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# Is a financially viable news media market the key to fighting disinformation in Europe? A cross-country quantitative study

## ABSTRACT

*The rise of fake news poses a significant challenge for governments worldwide, prompting the European Commission to address the urgency of combating disinformation. In the contemporary 'market of attention', where economic considerations often overshadow democratic and societal concerns, disinformation thrives. This study asserts that financial viability within news media markets is a critical yet overlooked factor in the fight against disinformation. The authors define financial viability as the capacity of institutions to balance income and expenses, positing that a financially sound news media market creates a resilient news landscape less susceptible to disinformation-induced harm. The research employs a*

## KEYWORDS

journalistic  
sustainability  
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public subsidies  
economic structures  
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*comprehensive approach to assess this claim, commencing with a literature review on the financial viability of news media markets that leads to the development of a conceptual framework consisting of nine indicators to measure the financial viability of news media markets in relation to disinformation. Subsequently, primary and secondary data are collected from official and non-official data sources for each of the indicators across ten European countries and compared to the perceived exposure to disinformation in each country. Findings from the analysis reveal that financially viable news media markets exhibit greater resilience to disinformation. This underscores the significance of incorporating financial considerations into governmental efforts to counter disinformation. The article concludes by emphasizing the implications of the research for policy-makers, the news media industry and future research endeavours.*

## INTRODUCTION

Fake news (or disinformation or misinformation) have been recognized as an important threat by the European Commission (EC). In this article, we use the word ‘disinformation’ further as an umbrella term. The EC defines disinformation as ‘false or misleading content that is spread with an intention to deceive or secure economic or political gain, and which may cause public harm’ (2022: n.pag.). While this study uses the EC’s definition, we recognize that the concept of disinformation is context dependent, with its meaning and impact varying across different cultural, political and temporal settings. Recognizing this flexibility is crucial, as what constitutes disinformation may shift based on the sociopolitical environment in which it is framed. In adopting this definition, the EC acknowledges a key element put forward by various academic experts in the field, namely that the spread of disinformation has also the purpose of economic gains (Allcott and Gentzkow 2017; Bernecker et al. 2021; Tandoc Jr et al. 2018). Financial motivations are mainly directed towards collecting online advertising revenues, which are generated by attracting as many readers as possible to websites or social media, something to which false information apparently lends itself very well. This would imply that disinformation can, on the one hand, disrupt the news market creating competition for ‘legitimate’ news media and, on the other hand, that in a market where news providers struggle financially, disinformation can easier gain a stronger position. At the same time, it is widely acknowledged that news media markets are financially struggling due to digital disruptions, the impact of social media on legacy media and their traditional financing models and the low willingness to pay by readers for online news.

Indeed, disinformation does not operate in a vacuum: the whole media ecosystem can be seen as a ‘market of attention’ (Hendricks and Vestergaard 2019). Previous research already highlighted that disinformation should not be understood outside of its particular contexts of production and consumption, and therefore an investigation into the phenomenon of disinformation needs to take account of local specificities (Wasserman 2020). The role of contextual characteristics in driving – but hence potentially also countering – the propagation and reception of disinformation in certain countries is being increasingly acknowledged (e.g. Humprecht et al. 2020).

However, so far governments’ efforts to combat disinformation are mostly focused on promoting media literacy and education, supporting fact-checking and debunking efforts, regulating social media platforms, increasing

transparency and accountability and promoting responsible journalism (Lazer et al. 2018). Contextual factors such as the financial viability of news media markets are rarely considered. In this article, we define financial viability as ‘the ability of institutions (or in some cases, individuals, and collectives) to balance income and expenses so that their output of journalism can be sustained’ (Schiffrin et al. 2022: 1). We argue that financial viability of the news media is dependent on various market supply and demand characteristics that go beyond digital revenue streams. Previous research has already pointed out that the changing business model of the news media in a digital landscape is impacted and impacts the spread of disinformation (e.g. Braun and Eklund 2019; Dholakia et al. 2023). In this study, we want to look at the macro level of financial sustainability to which the digital business or revenue model contributes.

We hypothesize that a financially viable news media market generates a news landscape in which disinformation has a hard time causing public harm – and therefore should be considered by governments when fighting the spread of disinformation. We investigate the validity of this hypothesis by asking the question: *does a financially viable news media market lead to less exposure to disinformation amongst its citizens?*

This article is structured as follows. First, a review of the literature on financial viability of news media markets is presented on which we then build a framework. We evaluated the proposed model through interviews with academics and media professionals. Second, we present the methodology applied in the article, which expands the approach of studies like the one of Humprecht et al. (2020) by proposing a framework to assess the financial viability of news markets and gathering data on a much broader set of empirical indicators. Third, we present the findings from the analysis. Our findings suggest that financially viable news media markets are more resilient to disinformation. This research has important implications for policy-makers, the news media industry and future research, which we present in the final section.

## LITERATURE BACKGROUND: CONNECTING FINANCIAL VIABILITY TO THE SPREAD OF DISINFORMATION

Research about disinformation is as voluminous as it is fragmented, due to the many disciplines in which the phenomenon is being researched (Di Domenico et al. 2021). Reviewing the field of disinformation research, Tandoc Jr (2019) identified three main themes: the definition and scope of the problem, its potential causes and the impact of disinformation. Most of these studies, however, still focus on the individual-level problems, causes and impacts. This comprises, for example, research on what makes individuals more prone to the influence of disinformation (e.g. Bryanov and Vziatysheva 2021), why individuals share disinformation (e.g. Celliers and Hattings 2020) or what drives individuals to turn to alternative anti-establishment news outlets (Hameleers et al. 2022). Also, the impact on the individual level of media providers has been researched. This includes, for example, research on the impact the digital environment of news consumption and news business models on disinformation. Ruiz (2023) found that digital markets such as programmatic advertising, commercial content moderation and influencer marketing enforce the spread and making of disinformation. Di Domenico et al. (2021) researched how digital markets enable legitimization of disinformation.

But a strand of research is emerging that seeks to shift our focus from the individual to the macro-level factors influencing the propagation and impact of disinformation. The idea is that people's vulnerability to disinformation is dependent not only on individual dispositions, but also on, for example, the social structures and the coping capacities that ensue from it, including the information environment (Hansson et al. 2020). This also means that the spread of disinformation is not only explainable by the shift to a digital environment and digital business models employed by news providers. A macro-level view looks at the wider context and structures in a given country to understand the spread of disinformation. A first indication of the role that local political and media contexts play in this context came from comparative survey research across countries, showing, for example, that people living in countries with liberal democratic governments are more likely to worry about disinformation than people in countries with no or limited democratic institutions (Knuutila et al. 2022).

