WORKING paper

BANQUE DE FRANCE
EUROSYSTÈME

Europe in the Headlines: What Two Decades of French News Reveal about EU Sentiment[1]

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ABSTRACT

Using a large language model, we build a unique 400,000 corpus of articles related to the European Union (EU) published between 2005 and 2023 in more than 100 French local and national newspapers. Drawing on this dataset, we show that the interest of French newspapers in European issues has remained stable since 2005 and is primarily driven by the European elections every 5 years. An analysis of polarity and topics covered reveals that the local press pays greater attention to tangible EU initiatives—such as cultural exchange programs—which are generally portrayed in a positive light. Finally, we show that French media sentiment towards the European Union deteriorated significantly following the financial and sovereign debt crises, mirroring the trend observed in Eurobarometer opinion surveys on EU sentiment. However, from 2013 onward, a divergence emerged since sentiment in the press gradually returns to pre-crisis levels while public image of the European Union in the opinion remains below these levels. Focusing on the Euro area, we do not observe such a divergence.

Keywords: Sentiment Indicator, European Sentiment, Press Text Mining.

JEL classification: C55, F59

NON-TECHNICAL SUMMARY

The image of the European Union (EU) in public opinion remains a difficult topic to gauge, notably due to the specificity of the European construction with different interactions between local, national and EU levels. Yet understanding citizens' sentiment toward European affairs is crucial, especially as citizen involvement in policymaking is regarded as essential. The European Commission set up in the 1970s a unique collection of opinion surveys, the Eurobarometer, to help assessing the opinion of the Europeans. This source has remained largely unchallenged and is therefore the main dataset used in most of the literature on European sentiment. Nonetheless, the Eurobarometer is not without limitations, notably concerning sampling issues in certain countries and methodological challenges linked to the cross-national intelligibility of its questions across the 27 Member States.

This article precisely aims at providing another source of understanding of the sentiment toward the European affairs in France by drawing on information from the French press. Although the written press is neither fully representative of citizens' opinions nor as immediate as social media, it remains an important factor in shaping public opinion. As such, it provides a valuable complement to opinion surveys for understanding public sentiment.

Using a large language model (LLM), we built a new dataset covering around 400,00 articles related to the European Union published in France between 2005 and 2023 from more than 100 local and national newspapers as well as magazines. Compared to previous studies (see, for instance, Bortoli et al., 2018), our contribution is twofold. First, we enhance the methodology by going beyond traditional dictionary-based approaches and leveraging large language models (LLMs) to improve classification performance—both in accurately identifying EU-related issues and in assessing article tone. Second, our dataset offers substantially broader coverage than most of the existing literature, which typically focuses on only one or two newspapers (see, for example, Papadia et al., 2019).

Our database helps to better understand the relation of French citizens to the European Union. The salience of EU affairs remained relatively stable over the period, around 0.7% of published articles. Our results further show that between 2005 and 2013, French media sentiment toward the EU closely aligned with Eurobarometer surveys. After 2013, however, the two diverged: the media's portrayal became steadily more positive, eventually surpassing pre-financial-crisis levels, while Eurobarometer results indicated that public opinion remained stable and less favourable. In addition, the findings highlight that public support for the EU is shaped not only by broad political debates but also by tangible, local initiatives such as school cooperation — areas often underrepresented in national media coverage. In the case of the euro area specifically, we find a closer alignment with Eurobarometer surveys. Although the frequency of coverage is considerably lower, both media sentiment and public opinion show a strong rebound after 2013.

By combining a vast new media dataset with modern AI language analysis, this paper demonstrates how machine learning can uncover richer and sometimes different narratives about public attitudes than those captured by traditional surveys alone. In particular, these results illustrate the multifaceted relationship between French citizens and the European Union as reflected through the press.

Comparing the Eurobarometer and our EU newspaper sentiment index
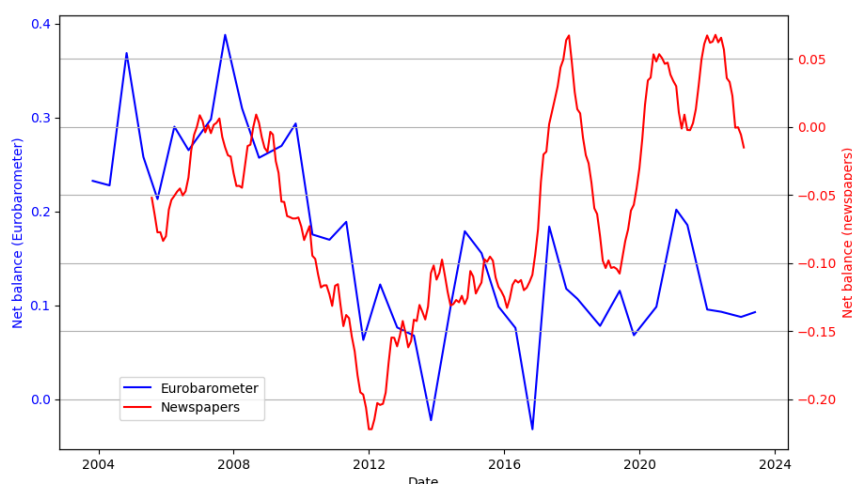
Sources: Factiva, *Le Monde* and Eurobarometer, authors' computations.
Note: The blue curve (lhs) represents French citizens' perception of the EU as measured by the Eurobarometer (net balance of positive and negative opinions), while the red curve (right-hand side) shows our sentiment index computed from the French written press.

