bolloré channels and the three control group radio stations (France Culture, France Info and France Inter). Appendix Tables D.7, D.8 and D.9 and Figure C.32 report the estimates we obtain when we exclude non-Bolloré television channels from the control group. Because we drop observations, we have less statistical power, but the point estimates are relatively stable. We also find a statistically significant increase in the right-left time share difference. Although point estimates are not statistically significant, they are much larger for politically-engaged non politicians than for professional politicians. We also find that guests on Canal+ become significantly less likely to be politically classified, and that the time share of radical-right politicians on C8 and CNews nearly doubles. This is also supported by event study estimates. Taken together, and despite a lower statistical power, these results suggest that our estimates are not affected by control group television channels being impacted by the takeover.

4.3 Mechanisms

So far, we have documented that the Bolloré takeover has a significant impact on the editorial line of the acquired media outlets. But how does a new owner caused the guests mix to change

Table 2: Effect of the Bolloré takeover on political families time shares

(a) Politicians and politically engaged non-politicians (PENOPs)				
	(1)	(2)	(3)	(4)
	Classified	Rights-Lefts	Lefts	Rights
Bolloré × After	0.0564 (4.070)	10.64** (4.719)	-5.630 (3.560)	5.012*** (1.566)
R-sq	0.034	0.323	0.182	0.496
Within R-sq	0.010	0.071	0.062	0.157
N	225	225	225	225
# channels	15	15	15	15
\bar{y} Bolloré	20.87	-10.75	50.89	40.14
(b) Only politicians				
	(1)	(2)	(3)	(4)
	Classified	Rights-Lefts	Lefts	Rights
Bolloré × After	-1.859 (3.368)	8.303 (4.843)	-5.377 (4.723)	2.925* (1.624)
R-sq	0.007	0.248	0.114	0.463
Within R-sq	0.002	0.213	0.093	0.419
N	225	225	225	225
# channels	15	15	15	15
\bar{y} Bolloré	16.07	-8.95	51.38	42.43
(c) Only politically engaged non-politicians (PENOPs)				
	(1)	(2)	(3)	(4)
	Classified	Rights-Lefts	Lefts	Rights
Bolloré × After	1.802 (1.397)	17.47* (8.309)	-8.725* (4.707)	8.743* (4.164)
R-sq	0.304	0.080	0.059	0.128
Within R-sq	0.223	0.004	0.007	0.003
N	223	223	223	223
# channels	15	15	15	15
\bar{y} Bolloré	4.8	-17.82	51.86	34.04

Notes: The table reports difference in differences estimates from Equation 2. The sample used includes the 15 television and radio stations for which we have good data coverage until 2020. Standard errors are clustered at the channel level. Time shares are weighted by the average audience of television and radio for the corresponding time slot. Political family time shares are computed as a proportion of the total time of politically classified guests. * 10%, ** 5%, *** 1%.

Table 3: Effect of the Bolloré takeover on political families time shares, heterogeneity by channel

	(1)	(2)	(3)	(4)
	Classified	Rights-Lefts	Lefts	Rights
Canal+ \times After	-7.807*** (1.146)	7.851 (4.886)	-4.045 (3.708)	3.806** (1.480)
C8 D8 \times After	5.042*** (1.683)	13.79* (6.731)	-9.875* (5.117)	3.913* (2.160)
CNews I-Télé \times After	5.057*** (0.856)	11.68*** (3.253)	-4.912* (2.646)	6.772*** (1.014)
R-sq	0.096	0.324	0.184	0.496
Within R-sq	0.006	0.072	0.063	0.161
N	225	225	225	225
# channels	15	15	15	15
\bar{y} Canal+	19.07	-21.96	57.01	35.05
\bar{y} C8	3.82	4.36	43.44	47.8
\bar{y} CNews	39.72	-14.64	52.22	37.58