In a similar vein, in a cross-national study on the factors explaining citizens' decision not to further propagate disinformation, Humprecht et al. concluded that 'resilience factors are country-specific and are highly dependent on the respective political and information environments' (2023: 1). Furthermore, it is acknowledged that the rise of digital and social media has also disrupted the business model of news media by diverting large percentages of advertising revenues to technology companies. 'The increasing financial pressure also leads to greater commercialization of news, less resources for journalistic work in general, and a greater risk that mainstream news media inadvertently spread false or misleading information' (Strömbäck et al. 2022: 53). In more recent studies, the business models and market context of disinformation have also been studied. These observations lead us to assume that the financial viability of a news media market is important regarding disinformation, and this is because of several reasons.

First, as discussed above, research has argued that *disinformation is often driven by financial gains* (Tandoc Jr et al. 2018). To understand the financial gains of disinformation, we need to look at the market context where disinformation is spread. This is also recognized by governments. For example, recent British and French government reports on disinformation emphasized the role of revenues in the production of disinformation (Bronner 2022; House of Commons 2018).

Second, research has shown that *different media consumption patterns that drive news market structures mitigate the impact of disinformation*. Digital and social media have changed the way we access and consume news. And, social media have become the main source for accessing news (Newman et al. 2023). At the same time, social media platforms have been found to be responsible for the proliferation of disinformation (Zimmer et al. 2019). This shows how media consumption and spending can influence the financial viability of news media markets but, at the same time, enable the spreading of disinformation.

Third, previous research has shown first indicators about *the importance of news media market structures and their impact on propagation of disinformation*. For example, Humprecht (2019) already partially confirmed in her study across a number of countries, that public spending in and a higher market share for public service broadcasting (PSB) leads to less disinformation.

Still, most structural factors of news media markets have not been researched in-depth yet. This study tries to close this research gap by focusing

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on the relation of the spread of disinformation to the financial viability of news media markets.

## **TOWARDS A NOVEL FRAMEWORK FOR MEASURING THE FINANCIAL VIABILITY OF NEWS MEDIA MARKETS**

### ***Defining financial viability of news media markets***

When talking about ‘financial viability’ in relation to news media markets, different terms are used in different models, such as ‘financial sustainability’, ‘media sustainability’ or ‘business sustainability’ (Free Press Unlimited 2016). The NGO Free Press Unlimited uses the concept of ‘media viability’, which is defined as the ‘whole of conditions that need to be fulfilled for media to be able to exist and flourish completely independently (on their own)’ (Free Press Unlimited 2016). The Deutsche Welle Akademie (2021) defines ‘media viability’ as ‘the ability of media to produce high quality journalism in a sustainable way’.

Definitions might vary, but academics and policy-makers agree that the financial viability of news media markets remains at risk. Sore point is the central role of advertising revenues in the traditional business model of quality journalism, a revenue stream that is increasingly going to digital platforms, making it increasingly difficult for news media to find sustainable business models (Bleyer-Simon and Nenadic 2022; Harlow 2018) – even though the literature regarding business and revenue models for media is still limited (Ismail 2018). Unsurprisingly then, in a declaration adopted in 2019, the Council of Europe Committee of Ministers encourages states to intervene and ensure the ‘financial sustainability’ of quality journalism (Council of Europe 2019).

Next to faltering business models, the financial viability of news media markets is also driven by more contextual factors such as changing demand and public support to avoid market failure (Humprecht 2019). With news being an experience good with positive externalities, the market drivers are very different compared to, for example, manufacturing markets. For example, news hold value that consumers can only assess after consumption, making trust and credibility crucial market drivers. Positive externalities, like the societal benefits of well-informed citizens, mean news markets depend more on public interest and regulatory support than purely on consumer demand or efficiency. Additionally, while manufacturing focuses on tangible goods and production costs, news markets are shaped by factors like content distribution, advertising revenue and the impact of digital platforms on accessibility and competition. Analysis of the financial market dynamics need therefore to take additional structural factors into consideration.

### ***Measuring the financial viability of news media markets***

There is, to the best of our knowledge, no framework to measure the financial viability of the news media so far and especially not in relation to disinformation. To fill this gap in research, we developed a framework based on a structured literature review. The structured literature review was conducted by using keywords such as ‘news media markets’ and ‘financial viability’ to search academic articles and reports from platforms like Web of Science and Google Scholar. The identified publications were then analysed to extract initial dimensions for the framework that influence the financial viability of

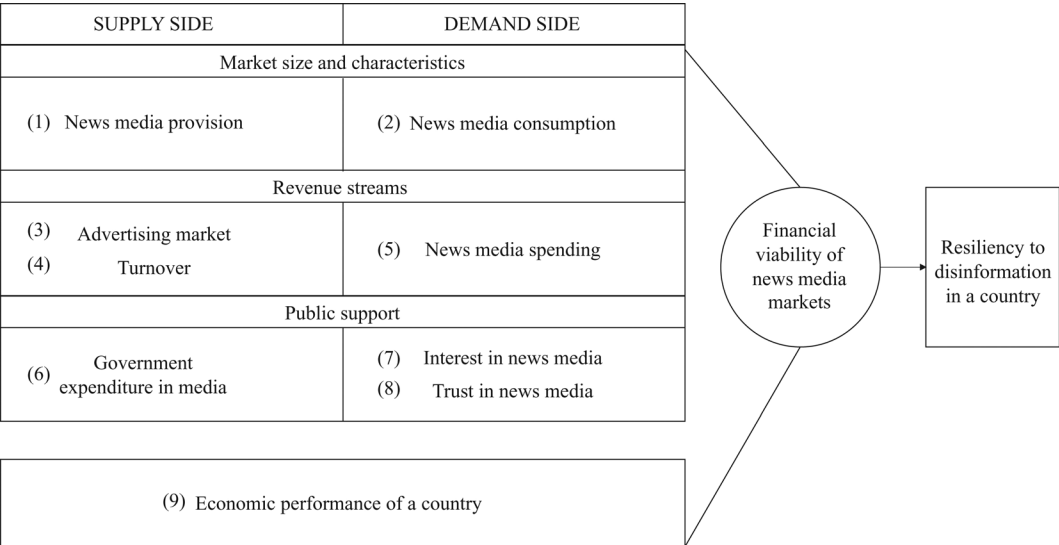


Figure 1: Framework to measure the financial viability of news media markets in relation to the spreading and impact of disinformation.

news media markets. This analysis focused on identifying patterns, evidence and insights from various publications to draft the initial framework. Feedback on the initial framework was gathered through workshops with experts and stakeholders (see below for more information on the methodological approach), which largely validated the model and was useful to refine the indicators. Additionally, throughout the data gathering process, we further delineated the factors integrated in the framework.