L'Europe à la une : ce que deux décennies de journaux français révèlent sur le sentiment européen

RÉSUMÉ

À l'aide d'un modèle de langage de grande taille (LLM), nous construisons un corpus unique de 400 000 articles relatifs à l'Union européenne (UE) issus de plus de 100 journaux français, locaux et nationaux, publiés entre 2005 et 2023. À partir de ce corpus, nous montrons que l'intérêt des journaux pour les questions européennes est resté stable depuis 2005 et est principalement stimulé par les élections européennes tous les cinq ans. L'analyse de la polarité et des sujets traités révèle que la presse locale s'intéresse davantage aux initiatives concrètes de l'UE—comme les programmes d'échanges culturels—qui sont généralement présentées de manière positive. Enfin, nous montrons que le sentiment des médias français à l'égard de l'Union européenne s'est considérablement détérioré à la suite de la crise financière et de la crise de la dette souveraine, reflétant la tendance observée dans les enquêtes d'opinion Eurobaromètre sur le sentiment vis-à-vis de l'UE. Cependant, à partir de 2013, une divergence apparaît : le sentiment dans la presse retrouve progressivement les niveaux d'avant-crise, tandis que l'image de l'Union européenne dans l'opinion publique reste en deçà de ces niveaux. En nous concentrant sur la zone euro, nous n'observons pas une telle divergence.

Mots-clés : indicateur de sentiment, sentiment européen, analyse de texte de presse.

1 Introduction

Defining the "European public opinion" remains a very hard challenge. The 2005 referenda on European treaties in France and the Netherlands bear the memory of a disjunction between supposed public opinion on European affairs and results in votes, raising the complexity of establishing a common understanding of what EU citizens think. Nonetheless, the inclusion of citizens in European Union (EU) policy shaping is nowadays considered as an essential element of transparency, accountability and finally acceptance of EU policies. The understanding of citizens' sentiment towards EU affairs is therefore of utmost importance. The European Commission's set of surveys covering all Member States, the Eurobarometer, is a unique source of information on this matter. This instrument, which as been in existence for more than fifty years, constitutes the indispensable path to any form of assessment of EU citizens' sentiment and opinion. However, the Eurobarometer remains quite unchallenged, while media also play an essential role in framing public opinion, in addition to what surveys contribute. This article precisely aims at providing another source of understanding of the sentiment towards European affairs in France. More specifically, we investigate three main research questions. What is the place of the European Union in the French written press? In which terms is the European question framed? Finally, can this analysis of the press shed light on the French public's relationship with the European Union?

Our contribution is threefold. First, we gather more than 400,000 articles related to the European Union published in France over the 2005-2023 period. Our new dataset covers more than 100 newspapers and is much larger than previous analyses. As compared to Papadia et al. (2019c) for instance, who only rely on *Le Monde* to estimate French opinion, our dataset comprises all national daily newspapers, a large part of daily regional press and numerous magazines.

Second, we make a methodological contribution as we use a large language model (LLM) for newspapers textual analysis. For instance, while Bortoli et al. (2018) relied on a dictionary-based approach for sentiment analysis, we leverage the power of a LLM (Mistral 8x7B) to increase the performance of our classification.

Third, we contribute to a better understanding of French citizens' relation to the European Union. We show that French media convey an EU sentiment consistent with Eurobarometer results between 2005 and 2013, but that opinions subsequently diverge. While sentiment in the press gradually recovers and eventually exceeds its pre-crisis level, public image of the European

Union as measured by the Eurobarometer remains broadly stable and below its pre-crisis level. Interestingly, when focusing on the Euro area, we do not find such a divergence. In addition, we show that local involvement is also crucial for the European Union: EU adherence is also made of concrete actions like school cooperation, which are often under-assessed. We illustrate a multifaceted relation to the European Union delivered through the press, which reflects the complex but numerous nexus which French citizens have built with Europe.

This paper is organised as follows: Section 2 briefly examines the literature on how the European public sphere is shaped and analysed. Section 3 introduces the dataset, section 4 presents the results for the EU and section 5 for the Euro area. Section 6 finally concludes.