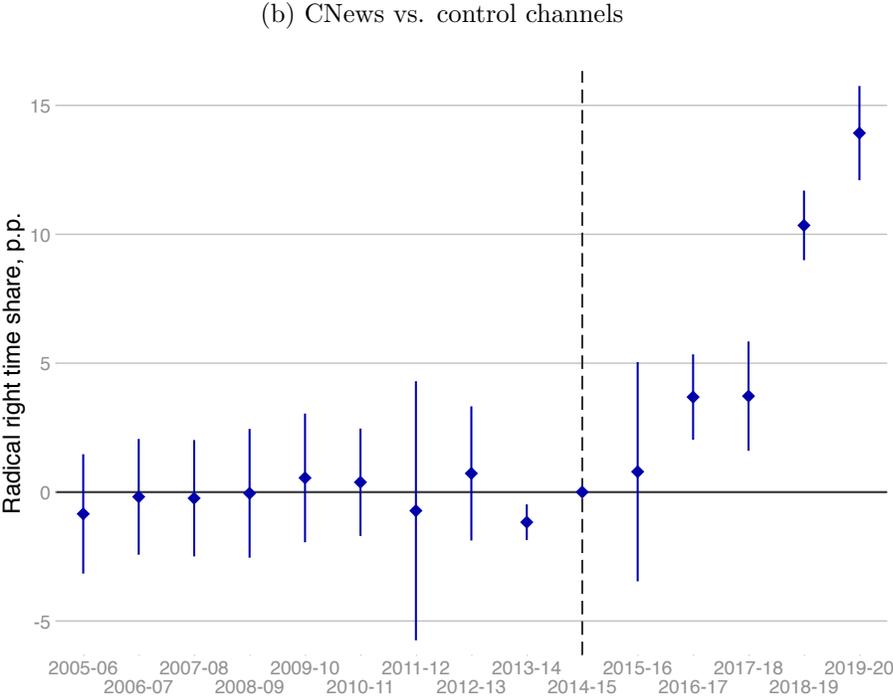
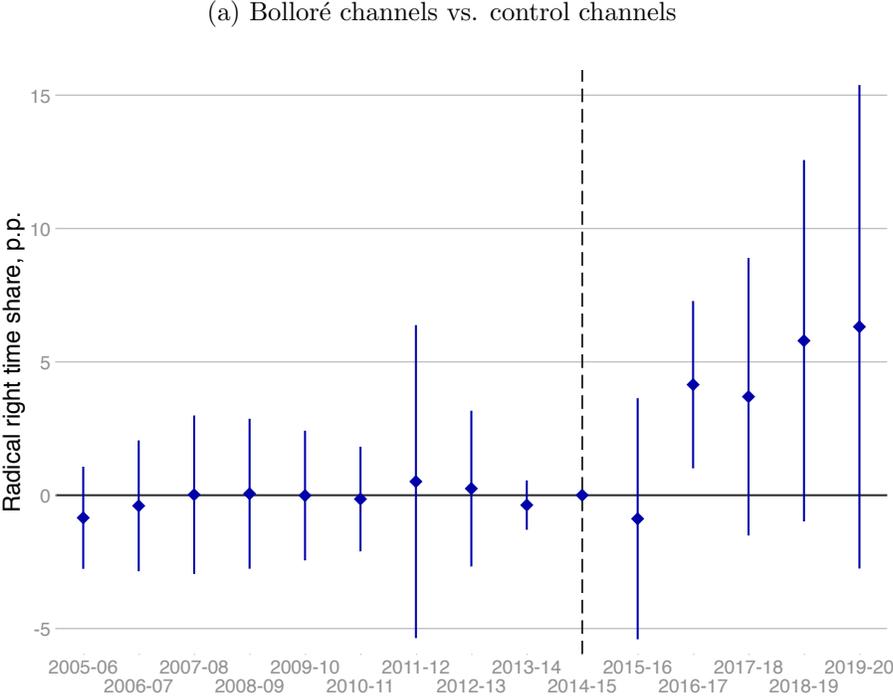
Notes: The table reports difference in differences estimates from Equation 2. The sample used includes the 15 television and radio stations for which we have good data coverage until 2020. Standard errors are clustered at the channel level. Time shares are weighted by the average audience of television and radio for the corresponding time slot. Political family time shares are computed as a proportion of the total time of politically classified guests. * 10%, ** 5%, *** 1%.