This led to the identification of nine dimensions grouped into four factors and two structural market characteristics. These were then applied to primary and secondary data from both official (official bodies and government agencies) and non-official (for-profit companies) data sources to analyse the financial viability of news media markets, differentiating between the financial viability of the supply side and the demand side (Voci and Nölleke-Przybylski 2024: 63, 70). We thoroughly evaluated the secondary data sources and only included data from vetted and established sources and transparently listed all data used in Appendix 1. Figure 1 summarizes the findings, which are detailed out in the coming sub-chapters.

The nine dimensions of the framework can be described as follows:

1. News media provision: We argue that to measure the financial viability of a news media market, it is important to understand if the supply side of the market enables efficient news provision. Efficiency of news provision in a market can be assessed through market data, such as number of media organizations, investments made in the market, the number of employees and the productivity of the organizations in the market. Research on disinformation has already provided evidence that the provision of diverse media can impact knowledge gaps and therefore mitigate the extent to which disinformation becomes harmful. Lind and Boomgaarden (2019) find that television maintains existing knowledge gaps while print media

and digital media seem to increase knowledge inequalities between groups with different educational backgrounds.

2. News media consumption: The demand side of a market and therefore the extend of news consumption also give indications about the financial viability of a news media market. Even if a lot of diverse media is available, if the news media is not 'consumed', the market is not viable. News consumption has also already been connected to the impact of disinformation. Allcott and Gentzkow (2017) found, for example, a correlation that people who spend less time-consuming media are more likely to believe disinformation. Moreover, people were less critical regarding online information if their most important sources of news were social media (Allcott and Gentzkow 2017). However, previous research already confirmed that the way news is consumed (e.g. online or offline) and the time spend on news media impacts the financial viability of the media market.
3. Advertising market: As already discussed above, the digital environment disrupted traditional business models for news. Often, online disinformation is created as clickbait to generate online traffic and therefore revenues from advertising (Berthon and Pitt 2018). This makes disinformation in return a competitor to 'traditional' news media organizations especially in the online environment. This might also incentivise news media organizations to follow such strategies and change the quality of the news content to compete. Research already highlighted that new underlying media infrastructures and industries, such as ad tech firms and programmatic advertising exchanges, created a lucrative incentive structure for disinformation publishers (Braun and Eklund 2019). And traditional news media have begun to compete for ad revenue not just with newer online news organizations or disinformation but with blogs, social networking applications, websites and apps offering ad space (Couldry and Turow 2014), which might introduce additional conflicts with the public-service mission of journalism. It is therefore important to understand how shifts in the functioning and spending in the advertising market impacts the financial viability of a news media market.
4. Turnover: Even though commercial (as well as public) news organizations depend highly on advertising as revenue streams, news media is reliant on a combination of revenue sources. Previous research has shown that news media has a better chance for survival when combining different revenue sources, but there is no single recipe for financial success (Cook et al. 2016). Therefore, not only the advertising market can be used to understand the financial viability of a news media market but also the turnover that is made from other revenue streams.
5. News media spending: Media consumption patterns also dictate the money that is being spend on news media in each media market. As described above while many news outlets still rely mostly on advertising revenue, other revenue sources including the money spend by consumers on news is highly relevant. Many news organizations have now implemented diverse online business models, e.g., subscription models for newspapers. Research has in this context highlighted the need for replacement in the spending on media consumption. McCombs's (1972) already argued based on the notion of relative constancy that consumer expenditures on media remains constant, resulting in a decrease in the resources spent on traditional media with the growth in new media. Because of this, we argue that there is a relationship between the money spend on news



media content (especially in the online environment) and the financial viability of a media market.

6. Government expenditure in media: Different public environments including regulations and media policy as well as public support highly impact media markets (Aalberg et al. 2010) and therefore the financial viability of a media market. For example, the Council of Europe Committee of Ministers encourages states to include a beneficial tax regime, financial support schemes and the possibility of media outlets to operate as not-for-profit organizations and receive donations from philanthropic programmes (Council of Europe 2019). One of the most impactful public interventions in a news media market is PSB or public service media (PSM). Aalberg et al. (2010) demonstrated a positive relationship between the amount of 'hard' news coverage available in a country and citizens' level of public affairs knowledge. And previous research has shown that a strong PSB measured based on market share and public revenue, leads to less disinformation in a given country (Humprecht 2019). We therefore assume that measuring the total expenditure of governments into the news media next to other support mechanisms that are made available give indication about the financial viability of a news media market.
7. Interest in news media: People who are less interested in news are more likely to avoid the news (Chan et al. 2022). More precisely, a preference for soft news over hard news is one of the most predictive indicators for news avoidance, likely reflecting the importance of political interest in people's consumption of news (Toff and Kalogeropoulos 2020: 383). In light of these insights, it is worrisome to observe that interest in the news has been in decline across several countries (Newman et al. 2023). Certain markets, exemplified by stable media, ample funding and strong institutional trust – such as Finland and the Netherlands – appear to deviate from this pattern. Hence, news interest forms an interesting indicator to probe the degree of financially viable media markets.
8. Trust in news media: The financial viability of a news media market can also be linked to the level of trust in media in a country (e.g. which might in turn also lead to more spending). We understand trust in news media as public confidence in the accuracy, impartiality and credibility of the news in general, including trust in news brands, sources and the journalistic process. Distrust in professional news media can affect the interpretation of information (Swire et al. 2017) and therefore also increase the impact of disinformation. Distrust in news media also increases the use of alternative sources – such as those producing disinformation (Newman et al. 2023). In other words, in a media market in which distrust in news media is higher, people are less likely to be exposed to different sources of news (Humprecht 2019) and therefore this also impacts the financial viability of news media markets.
9. Economic performance: Finally, we consider the economic performance of the country as a whole because of the two-sided business model of news media. In terms of advertising revenues, a downturn in economic performance like the one we witnessed with the COVID-19 health crisis is known to lead to, for example, decreased ad spending, directly impacting the news market (Jenyns 2021). In terms of reader revenues, the Digital News Report shows that over three-quarters of those who make an ongoing payment to news media have medium to high household incomes (Newman and Robertson 2023). Hence, if the economy in a country is

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performing well this will likely increase the willingness of companies to advertise and the number of people willing to pay for news, both in turn strengthening the financial viability of a news media market.

## RESEARCH DESIGN

### *Data collection*

The data collection for testing the above-described model happened in two phases. In the first phase, feedback on the initial model was collected through diverse interactions with experts and stakeholders in the field of media economics, news use and disinformation. The scope was to identify both possible omissions in the indicators in the model and relevant data sources to use in the analysis. The matrix was initially presented during a workshop in Brussels in October 2022, where we presented the framework and collected feedback on it from approximately twenty representatives from academia, disinformation experts and fact-checkers through a moderated discussion. Additional insights were provided during a closed workshop in 2023, by four experts in disinformation from the Flemish Knowledge Centre on Media Literacy. Furthermore, at the Desinform network event held at the Google Lab in Brussels in June 2023, we actively engaged with various media policy representatives and experts in media economics to gather perspectives on the model. The feedback received over the course of these interactions largely validated the model but was useful to refine some of the indicators.