2 Studying European public opinion

2.1 Assessing citizens' opinion: a case for the European Union

Assessing citizens' opinion has become an integral part of public policy development among advanced economies. The willingness to reach more closely citizens and to embark on a more bottom-up approach has created a strong interest in citizen representations and in instruments for measuring their opinion. Ensuring the support of citizens for government and decision-making bodies is no longer only achieved through elections - i.e. the traditional way of expressing opinion in representative democracies (see Rosanvallon (2000)) - but also through a continuous assessment of the citizens' sentiment and opinion. This form of government is labelled as the third step of representative democracy or "opinion democracy" (coming after parliamentarianism and political parties democracy, see Manin (1995)). It is mainly based both on surveys and the media as vectors of "opinion".

In the case of the European Union, this tendency is nowadays totally integrated into the functioning of the three decision-making institutions, the European Commission, the European Parliament and the European Council. In contrast to the 1960s when European citizens were mostly excluded from European construction, the "Plan D for Democracy, Dialogue and Debate" (Commission (2005)) set the path for a new approach, notably after what was considered as a public opinion failure regarding the results of the Dutch and French referenda. The discussions on EU citizen deliberations have consistently broadened, using more often new channels, such as consultations of stakeholders (including citizens or associations representing some citizens' interests, see Commission (2001)). Such alternative tools also include the Eurobarometer collection

of surveys, which was created in the 1970s to precisely assess the citizens' opinion on different questions. The Eurobarometer has become so important in terms of questioning EU citizens that it is often regarded as representing the "EU opinion" itself.

2.2 The Eurobarometer: the unshakable voice of European opinion?

The first Eurobarometer survey was launched in 1973, under the auspices of Jacques-René Rabier, a senior EU official who has been deeply involved in developing communication about the Community's activities to members of the European Parliament (MEPs) and the general public since the 1960s. It has become the only and essential instrument for assessing the EU citizens' opinion. "*The idea of European public opinion is closely linked to the instrument, which is almost unanimously considered its "maker": the Eurobarometer.*" (Signorelli (2012), page 12.). Without any competitors due to the relatively high cost of running such surveys among all EU Member States, the Eurobarometer has become the incarnation of the "European public opinion" (Signorelli (2012)). The Eurobarometer has many advantages: comparability over time (since 1989 for long time series) and space (with the same sampling method and same questions for all EU Member States), transparency to the public (all data are available) and unicity among other large surveys (300,000 people surveyed in 150 public reports, see Signorelli (2012)). Due to its specific position, the Eurobarometer is credited being in itself a vector of the EU integration process (Melich (1998)).

As a consequence, the bulk of the literature on EU citizens opinion or sentiment relies on the Eurobarometer. Ronald Inglehart and Karlheinz Reif's edited book *Eurobarometer. The Dynamics of European Public Opinion Essays in Honour of Jacques-René Rabier* embodies this field of political sciences research on European opinion based on Eurobarometer data (Ingelhart and Reif (1991)). More recently, Teperoglou and Belchior (2024) used the Eurobarometer's results to describe the shift from pro-European to eurosceptic attitudes after the Great Financial Crisis in the "Old Southern South" of Europe. For his part, Kang (2025)'s analysis of EU citizen's relation to globalisation is based on Eurobarometer long-time series.

The Eurobarometer is nonetheless not without flaws. Main criticisms are twofold: they concern the underlying methodology and the instrumentalisation of the surveys. First, criticisms on the Eurobarometer come from classical arguments of political sociology. Based on the initial comment of Pierre Bourdieu (Bourdieu (1973)), the argument denies the possibility of identifying a common opinion, which would be an artefact, due both to the non-universally understood ques-

tion by interviewed people and to the non equality of answers. This criticism may particularly be true for the Eurobarometer, where the same questions can give rise to different interpretations across EU Member States. Aldrin and de Lassalle (2011) have for instance emphasised the issue of "intelligibility" of Eurobarometer questions. In consequence, the aggregation of results may lose any form of meaning. Second, because the Eurobarometer emanates from the European Commission, this may lead to potential instrumentalisation. Aldrin (2010) demonstrates that, from the 1990s, "*The Eurobarometer tool, which up to that point had only been an experiment developed and debated by academics, became a factor in political exchanges and even a policy instrument* (Aldrin (2010), p. 13). Notably thanks to *ad hoc* questions, added over time, the Eurobarometer has also become an instrument for assessing the leverage for European Commission policy proposals. Despite the qualities of the Eurobarometer, the potential instrumentalisation by the Commission may jeopardize its informational value (Nissen (2014)).