Table 4: Effect of the Bolloré takeover on political families time shares, heterogeneity by channel and political families

	(1)	(2)	(3)	(4)	(5)	(6)
	Radical left	Greens	Left	Liberals	Right	Radical right
Canal+ \times After	-0.337 (0.432)	-1.154*** (0.302)	-2.554 (3.503)	-1.375 (2.278)	3.282** (1.405)	0.524 (0.422)
C8 D8 \times After	3.908*** (0.702)	-2.786*** (0.455)	-11.00** (4.955)	5.100 (3.533)	0.452 (2.130)	3.460*** (0.466)
CNews I-Télé \times After	0.0864 (0.373)	-0.215 (0.253)	-4.783* (2.503)	-4.039* (1.918)	0.0633 (0.975)	6.708*** (0.417)
R-sq	0.377	0.053	0.169	0.416	0.539	0.361
Within R-sq	0.313	0.020	0.087	0.310	0.280	0.284
N	225	225	225	225	225	225
# channels	15	15	15	15	15	15
\bar{y} Canal+	7.3	6.28	43.43	5.25	26.72	8.33
\bar{y} C8	5.7	2.01	35.73	3.09	42.97	4.83
\bar{y} CNews	5.36	8.51	38.35	8.06	30.18	7.4

Notes: The table reports difference in differences estimates from Equation 2. The sample used includes the 15 television and radio stations for which we have good data coverage until 2020. Standard errors are clustered at the channel level. Time shares are weighted by the average audience of television and radio for the corresponding time slot. Political family time shares are computed as a proportion of the total time of politically classified guests. * 10%, ** 5%, *** 1%.

Figure 10: Event study coefficients of the effect of the Bolloré takeover on far right time share



Notes: The figure reports event study estimates adapted from Equation 2. The outcome is the The sample used include the 15 television and radio stations for which we have good data coverage until 2020. Standard errors are clustered at the channel level. Time shares are weighted by the average audience of television and radio for the corresponding time slot. Political family time shares are computed as a proportion of the total time of politically classified guests. * 10%, ** 5%, *** 1%.

significantly?

To better understand what drives these changes in media slant, we explore potential mechanisms. In particular, we study whether ownership change affects program types and triggers changes in hosts. We use the Plurimedia data set to study these changes as it includes all programs, making it possible to examine extensive margin responses. Importantly, the Plurimedia data covers only television channels between October 2009 and December 2020.

We estimate the causal impact of change in media control over media content and hosts using a difference in difference framework. As before, we use channels experiencing no takeover as a comparison groups for channels experiencing one.

$$y_{c,t} = \mathbf{1}(\text{Taken Over}_c) \times \mathbf{1}(\text{After}_t) + \gamma_c + \delta_t + \epsilon_{c,t}$$

$y_{c,t}$ is the outcome of interest defined for channel c in month t . $\mathbf{1}(\text{After}_t)$ is an indicator variable for whether the month t comes after the control change month. We include twenty months prior the control change, and forty months after as the effects may take time to unfold. In alternative specifications, we drop July and August, as programs tend to change in the summer months. $\mathbf{1}(\text{Taken Over}_c)$ is an indicator variable for whether the channel is affected by a change in control over the period of interest. γ_c are channel fixed effects, they control for differences in levels across channels. δ_t are month fixed effects, accounting for any month-specific shocks that are common across channels. Standard error clustered at the channel level to account for serial correlation.

Identifying assumption The identifying assumption is that treated and not treated channels would have followed the same trend in the outcomes of interests have there been no change in media control. Our estimates can be interpreted as causal to the extent that this assumption holds true. It might not be the case if media outlets experiencing a change in control were facing market conditions different than other outlets (declining viewership, declining revenues, etc.). Whether this assumption holds in this context is ultimately an empirical question. To gauge its plausibility, we systematically plot the monthly averaged outcome of interest at the month level for treated and untreated firms in months before and after the change in control.

Change in hosts We first explore whether a change in media control affects the screen time of people who were hosts before the takeover. We have documented that hosts contribute to shape channels' slant. We now want to understand whether a change in media ownership triggers a reallocation of hosts across channels. For that purpose, we measure for each month and channel the screen time share of hosts who were on screen during the month prior control change. More formally, we we define it as follows:

$$\text{incumbent hosts time share}_{c,t} = \frac{\sum_h \text{length}_{h,c,t} * \mathbf{1}(\text{length}_{h,c,t_0-1} > 0)_{h,c}}{\sum_h \text{length}_{h,c,t}} \quad (3)$$

where $\text{length}_{h,c,t}$ is the screen time length of host h (length of the show divided by the number of hosts) on channel c in month t and $\mathbf{1}(\text{length}_{h,c,t_0-1} > 0)_{h,c}$ is an indicator variable for whether the host had a screen time strictly greater than 0 in the month prior control change. As a robustness test, we also compute the same outcome of interest, but excluding programs whose start time is between midnight and 5am as data quality for night programs can be lower. For convenience, we will refer to programs starting after 5:00 am and before 00:00 am daytime programs.