In the second phase, to study the distribution of these different factors across different countries and measure the financial viability of each country's news media market, we collected data for ten different European countries between 2016 and 2022. The countries included in the analysis were Belgium, Germany, France, Italy, Spain, Denmark, Hungary, Poland, Romania and Greece. To make the comparison as accurate and relevant as possible, we selected all countries in Europe for which sufficient data were available for the different predefined measures. Note that all measures were z-standardized to make cross-country comparisons more straightforward. In the data collection, we used various data sources. Appendix 1 provides an overview of the used data and links to data sources:

- We analysed longitudinal country-wise data on trust and interest in news media from the annual Digital News Report by the Reuters Institute for the Study of Journalism at Oxford University. We also used 2022 data to evaluate perceived exposure to false or misleading information.
- Second, we also gathered data from different tables of Eurostat and the World Bank. Eurostat data relevant to our research question centre around country-level measures such as annual structural business statistics of newspaper publishing enterprises and news agency activities: number of active businesses, turnover, gross investment in tangible goods, number of employees and apparent labour productivity. Also, measures related to annual news media consumption and internet use were included: individuals using the internet for participating in social networks, individuals frequently using the internet, individuals (in total and in different age groups of 16–24, 25–54 and 55–74) using the internet for reading online news and individuals accessing news several times a day. In addition, we integrated Eurostat data on government statistics on government

expenditure on broadcasting and publishing services. Lastly, we also used macroeconomic measures to control for a country's economic context from Eurostat and the World Bank: real GDP growth rate, real GDP per capita, unemployment rate, inward FDI stocks in percentage of GDP, Gini coefficient of equivalized disposable income before social transfers and inflation.

- Third, IAB Europe's annual AdEx benchmark report provided relevant advertising market data on digital ad spend by market (the total amount of money spent on digital advertising within a national market), digital ad spend per capita (the average amount spent on digital advertising per person in a national market), display value (the total value of display advertising, typically including banner ads, video ads and other visual advertisements placed on websites, apps or social media platforms), classifieds and directories value (the total value of advertising spent on classified ads and directories, typically including short advertisements organized by category often found in newspapers, online marketplaces or specialized websites), and paid-for-search value (the total value of advertising spent on paid search campaigns, such as those run through search engines like Google Ads).
- Fourth, through the Our World in Data platform, we used different measures to control for the differences in country-level political context and democracy: Liberal democracy rating, Democratic Culture Index, Functioning Government Index and Respect for counterarguments score.
- Finally, we integrated measures of news market pluralism by adding data of the Centre for Media Pluralism and Media Freedom on basic protection, market plurality, political independence and social inclusiveness.

### Operationalization

Next to the nine dimensions (divided across four *framework* factors: market size and characteristics, revenue streams, public support and economic context), we integrated two *control* factors: political performance and media pluralism. Our motivation for including political performance (including the following dimensions: liberal democracy rating and democratic culture index) came from previous research that has shown relationships between a country's political environment and its resiliency to disinformation (Allcott and Gentzkow 2017; Shin and Thorson 2017; Young et al. 2018). Similarly, media pluralism (including the following dimensions: basic protection, market plurality, political independence and social inclusiveness) was integrated to control for its hypothesized impact on disinformation (Brogi and Bleyer-Simon 2021; Parcu 2020).

The empirical analysis and the testing of the model consisted of two parts. The first part included a principal components analysis (PCA) of the different measures for each *framework* factor (market size and characteristics, revenue streams, public support and economic context) and for the *control* factors (political context and news market pluralism). Additionally, we conducted a PCA of all measures for the two structural market characteristics across different dimensions of the framework factors: the supply side and the demand side of the news media market.

Then, in the second step, we performed an OLS linear regression ( $N = 10$ ) integrating those factors (i.e. the weighted sum of the principal components for framework factors and control factors) as predictor variables

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for perceived non-exposure to fake news (i.e. the predicted variable). We tested the model with in which all framework factors and control factors were integrated, but we were confronted with multicollinearity. Therefore, we re-ran the regression while leaving out political and economic context, which made the multicollinearity disappear. We also calculated the composite score of the different z-standardized framework factor values for each country to get a measure of the financial viability of the news media market, and for that measure, we then calculated the correlation with perceived non-exposure to fake news.

Additionally, we calculated multivariate correlations between all the different factors (market size and characteristics, revenue streams, public support, political context, economic context and news market pluralism), between the financial viability of the news media market (i.e. the composite score of the z-standardized framework factors) and perceived non-exposure to fake news and, finally, between the two structural market characteristics (supply side and demand side) and perceived non-exposure to fake news. Given the research design in which we wanted to conduct a multivariate analysis, we decided to pre-process the data through standardized PCA (and Varimax rotation with Kaiser normalization). Hence, transforming the measures in our data table to several orthogonal variables called principal components allowed for reduction of the dimensionality of the data while still maintaining the largest extent of the variation in the data (Ringnér 2008: 303). In essence, the first part of the analysis aimed to identify measures forming coherent subsets (in terms of correlation between measures) that are relatively independent of one another (Brown 2009: 26). Following the Kaiser–Guttman’s rule, we selected all components with an eigenvalue exceeding one, thus explaining variation of more than one measure (Bro and Smilde 2014: 2824).

For market size and characteristics measures, four principal components were derived with eigenvalues exceeding one (eigenvalue for component 1 = 4.21, component 2 = 3.85, component 3 = 1.63 and component 4 = 1.23), cumulatively explaining 84.06% of the variation (Appendix 2). Turnover measures resulted in two principal components with eigenvalues greater than one (eigenvalue for component 1 = 5.67 and component 2 = 1.22), explaining 86.12% of revenue streams’ variation. Public support measures yielded one principal component meeting the eigenvalue requirement (eigenvalue for component 1 = 1.64), explaining 40.97% of the variation. For political context, one principal component was obtained (eigenvalue for component 1 = 3.11), explaining 77.85% of variance. Economic context’s PCA resulted in one principal component (eigenvalue for component 1 = 1.05), explaining 52.41% of variance. News market pluralism measures produced one principal component (eigenvalue for component 1 = 3.21), explaining 80.15% of variance.