2.3   The advantages of written media information

Against this backdrop, written media can constitute a complementary indication of EU sentiment. First, the press is different from, but supplements, opinion polls, and is an indicator of public opinion. Mercier (2012) demonstrates that media and surveys are interconnected, the media often using forms of polls regarding their audience. He also shows that the media play their own part in the agenda-setting and framing of opinion.

Second, media play a significant role in ensuring EU citizens' confidence in the European Union. Brossius et al. (2012) for instance show how media information, in particular visibility and tonality, impact citizens' confidence in the European Union. For their part, Vliegenthart and Walgrave (2008) demonstrate the role that media play in framing news in terms of benefits or conflict and to what extent this affects public opinion and support for the European project. Based on three business media (*Les Echos*, *Handelsblatt* and *Il Sole*) and using Latent-Dirichlet Allocation (LDA) techniques, Mourlon-Druol et al. (2022) also show that media help to frame the national and European debate on EU reforms and to overcome strict national interests.

However, press information is by construction not fully representative. Written media target specific audiences depending on their strategies, and not all citizens. The press cannot be directly identified to global public opinion. In addition, the written press also shows a strong decrease in use and audience. Written press is in particular increasingly outpaced by social media. Standard Eurobarometer surveys show that the use of online social networks as a vector of information on

the European affairs has largely grew over the recent years. From 1% in 2014 as a first mean of information, it reached 11% in 2024, whereas written press went from 9% in 2014 to 6% in 2024, with crossing dynamics since 2022 (see Figure 42 in Appendix K). Yet, Castro et al. (2021) show that many citizens are users of different types of media support (TV, paper and online press, social media...), with different levels of associated political knowledge or trust in traditional news media (Hameleers et al., 2022). This brings another layer of complexity to any assessment of citizens' sentiment through press.[1]

Nevertheless, the 2023 release of the Standard Eurobarometer still indicates that 43% of French people still regularly read the written press. Although it is declining, the press in France therefore remains a significant indicator of a large share of citizens, even in different ways. In particular, social media also refer to written press, though the quantification of the re-use of articles by social media remains difficult. To put it in a nutshell, written press still show some analytical interest. Daminov (2024) demonstrates for instance thanks to Eurobarometer surveys that the written press is a vector of confidence in institutions, as opposed to social media.

2.4 Machine learning techniques to uncover EU citizens sentiment

Recent but significant improvements in machine learning techniques, particularly in natural language processing (NLP), have led to the emergence of a literature seeking to propose alternative data sources based on automated textual content analysis. This is particularly evident in the field of economics, where researchers have started to use press articles or tweets to forecast inflation or GDP to complement existing classical indicators, such as business and consumer surveys (Bricongne et al. (2023) and Bortoli et al. (2018) for example).

This growing interest in textual analysis has also extended to the study of European affairs. For instance, Guadarrama Rios et al. (2025) combine several NLP techniques to predict MEPs' voting behaviour. The possibility of using newspapers as an alternative data source to surveys has also been explored in a number of articles. These include the work of Müller et al. (2018) on four newspapers of four different Member States (Italy, Germany, France and Spain) to analyse the different interpretations of the euro crisis by EU citizens. Papadia et al. (2019c), for their part,

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[1]Some studies benefit from information from social media (for instance Bricongne et al. (2023) use information from Twitter). In our case however, the use of social media does not bring enough structural stability since 2005, given that social media were not used at the beginning of our sample, but also due to the instability of use of some social network over the period.

demonstrate an increasing trend of EU concern based on the French newspaper *Le Monde* from 1944. This tendency is also confirmed for Italy (with *La Stampa*, Papadia et al. (2019b)) and Germany (with *Der Spiegel* and *Die Zeit*, Papadia et al. (2019a)). Papadia et al. (2021) finally conclude that the increased frequency of European news in French, Spanish and Germany newspapers signals more attention to the EU, while being accompanied by a less favourable attitude. The main limitation of this still relatively scarce literature is the small number of newspapers used to cover each country (generally one or two).

In addition, one main challenge, which is common to the all the NLP studies mentioned above, is the setting up of a clearest as possible definition of what is the "European Union". As discussed, the European construction is a political object which is hard to define, not only in institutional terms, but also for the citizens. NLP studies mainly used a list of keywords referring to the object, such as "European Union", "Brussels", "European Commission", etc... This first step is then usually refined by different NLP techniques to approach a global definition of "European Union affairs", encompassing the EU institutions at large and their different effects on citizens, either through the political debate on EU choices or the effective policies set up in the European Union Member States. This is consequently a large approach of citizens' relation to the European Union, able to include the spectrum of different possible representations towards the EU (Boomgaarden et al., 2011). This however excludes bilateral relations between European Member States. Consequently, the technical choices behind the operational definition of the European Union may have a large impact on the results.