We use Plurimedia data to explore whether the ownership change impacts the screen time share of hosts who were there before the takeover. We use these data rather than INA data as a newly acquired channel may start broadcasting more talk shows, and have people formerly hosting games or sports programs as hosts, most of which are not documented in the INA data. We therefore focus on people whose role is host (*animateur* or *presentateur* in French). If there are several hosts in a given show, we implicitly assume that speaking time is split equally among hosts and divide the length of the show by the number of hosts. There are 1,188,810 host appearance in the data and 3,680 unique hosts, meaning that the average host appears 323 times.

Figure 11 describes how the screen time share of incumbent hosts (i.e. hosts who had a strictly positive screen time in the month prior the takeover) evolves around ownership change. The grey line corresponds to the mean of the incumbent hosts time share in channels that did not experience a takeover. The blue line corresponds to on of the channels experiencing a takeover. Panel (a) to (d) refer to the takeover the Canal Plus group channels by Bolloré in 2015. In panel (a), the blue line corresponds to Canal +, C8 and CNews combined, the other graphs depict the evolution of the outcome for each channel separately. The solid red line indicates the time of the takeover.

Table 5 reports the estimates from Equation 3. In columns (1) and (2), all shows are included, while in columns (3) and (4) only shows starting between 5:00am and midnight are. In columns (1) and (3), all months are included while columns (2) and (4) exclude summer months (July and August). Overall, on Bolloré channels, the length share of incumbent hosts and journalists decreased by 12 percentage points following the takeover. On Figure 11, the gap between Bolloré channels and control channels visibly widens over time. In 2018, incumbent hosts accounted for 40% of screen time on Bolloré channels, while they had 60% of screen time on control channels.

The effect is particularly large for Canal+ and for CNews, with a reduction of the incum-

bent host time share of respectively 20 ppt and 10 ppt compared to control channels. The incumbent host time share declined markedly both in summer 2015 and 2016 on Canal+, as star hosts of the channels decided to leave (*Le Petit Journal* for instance). The drop occurs in the second semester of 2016 for CNews, consistent with the large strike conducted by hosts and journalists at that time period, protesting against editorial changes. By contrast, the decline is smaller on C8, and Figure 11 actually shows this gap narrows over time, probably because the hosts who did stay on the channel gradually gained more screen time, suggesting complying with the new owner can be a winning strategy.

Interestingly, of the three, Canal+ was the channel granting the most speaking time to the left, and it is also the channel whose hosts were the most likely to have left. C8 on the other hand was the channel giving the most screen time to the right, and experienced the smaller reduction in the time share of incumbent hosts. The patterns of hosts' changes mirror changes in political slant on these channels, which supports the idea that changes in slant were mediated by changes in hosts.

Types of shows. Figure 12 report the time share of each show type (mostly news and talk shows in these cases) for two news channels: BFM TV and CNews. While the share of talk shows on BFM only gradually builds up over time, it dramatically increases at CNews around 2017.

We next explore whether a change in media control affects the programs broadcast. We measure for each month and channel the length share of each genre of programs. The outcome of interest is the following:

$$\text{program type time share}_{c,t} = \frac{\sum_p \text{length}_{p,c,t} * \mathbf{1}(\text{type} = s)_{p,c}}{\sum_p \text{length}_{p,c,t}} \quad (4)$$

where $\text{length}_{p,c,t}$ is the length of program p on channel c in month t and $\mathbf{1}(\text{type} = s)_{p,c}$ is an indicator variable for whether the program belongs to the genre s we are considering. To build this measure, we exclude programs starting between midnight and 5am as data quality for these programs is generally lower and they are often given generic names such as “night programs.”