The weighted sum of principal components for each factor was calculated, providing one z-standardized value per factor for each country. This approach simplified interpretation, setting a joint threshold at 77.00 per cent cumulative explained variation for each factor. Reliability analysis showed Cronbach’s alpha exceeding 0.70 for market size and characteristics ( $\alpha = 0.72$ ), revenue streams ( $\alpha = 0.89$ ), political context ( $\alpha = 0.90$ ) and news market pluralism ( $\alpha = 0.92$ ). Public support ( $\alpha = 0.50$ ) and economic context ( $\alpha = 0.09$ ) were excluded due to low reliability. Trust in news and GDP per capita were z-standardized as proxies. The analysis was extended by averaging each factor between 2016 and 2020 for each country.

We also need to consider the shortcomings of the data gathered. First, on the framework factors, data were only available up to 2020 while for data non-exposure to disinformation, there was only consistent data for 2022. Thus, to study the relationship between the indicators in question, we were forced to relate average composite scores of financial viability from 2016 to 2020 to measures of disinformation for 2022. Second, there were no concrete measurements of disinformation circulation in the countries concerned. As an alternative, we therefore used perceived exposure to false or misleading information in the last week. For this, we used the question *have you seen false or misleading information about any of the following topics, in the last week?* asked in the 2022 Digital News Report as a proxy for fake news circulation. Since we were mainly interested, in line with the conceptualization of Humprecht et al. (2020: 2), in the relationship between news media market financial viability and resiliency to disinformation, we used the percentage of news users who report not having seen disinformation on a topic in the past week as a measure for perceived non-exposure to false or misleading information. Our motivation for deciding on the use of this measure came from the observation that there is no consistent measure of the actual amount of fake news circulation in different media markets. However, the question used in the Digital News Report allowed us to obtain a cross-country consistent measure of the extent to which respondents in each media market (country) *feel* like they have seen fake news. Our claim, therefore, is not that this measure measures the amount of fake news, but rather that this measure provides the benefit of asking the same exact question across various countries and, as such, be a comparable indication of differences in perception between countries.

## FINDINGS

### ***Assessing the financial viability of news media markets in Europe***

First, to test the relationships between the factors of our model and how they may jointly influence the outcome variable, we analysed the bivariate correlation ( $N = 50$ ) between the factors. This furthermore helps us to compare the financial viability of the analysed countries. The initial analysis of the bivariate correlations between the factors consistently shows positive and, in some cases, strong Pearson correlation (Table 1).

Moreover, a significant proportion of the results are significant at 95 per cent or even 99 per cent at confidence. For example, we see a very strong correlation between market size and characteristics and revenue streams ( $r = 0.76$ ). Besides, news market pluralism correlates strongly with economic context ( $r = 0.88$ ) and with political context ( $r = 0.80$ ). It also noteworthy that economic context correlates very strongly with the control variable political context ( $r = 0.94$ ).

A graphical representation of the average country values of framework factors between 2016 and 2020 (Figure 2) shows that there are substantial country differences regarding our indices. Southern European countries such as Italy and Spain score low or even negative on most factors, thus suggesting less news media market financial viability. The same goes for eastern European countries such as Hungary, Poland, Romania and Greece scoring even substantially worse than Italy and Spain. Belgium and France score positively on most factors related to news media market financial viability, but these values are significantly lower than those of the highest-scoring

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Table 1: Bivariate correlations between all factors (framework factors and control factors).

		Correlations					
		Market size and characteristics	Revenue streams	Public support	Political context	Economic context	News market pluralism
Market size and characteristics	Pearson correlation	1	0.759**	0.241	0.570**	0.607**	0.610**
Revenue streams	Pearson correlation		1	0.213	0.540**	0.597**	0.760**
Public support	Pearson correlation			1	0.352*	0.424**	0.336*
Political context	Pearson correlation				1	0.944**	0.803**
Economic context	Pearson correlation					1	0.878**
News market pluralism	Pearson correlation						1

Note:  $N = 50$ ; values are Pearson's correlation coefficients.

\*Correlation is significant at the 0.05 level (two-tailed).

\*\*Correlation is significant at the 0.01 level (two-tailed).

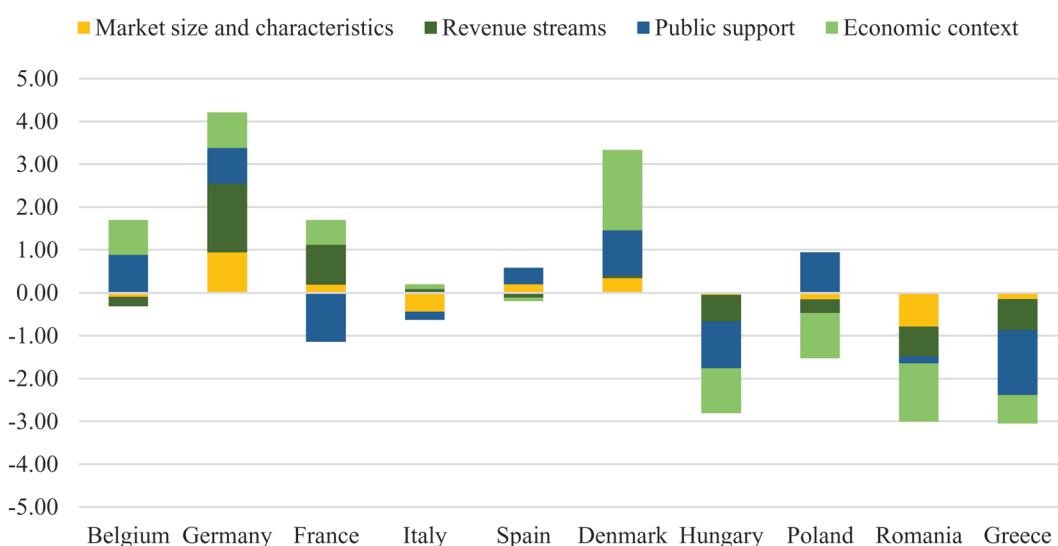


Figure 2: Average country values of framework factors between 2016 and 2020. Note: Bars show added country values (z-standardized) for different framework indicators. Higher average country values for factor theoretically indicate greater news media market financial viability. Lower values indicate less news market financial viability.