3 A corpus of French press articles on the European Union

3.1 Media database

To analyse the treatment of EU affairs by the French press, we extract articles from newspapers and magazines available on Factiva. Factiva is a Dow Jones API that aggregates multimedia content from more than 8,500 sources both from local and national newspapers in digital or paper format. For content published in France, more than 60 million articles since 1994 are available from more than 150 sources.

In order to extract the press articles related to the European Union, we limit our extraction to articles published in France between 1 January 1994 and 30 June 2023 that contain at least one of the selected European Union related keywords (for instance "Union européenne", "Bruxelles",

"BCE", etc... see Appendix A for the full list of the chosen keywords). Our extraction includes articles from five national newspapers, most of the regional newspapers, some magazines, as well as the releases from the French press agency *Agence France Presse (AFP)*.

However, the Factiva dataset does not include articles from *Le Monde*. As this is the national most widely read newspaper, we manually build an *ad hoc* web scraper to retrieve them. To do so, we collect all the articles returned by a similar keyword search in the digital archives (see Appendix A for more details). This will allow us to have a full coverage of all daily national newspapers published in France.[2]

Following these two steps, our dataset finally consists of 1,027,547 articles published in French newspapers containing EU related keywords (939,425 from Factiva and 88,122 from *Le Monde*). For each article, we retrieve both the title, the snippet, the full body of the article and the date of publication.

Based on this methodological choice and following recent literature, our analysis focuses exclusively on the attitudes of French citizens towards EU affairs in a broad sense. In other words, we aim to capture public sentiment regarding the overall flow of news and information related to the European Union—whether concerning the institutions themselves, EU public policies, European elections, and so forth.[3]

3.2 Removing false positives

This initial database must, however, be corrected to remove potential false positives and ensure the relevance of the articles selected so far. Indeed, the keyword search indeed results in the inclusion of many articles without a real link to the European Union. This applies in particular to papers mentioning the EU as a geographical area (for example, the number of car sales in the EU) or articles reporting the results of sports (the football UEFA Champions League for example).

To further select articles dedicated to the EU and given the vast amount of available data, we choose to implement a LLM (large language model) to classify whether our articles are related or not to the European Union. The use of LLM to tag data has been expanding in research and

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[2]The daily national newspapers in France are *Le Monde*, *Le Figaro*, *Les Echos*, *Libération*, *La Croix* and *L'Humanité*. We do not include *L'Equipe* and *Le Parisien* since they focus on sports and the Parisian region, respectively.

[3]Bilateral European relations, such as matters pertaining solely to Franco-German relations, are excluded from the scope of this study.

has shown to be promising (see Kwon et al. (2024) as an example).

Using the *Mistral 8x7B* model, we ask the following question: *Your role: to indicate whether the main subject of the article is the European Union. You can only answer with 'yes' or 'no'.*[4] We chose to use the *Mistral 8x7B* given its abity to perform on various tasks including classification (see the MT benchmark on French prompts).[5]

To check for the validity of our methodology, we manually tagged 400 randomly sampled articles. On this validation dataset, the LLM achieves a 92.5% accuracy (F1-score: 0.91).[6] Moreover, the model's performance appears stable over the entire period, with an accuracy of 92.2% on articles from 1994 to 2014 (representing approximately half of the database in terms of article volume) and 92.8% on those published after 2015. This suggests that the model does not demonstrate significantly greater effectiveness on recent articles and appears unaffected by potential shifts in the definition or conceptualization of the EU.

We performed several further robustness checks. First, we evaluated several prompt formulations on our validation set.[7] While they yield comparable results, their accuracy remains however slightly lower. Second, we also trained a CamemBERT model on another 1,000 manually tagged articles.[8] It only achieves a 85.0% accuracy (F1-score: 0.83). Lastly, we calculated that, on average, articles classified as "EU" by the LLM contain six of our EU-related keywords, compared to less than two for the excluded articles.[9] This higher keyword density supports the hypothesis that our algorithm effectively selects articles whose main topic is the European Union, rather than those that merely mention it.

We finally select only 422,547 articles, representing 41.1% of our initial sample.

3.3 Some first descriptive statistics

The number of articles tends to increase over time, which is due to the fact that the Factiva database has been enriched with newspapers over the years. In 1994, only one source is available

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[4]In French: Ton rôle : indiquer si le principal sujet de l'article est l'Union européenne. Tu ne peux répondre autrement que par 'oui' ou 'non'.

[5]The multi-turn (MT) benchmark measures the ability of large language models (LLMs) to engage in coherent, informative, and engaging conversations.

[6]With a precision of 0.89 and a recall of 0.92.