Figure 13 plots the length share of different program types in channels taken over and in the channels of the control group. Blue lines plot the monthly average of the time share of a given show type for channels that experience a takeover, while grey lines do the same for firms that experience no change in ownership. After the 2015 takeover, Canal + had less talk shows which were replaced by fiction, entertainment and sport content, consistent with the decline in the time share of politically classified guests. This decline in talk shows' time share

Table 5: Effect of takeovers on the length share of incumbent hosts (in percentage points)

(a) All Bolloré channels

	(1)	(2)	(3)	(4)
Takeover	-0.122** (0.0499)	-0.137** (0.0507)	-0.130** (0.0506)	-0.148** (0.0478)
N	669	548	669	548
R-square	0.694	0.758	0.694	0.758
Summer	Yes	No	Yes	No
Daytime only	No	No	Yes	Yes

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

(b) Canal+

	(1)	(2)	(3)	(4)
Takeover	-0.187*** (0.0407)	-0.201*** (0.0422)	-0.191*** (0.0410)	-0.203*** (0.0420)
N	548	449	548	449
R-square	0.707	0.744	0.697	0.736
Summer	Yes	No	Yes	No
Daytime only	No	No	Yes	Yes

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

(c) C8

	(1)	(2)	(3)	(4)
Takeover	-0.0762* (0.0407)	-0.118** (0.0421)	-0.0721 (0.0410)	-0.116** (0.0420)
N	548	449	548	449
R-square	0.640	0.708	0.625	0.696
Summer	Yes	No	Yes	No
Daytime only	No	No	Yes	Yes

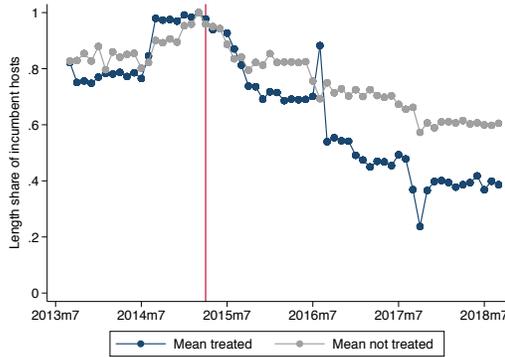
Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

(d) CNews

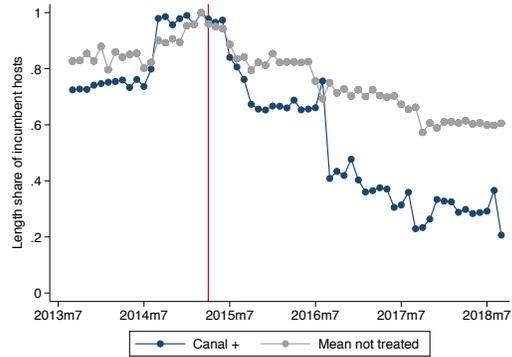
	(1)	(2)	(3)	(4)
Takeover	-0.101** (0.0404)	-0.0911* (0.0417)	-0.126** (0.0407)	-0.126** (0.0416)
N	547	448	547	448
R-square	0.649	0.699	0.654	0.701
Summer	Yes	No	Yes	No
Daytime only	No	No	Yes	Yes

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

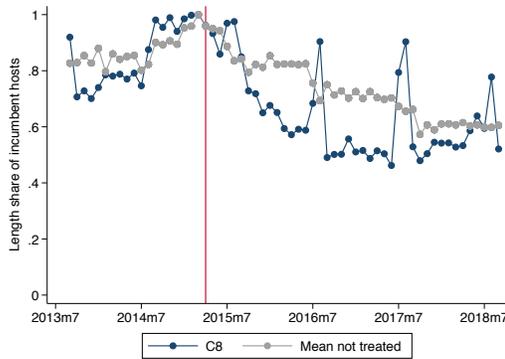
Figure 11: Length share of incumbent hosts around takeovers (daytime)



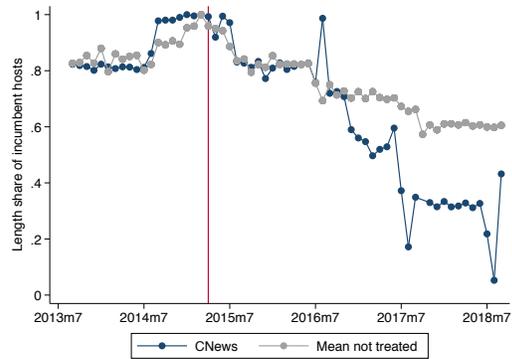
(a) Canal Plus, C8 and CNews takeover in 2015