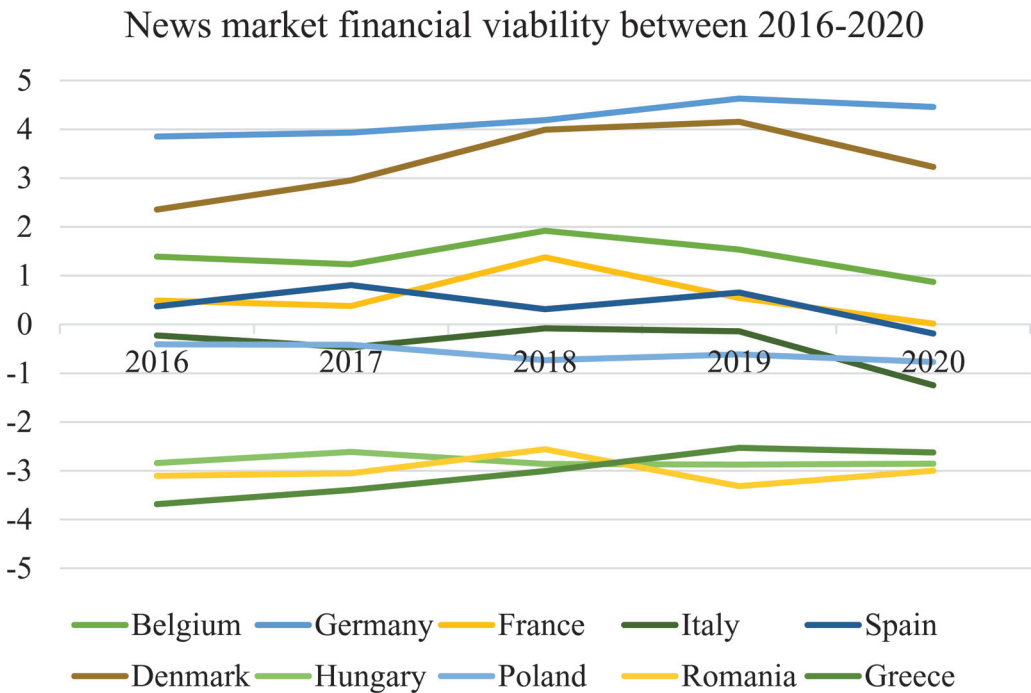


Figure 3: Country values of framework factors for different countries 2016–20.

countries. Denmark and certainly Germany hence seem to be the most financially viable news markets, according to the theoretical framework. Is also noteworthy that France is characterized by below-average public support.

Furthermore, we can also look at the development of the financial viability of the news media markets of the studied countries over time (2016–20). As can be seen in Figure 3, over five years, the development of the financial viability has been quite different across the countries. In some countries, the financial viability has increased over time (such as Germany and Greece). However, in most countries especially since 2018, the overall financial viability of the news media markets has decreased. Besides, we expect that this downward trend in news media markets’ financial viability has continued beyond 2020 given the outbreak of COVID-19 in Europe in that year.

**Measuring the impact of financial viability of the news media market**

We examined the correlation between news market viability and perceived non-exposure to disinformation, revealing a strong Pearson correlation coefficient ( $r = 0.84, p < 0.01, N = 10$ ). This suggests that in countries with a more financially viable news media market, citizens feel less exposed to false information. To delve deeper, we conducted OLS linear regression, connecting framework factors (market size, revenue streams, public support and

economic context) to non-exposure to fake news, while considering control factors (political context and news market pluralism). The regression ( $N = 10$ ), excluding political and economic contexts, yielded an  $F$ -statistic of 13.573 with a  $p$ -value  $< 0.05$  ( $p = 0.007$ ), signifying significant country differences. Importantly, the OLS regression explained 91.60 per cent of the variation in perceived non-exposure to fake news ( $R^2 = 0.916$ ).

The analysis (Table 2) resulted in two statistically significant factors (one framework factor and one control factor) at nearly 95 per cent of confidence. Hence, we conclude that public support (i.e. a proxy for trust in news) ( $\beta = 0.362$ ,  $p = 0.049$ ) and news market pluralism ( $\beta = 0.771$ ,  $p = 0.019$ ) are strongly associated with perceived non-exposure to fake news at 95 per cent of confidence or more. Market size and characteristics ( $\beta = 0.295$ ,  $p = 0.218$ ) and revenue streams ( $\beta = 0.297$ ,  $p = 0.292$ ), then, do not have a significant effect on perceived non-exposure to fake news.

Finally, it is noteworthy that the framework factor revenue streams ( $\beta = 0.297$ ,  $p = 0.292$ ) is negatively associated with perceived non-exposure to fake news. This finding of a negative association of revenue streams (which mainly consisted of measures of the advertising market strength) with perceived non-exposure to disinformation is in line with the analysis of Humprecht et al. (2020: 12) who state that a large advertising market is factor limiting resiliency to disinformation.

Table 2: OLS regression for factors predicting perceived non-exposure to fake news.

Model		Unstandardized coefficients		Standardized coefficients
		<i>B</i>	SE	$\beta$
1	(Constant)	9.665E-16	0.123	
	Market size and characteristics	0.635	0.450	0.295
	Revenue streams	0.399	0.338	0.297
	Public support	0.374*	0.144	0.362*
	News market pluralism	0.947*	0.279	0.771*

Note: Dependent variable: Perceived non-exposure to fake news (z-standardized);  $N = 10$ .

\*Correlation is significant at the 0.05 level (2-tailed).

\*\*Correlation is significant at the 0.01 level (2-tailed).

Table 3: Bivariate correlations between structural market characteristics and perceived non-exposure to fake news.

Correlations				
		Supply side	Demand side	Perceived non-exposure to fake news
Supply side	Pearson correlation	1	0.294	0.665*
Demand side	Pearson correlation		1	0.449
Perceived non-exposure to fake news	Pearson correlation			1

Note:  $N = 50$ ; values are Pearson's correlation coefficients.

\*Correlation is significant at the 0.05 level (2-tailed).

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Through PCA, we condensed our data collection's multidimensionality into two structural market characteristics: supply side and demand side. For the supply side, a PCA ( $\alpha = 0.95$ ) produced three principal components (eigenvalues for components 1–3: 10.02, 1.88 and 1.06), explaining 86.38 per cent of variance. The demand side PCA ( $\alpha = 0.69$ ) yielded three components (eigenvalues for components 1–3: 3.65, 1.70 and 1.14), explaining 81.22 per cent of variance. Weighted sums of these components resulted in supply side and demand side variables. Bivariate correlations ( $N = 10$ ) (Table 3) revealed a stronger and more significant correlation ( $r = 0.67$ ) between supply side and perceived non-exposure to fake news compared to the correlation between demand side and perceived non-exposure ( $r = 0.45$ ).

## SUMMARY OF FINDINGS

The aim of this study was, on the one hand, to identify and map factors that contribute to the financial viability of news media markets in different countries, which we integrated into a consistent model, and, on the other hand, to understand the relationship between those former and disinformation in a given country.

A first analysis of the data showed that Germany and Denmark score largely above average on almost every factor in our model, and that, according to our framework, these countries therefore have a financially more viable news market (Table 1). Countries such as Romania, Hungary, Poland and Greece score well below average, Belgium and France score above average and Italy and Spain feature an average level of news market viability. Also, these differences remain relatively stable throughout the period 2016–20.

Second, we calculated the correlation between composite scores for market viability and perceived exposure to disinformation in 2022. We observed a very strong positive and, moreover, also significant correlation ( $r = 0.84$ ,  $p < 0.01$ ). From this, we concluded that news media market financial viability is thus very strongly correlated with perceived exposure disinformation.