[7]We tested *Your role: to indicate whether the main subject of the article is the EU. You can only answer with 'yes' or 'no'.* and *Your role: to determine whether the European Union represents the central theme of the article. You can only answer with 'yes' or 'no'.*

[8]CamemBERT is the French version of BERT Google model.

[9]See Figure 29 in Appendix for the density of EU-related keywords given the LLM-classification.

(releases from the press agency dedicated to the European Union, *Agence Europe*). As a result, we choose to limit our analysis to articles published after 1 January 2005 in order to have a more stable and consistent database (we drop 43,805 articles published before this date, representing 10.4% of our database). The maximum number of articles is reached on 27 May 2019, with more than 1,400 articles published on this day (Figure 1). This stems from the 2019 European Parliament elections held the day before, many articles commenting the results. Conversely, 6% of the days in our sample contain fewer than 10 recorded observations.

Figure 1: Number of articles in our dataset over time
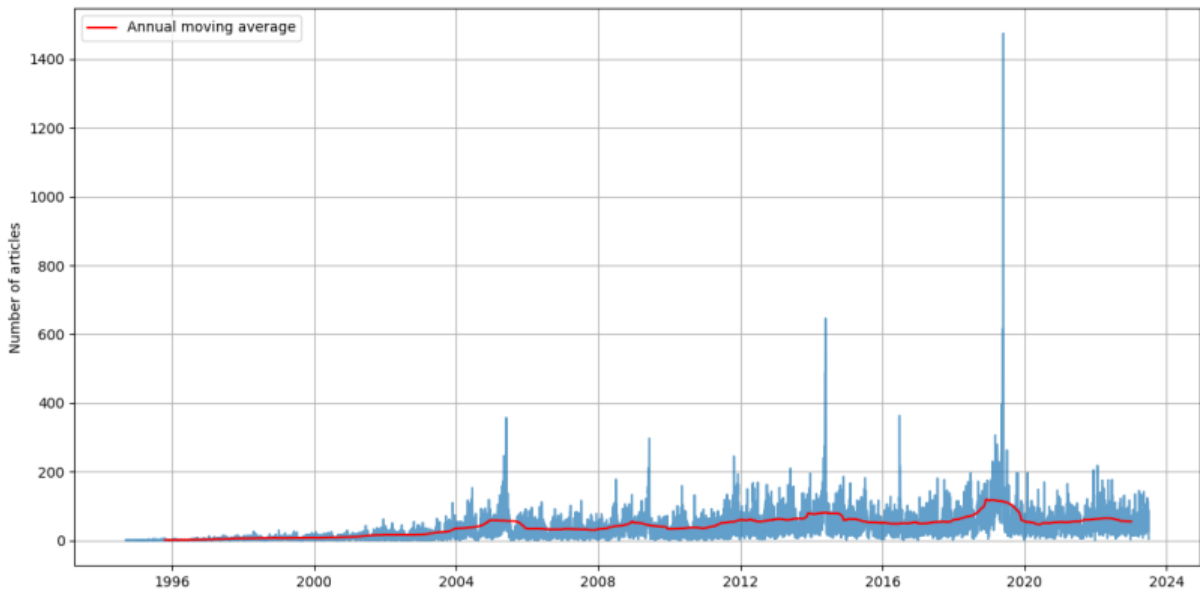
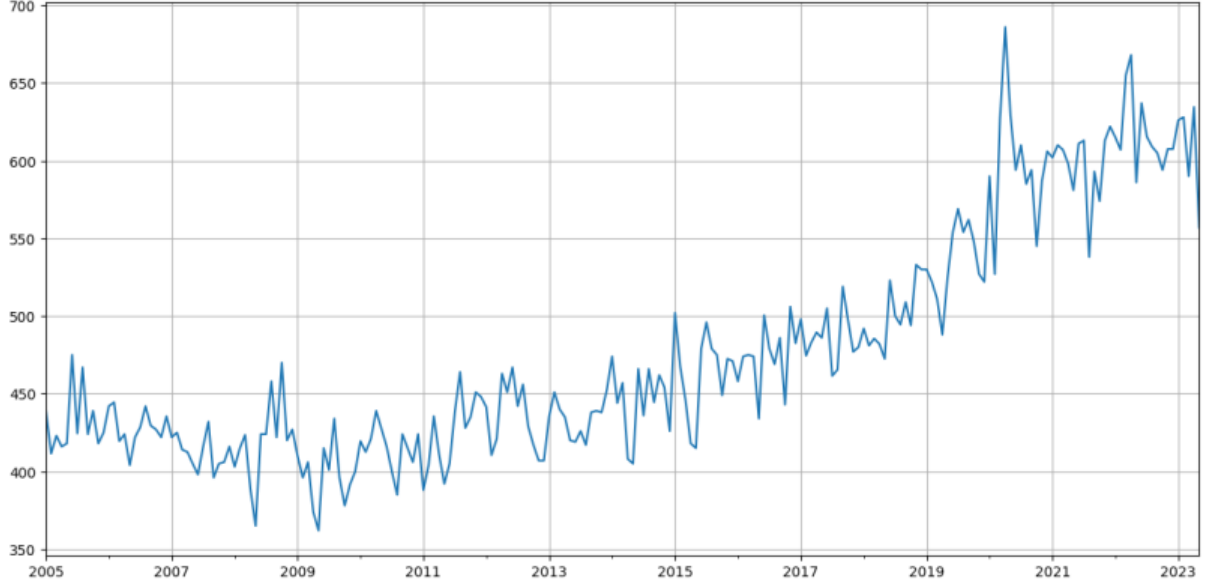Sources: Factiva, *Le Monde*, authors' computations.