(b) Canal Plus takeover in 2015



(c) C8 takeover in 2015



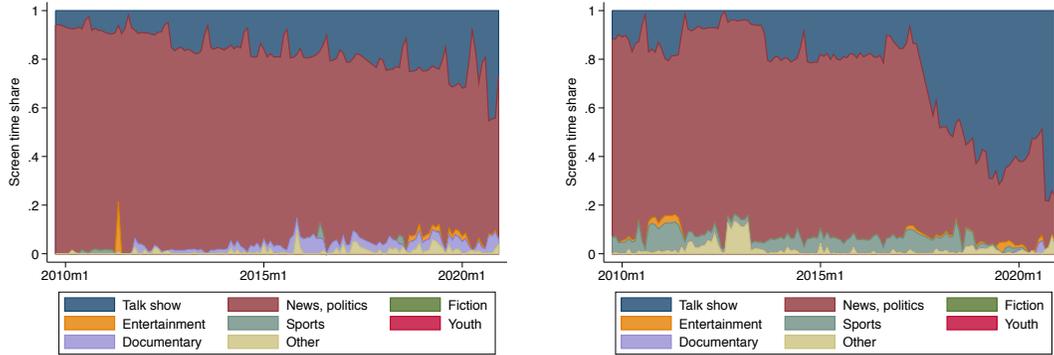
(d) CNews takeover in 2015

Notes: The vertical red line marks the month the transaction took place. Blue lines represent the mean of the outcome variable in treated channels, the grey line does the same for control channels.

seems to have led to talk show hosts being fired or let go after the takeover.⁵⁴ On C8, fiction and documentaries are replaced by entertainment shows and sports. On CNews, although the effects take time to unfold, news shows are replaced by talk shows. That the effects take time to unfold is in line with the raucous adjustments following the takeover. In particular, a large strike over the channel's management broke out in November 2016, with many journalists leaving the channel, which led to large changes in the show schedule next September.

⁵⁴Examples include Maitena Biraben, Yan Barthes, Ali Baddou or Renaud Le Van Kim, https://www.liberation.fr/futurs/2016/06/02/canal-bollere-createur-original-de-departs-en-serie_1456938/

Figure 12: Descriptive statistics on types of shows



(a) Program types share, BFM TV

(b) Program types share, CNews

Notes: The figures depict the monthly cumulative time share of each program type using Plurimedia data. Only programs starting between 5:00am and midnight are included. Sub-figure 12a presents the numbers for BFM, and sub-figure 12b for CNews.

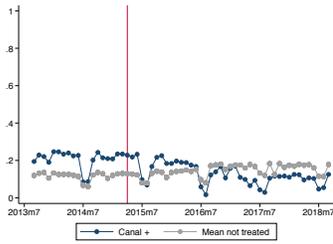
5 Robustness checks and Discussion

5.1 Robustness

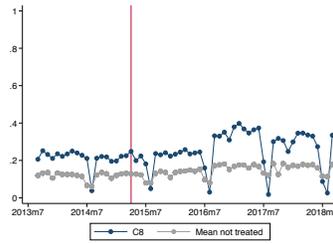
We perform several robustness checks. This section briefly describes them; the detailed results for these tests are available in the online Appendix.

Exhaustive coverage In the core of the analysis, our sample includes 22 television stations and radio channels from January 1st, 2002 to December 31st, 2020. However, as explained in Section 2.2.1, because of budget cuts at the INA, for two television channels (BFM TV and France 4) and five radio stations (BFM Radio, RMC, Europe 1, Radio Classique, and RTL), there is a decline in the number of documented guests after 2018 due to a number of retirements not being replaced, which led to these channels no longer being (thoroughly) documented.) Hence, in the online Appendix Section E.1, we show that our findings are robust to only considering the 15 television channels and radio stations that are fully documented between September 1st, 2006 and August 31st, 2018.