Next, we ran an OLS linear regression (Table 2) with perceived non-exposure to disinformation as dependent variable and the various framework factors as predictors, which showed that public support had a significant and positive effect on perceived non-exposure to fake news, and that the direction of this effect was indeed in line with expectations based on previous research (see, e.g., Humprecht et al. 2020). Market size and characteristics have positive, but not significant, effect on perceived non-exposure to disinformation. The effect of revenue streams, being mainly the size of a country's advertising market, is negative but not significant.

Finally, we conducted a PCA across the different factors to constitute two variables related to structural market characteristics: supply side and demand side and then linked them to perceived non-exposure to disinformation (Table 3). The results show that the supply side is more strongly correlated with perceived non-exposure to disinformation compared to the correlation between demand side and perceived non-exposure to disinformation.

## CONCLUSION

With this study, we aim to add to the body of work that seeks to address the issue of disinformation at a macroeconomic level. Our analysis of six countries

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shows a clear correlation: the higher the viability of a news market, the less likely people perceive to be exposed to disinformation. This is true even when we controlled for factors such as media pluralism and political context (contextual factors already tested in other research). Our analysis also shows that the framework we proposed to operationalize market viability includes a series of factors of which some, like the availability of public support for news media, play a bigger role than others, like market size. Here lie avenues for delving deeper into some of these factors and scrutinize how they play out at a meso and micro level in order to further assess their relation with perceived exposure to disinformation. For example, news users relying on social media for news have been shown to adopt a ‘news-finds-me’ attitude: they do not actively look for news because they are confident they will remain well-informed through their network of peers (Gil de Zúñiga et al. 2017). We could hypothesize that such an attitude is more easily adopted in a viable news market with plenty of brands where news users can trust that *factual* news will find them.

Although these findings do not immediately translate into concrete actions to tackle disinformation, they do invite both news media and policy-makers to explore how news markets can be strengthened as a whole now that evidence is growing of viable news markets leading to less (perceived) disinformation. Many of the existing policies to tackle disinformation are focused on the level of the journalistic production (fact-checking) or individual resilience (media literacy) so far. These efforts might very well need to be complemented with interventions on the level of the news market as a whole. For news media, this could mean, e.g., diversifying revenue streams in order to be less dependent on one of them, while for policy-makers it could be about, e.g., diversifying public support mechanisms to cover a wider group of beneficiaries. As disinformation is motivated not only by financial but also by political gains, it is important to move cautiously when exploring scenarios of direct media support. History has shown that to advance their cause or reinforce ideologies certain political actors too, including leaders of democratic states, have adopted disinformation strategies (Kuo and Marwick 2021). This is why direct support for news media always needs to be accompanied by the necessary safeguards for journalistic independence and autonomy. Inspiration for those can be found in PSM’s management agreements or the use of trusted third parties in granting procedures for public support. At the same time, we are aware that such levels of support are only available in affluent countries in the first place, and that news markets that would benefit most from a financial injection might be those in countries that have the smallest margins to do so.

Even though our developed model proved to be useful for further understanding the impact of financial viability of news markets and disinformation, there are several limitations. First, our framework looks at structural, market-level indicators and how they link to people perceiving disinformation. While this offers valuable insights into the importance of financial viability of a news market when trying to tackle disinformation, it risks reducing news users to rational actors that respond to market stimuli at a time when scholars like Wahl-Jorgensen and Pantti (2021: 1147) stress the need to investigate ‘the affective and emotional aspects of production, text and audience engagement with journalism’. Second, we chose to work largely with secondary data from official and non-official sources because it gave us a cost-effective way to incorporate the various dimensions of our

expansive framework. Even if we sought to mitigate issues by thoroughly evaluating and transparently listing all data sources, we acknowledge the limitations of working with secondary data such as different organizations collecting data in different ways using different definitions and certain nuances not being captured by market data, for example, media products being offered by non-media companies or vice versa (Voci and Nölleke-Przybylski 2024: 72).

Regardless, given that we wanted to understand harm caused by disinformation, in the future there will be a need for more concrete cross-country measures, rather than just the perceived exposure to fake news of news users. Options could be to include in cross-country studies questions that probe factual knowledge about current affairs or scales that assess media literacy. At the same time, one can also question whether fact-checking should be part of a model measuring the financial viability of a news media market, as fact-checking initiatives may be a reaction to the circulation of fake news resulting from a news media market that is financially less viable. Finally, although our quantitative research also showed that the countries in which the news media market is financially more or less viable and overlaps partly with the qualitative classification of media systems according to Hallin and Mancini (2004), more research on this is certainly needed.

**FUNDING**

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**ETHICAL STATEMENT**

The empirical component of this study consisted solely of workshops and semi-structured interviews with adult professionals (academics, journalists, policy specialists and fact-checkers). No minors, vulnerable populations or sensitive personal data were involved and all necessary procedures and safeguards such as consent by the participants were put into place. All quantitative analyses drew on publicly available, aggregate datasets (Eurostat, World Bank, Reuters Institute Digital News Report, IAB Europe AdEx, Our World in Data, CMPF Media Pluralism Monitor). These sources contain no personally identifiable information and do not trigger ethical-review requirements. No animals were involved, and no photographs of individuals were taken or reproduced. The authors confirm that the research adheres to the 2013 revision of the Declaration of Helsinki, the EU General Data Protection Regulation (GDPR 2016/679) and the Intellect Journals Ethical Guidelines for Human and Animal Subjects (2024).

**CONFLICT OF INTEREST STATEMENT**

The authors have no conflicts of interest to declare.

**FUNDING**

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APPENDIX 1: DATA FRAMEWORK AND DATA SOURCES

Analytical function	Factors	Dimension(s)	Measure(s) for 2016–20 and data source in hyperlink
			<i>Note: All measures are z-standardised for cross-country comparison</i>
Outcome factor	Resiliency to disinformation	Exposure to disinformation	Perceived exposure to fake news in the last week (inverse of the percentage of individuals that respond ‘yes’ to the question <i>Have you seen false or misleading information about any of the following topics,<sup>1</sup> in the last week?</i> )
Framework factors	Market size and characteristics	News media provision	Number of newspaper publishing enterprises (enterprises-number) Number of news agency activities (enterprises-number) Gross investment in tangible goods in for newspaper publishing enterprises (in million euro) Gross investment in tangible goods in for news agency activities (in million euro) Number of employees in newspaper publishing enterprises (employees-number) Number of employees in news agency activities (employees-number) Apparent labour productivity in newspaper publishing enterprises (in thousand euro) Apparent labour productivity in news agency activities (in thousand euro)
		News media consumption	Internet use: reading online news sites/newspapers/news magazines (total, 16–24, 25–54, 55–74) (in percentage of individuals) People accessing news several times a day (percentage of news users that respond ‘>1’ to the question <i>Typically, how often do you access news?</i> )

1. These topics include politics, celebrities (e.g. actors, musicians, sports stars), COVID-19 and other health issues, immigration, products and services, climate change or the environment or other topics. For our measure, we relied on the ‘Net: Any topic’ in the DNR dataset, thus grouping these topics together.