Our database includes 126 sources, equally halved between local and national press.[10] This large set of sources makes it possible to cover all French regions. The *Agence France Presse (AFP)* is the main individual source with more than 88,000 articles (22.8% of the full sample).[11] Daily national newspapers (for which we have a full coverage) represent more than 113,000 articles (30.0% of the sample) and constitute the main part of our dataset. After cleaning for possible empty articles, the median length of our articles is 475 words (mean: 574) and less than 2% of articles have less than 100 words. The median number of words has gradually increased since 2011 (Figure 2). This can partially be linked to the decrease in the share of press releases in our

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[10]The list of journals used is provided in Appendix B

[11]Given the large share and the special nature of a news agency as a newspaper, we conduct separate analyses dropping AFP press releases. We also control for possible duplicates (same article published twice). Such exclusions do not change qualitatively or quantitatively our conclusions. More details in Appendix H.

dataset (which are generally shorter) due to the enrichment over time of our database.

**Figure 2:** Monthly median number of words per article

4   Results

4.1   EU or not EU? EU salience in French newspapers

Following our selection of EU articles, we can compute the monthly frequency of European topics in the French press by dividing the number of articles related to the European Union by the total number of articles published.[12] Our analyses state that French newspapers devote a relatively small share of their publications to European affairs. Among the 56 million articles published since 2005, less than 0.7% of them were dedicated to European affairs.

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[12]The total numbers of articles published is retrieved from the Factiva API and directly from the *Le Monde* archives website.