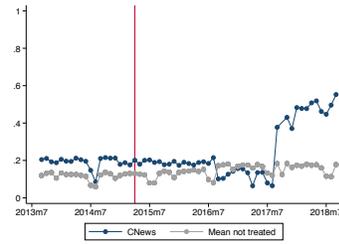
Talk shows



(a) Canal takeover in 2015

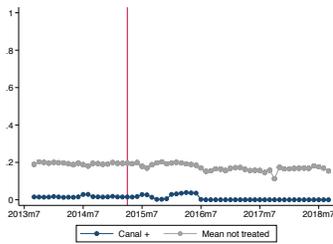


(b) C8 takeover in 2015

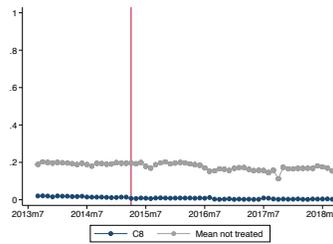


(c) CNews takeover in 2015

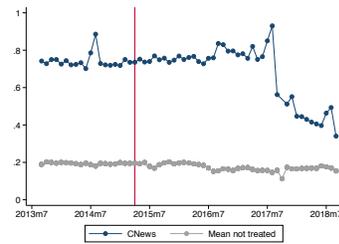
News and Politics



(d) Canal takeover in 2015

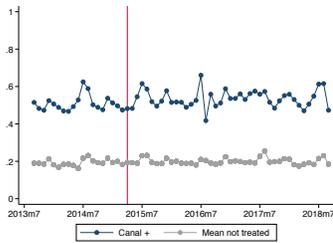


(e) C8 takeover in 2015

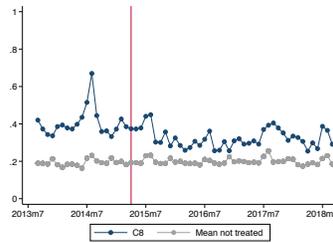


(f) CNews takeover in 2015

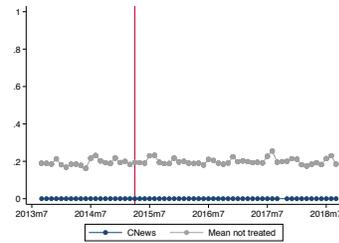
Fiction



(g) Canal takeover in 2015

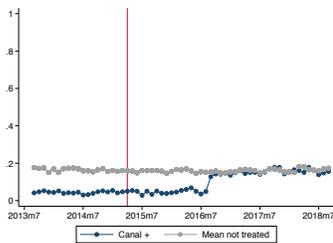


(h) C8 takeover in 2015

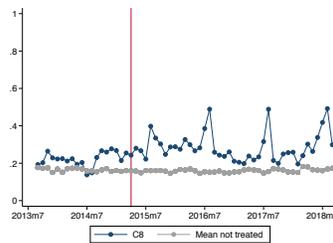


(i) CNews takeover in 2015

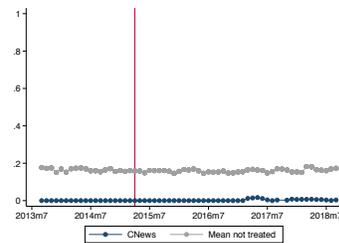
Entertainment



(j) Canal takeover in 2015



(k) C8 takeover in 2015



(l) CNews takeover in 2015

Notes: The vertical red line marks the month the transaction took place.

Figure 13: Program types around Bolloré takeover of Canal Plus Group in 2015

6 Conclusion

In a context of decreasing advertising revenues, business tycoons' appetite for traditional media outlets does not seem to wane. Recent empirical evidence has shown that changes in ownership can affect media content, therefore potentially impacting the set of information viewers have and their ability to hold elected officials accountable. These concerns warrant a better understanding of the mechanisms through which owners may impact media slant.

In this paper, we study the role played by hosts and journalists, who are charged with the daily production of media content, and how they react to changes in ownership. For this purpose, we use data on hosts and guests in French television and radio shows from 2002 to 2020. Using a difference-in-differences framework, we study a major takeover in the french media market: the 2015 Canal Plus group takeover by Vincent Bolloré, the “French Murdoch”.

Using the political affiliation of guests, we can measure whether some channels systematically grant more or less speaking time to left-wing or right-wing political parties. We find substantial variation across channels, with some channels overrepresenting right-wing parties with respect to France 2, the leading public television channel. We also find substantial variation in media bias across groups of channels with a similar owner. Using hosts working for channels that have different owners, we next document that hosts themselves exhibit statistically significant bias in who they grant speaking time to. This implies that the bias observed at the media outlet level is also partly driven by host-level slant. The allocation of hosts across channels therefore matters to explain media slant.

We next study the impact of Bolloré takeover of the Canal Plus group. We document that it translated into 11 extra percentage points in the time share difference between right and left-wing politicians. The effect is driven by a near doubling in the speaking time of radical-right politicians .

We finally document that, after the takeover, the time share of programmes hosted by incumbent anchors sharply decreases with respect to control channels, implying that the change in slant observed at the channel level could be triggered by a reallocation of hosts across channels. According to this, some hosts cannot shield their editorial independence from owner views contrasting with their own and thus sort across channels where their own slant is more in line with that of the channel.

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