Analytical function	Factors	Dimension(s)	Measure(s) for 2016–20 and data source in hyperlink
			<i>Note: All measures are z-standardised for cross-country comparison</i>
	Revenue streams	Advertising market	Digital ad spend by market (in million euro)
			Digital ad spend per capita (in euro)
			Display value (in million euro)
		Turnover	Paid-for-search value (in million euro)
			Classifieds and ad directories value (in million euro)
			Turnover of newspaper publishing enterprises (in million euro)
			Turnover of news agency activities (in million euro)
	Public support	News media spending	News users paying for online content (percentage of news users that respond ‘yes’ to the question <i>Have you paid for ONLINE news content, or accessed a paid for ONLINE news service in the last year?</i> )
			Total government expenditure on broadcasting and publishing services (in million euro)
			Interest in news media
	Economic context	Economic performance	Reported interest in news in general (percentage of news users that respond to the question <i>How interested, if at all, would you say you are in news?</i> by saying ‘Extremely’/‘Very’)
			Trust in news media
			Reported trust in news in general (percentage of news users that agree to the statement <i>I think you can trust most news most of the time</i> )
			Real GDP growth rate (chain linked volumes, percentage change on previous period)
			Real GDP per capita (in euro per capita)
			Inward FDI stocks in percentage of GDP (inward FDI stocks as per cent of GDP)

			Measure(s) for 2016–20 and data source in hyperlink
Analytical function	Factors	Dimension(s)	<i>Note: All measures are z-standardised for cross-country comparison</i>
Control factors	Political context	Political performance	Liberal democracy rating (score 0–1, rating incorporates measures of rule of law, checks and balances, and civil liberties along with the concepts measured in the electoral democracy index) Democratic Culture Index (score between 0 and 10, captures the extent to which citizens prefer democracy over other political systems) Functioning Government Index (score 0–10, captures the extent to which government acts on behalf of its citizens) Respect for counterarguments score (z-standardized score for measuring respect for counterarguments)
	News market pluralism	Media pluralism	Basic protection (score between 0 and 100, the basic protection indicator represents the regulatory backbone of the media sector in every contemporary democracy) Market plurality (score between 0 and 100, the market plurality is dealing mostly with media ownership, an economic component that is widely considered essential in the assessment of a level of media pluralism in any given context) Political independence (score between 0 and 100, the political independence indicator is designed to assess the risks for political independence of the national media system and its media outlets) Social inclusiveness (score between 0 and 100, the social inclusiveness indicators are concerned with access to and availability of media for different and particularly vulnerable parts of the population)

APPENDIX 2: RESULTS OF THE PRINCIPAL COMPONENT ANALYSIS

Total Variance Explained									
Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	4.213	32.407	32.407	4.213	32.407	32.407	3.711	28.544	28.544
2	3.846	29.588	61.995	3.846	29.588	61.995	2.882	22.168	50.712
3	1.627	12.512	74.507	1.627	12.512	74.507	2.486	19.124	69.836
4	1.241	9.548	84.055	1.241	9.548	84.055	1.849	14.220	84.055
5	0.675	5.192	89.247						
6	0.617	4.746	93.993						
7	0.325	2.499	96.492						
8	0.201	1.548	98.040						
9	0.135	1.039	99.080						
10	0.066	0.507	99.587						
11	0.034	0.261	99.848						
12	0.020	0.150	99.998						
13	0.000	0.002	100.000						

Note: Extraction method: Principal component analysis.  
PCA for market size and characteristics.

Total variance explained									
Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.666	70.821	70.821	5.666	70.821	70.821	5.665	70.812	70.812
2	1.224	15.298	86.119	1.224	15.298	86.119	1.225	15.308	86.119
3	0.576	7.199	93.318						
4	0.262	3.281	96.599						
5	0.211	2.643	99.242						
6	0.041	0.518	99.760						
7	0.018	0.227	99.987						
8	0.001	0.013	100.000						

Note: Extraction method: Principal component analysis.  
PCA for revenue streams.



**Total variance explained**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.639	40.968	40.968	1.639	40.968	40.968
2	0.974	24.360	65.328			
3	0.871	21.780	87.108			
4	0.516	12.892	100.000			

Note: Extraction method: Principal component analysis.  
PCA for public support.

**Total variance explained**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.114	77.847	77.847	3.114	77.847	77.847
2	0.440	10.989	88.836			
3	0.372	9.308	98.144			
4	0.074	1.856	100.000			

Note: Extraction method: Principal component analysis.  
PCA for political context.

**Total variance explained**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.048	52.412	52.412	1.048	52.412	52.412
2	0.952	47.588	100.000			

Note: Extraction method: Principal component analysis.  
PCA for economic context.

**Total variance explained**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.206	80.146	80.146	3.206	80.146	80.146
2	0.410	10.253	90.399			
3	0.294	7.359	97.759			
4	0.090	2.241	100.000			

Note: Extraction method: Principal component analysis.  
PCA for news market pluralism.

Total variance explained									
Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	10.017	66.782	66.782	10.017	66.782	66.782	6.295	41.969	41.969
2	1.875	12.501	79.282	1.875	12.501	79.282	5.242	34.949	76.919
3	1.064	7.094	86.376	1.064	7.094	86.376	1.419	9.458	86.376
4	0.910	6.068	92.444						
5	0.366	2.439	94.883						
6	0.283	1.889	96.772						
7	0.225	1.502	98.274						
8	0.127	0.847	99.121						
9	0.062	0.414	99.535						
10	0.035	0.234	99.769						
11	0.024	0.163	99.931						
12	0.005	0.034	99.965						
13	0.003	0.021	99.986						
14	0.002	0.010	99.996						
15	0.001	0.004	100.000						

Note: Extraction method: Principal component analysis.  
PCA for supply side.

Total variance explained									
Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.653	45.668	45.668	3.653	45.668	45.668	3.620	45.253	45.253
2	1.701	21.264	66.931	1.701	21.264	66.931	1.706	21.329	66.581
3	1.143	14.285	81.216	1.143	14.285	81.216	1.171	14.635	81.216
4	0.924	11.547	92.763						
5	0.377	4.713	97.476						
6	0.173	2.166	99.642						
7	0.028	0.353	99.996						
8	0.000	0.004	100.000						

Note: Extraction method: Principal component analysis.  
PCA for demand side.

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