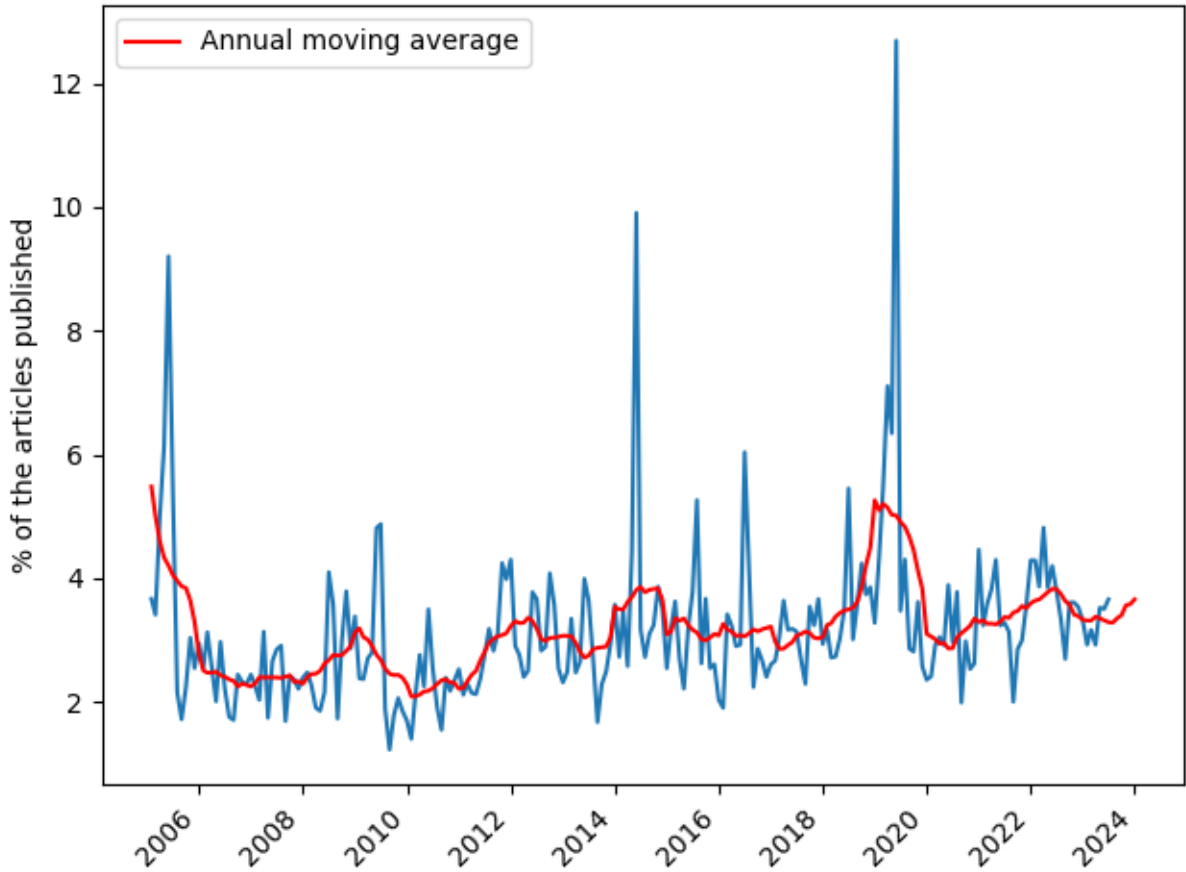**Figure 3:** Monthly share of EU articles in the French press
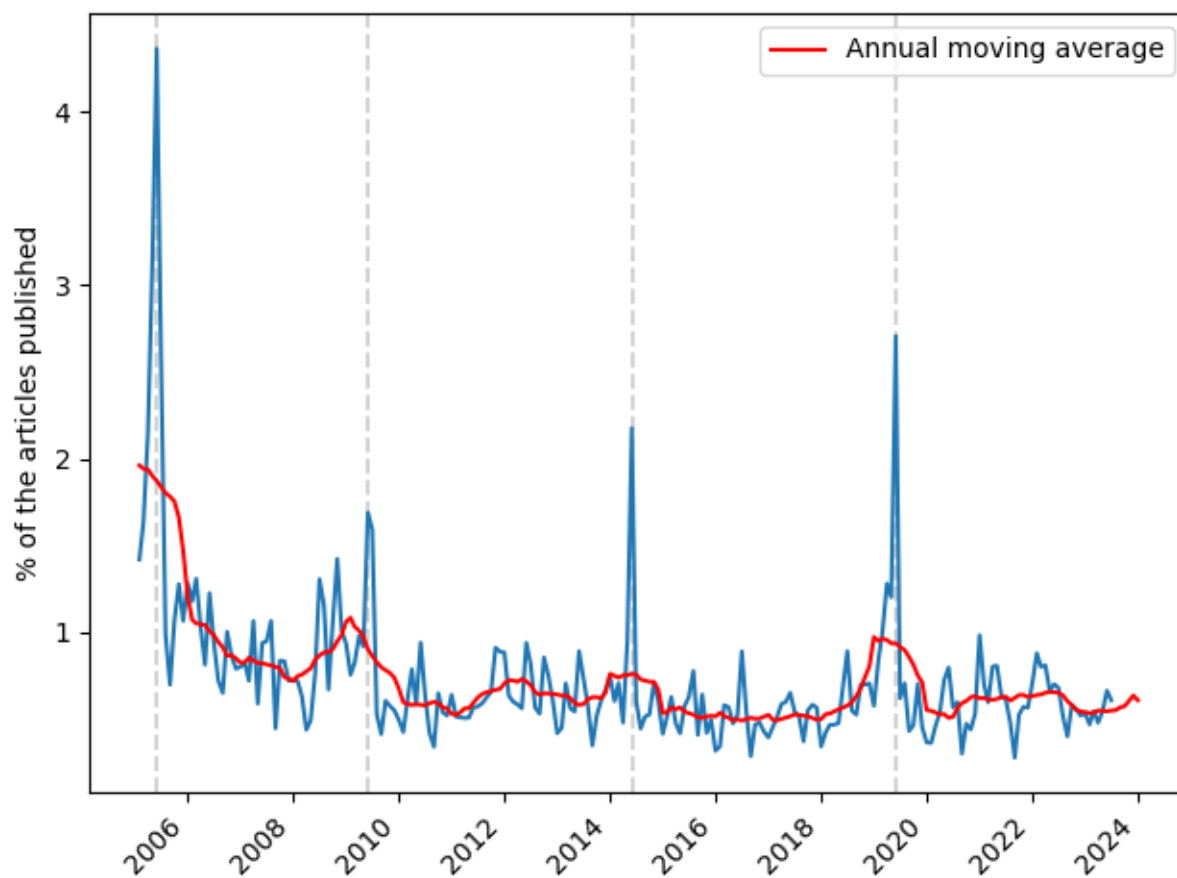
Over the period, the share of EU related topics has been globally stable, below 1% (Figure 3). The main identified peaks can be directly linked to the 2005 European Constitution referendum and to the different European elections, which have an amplifying effect on news coverage of the European Union. This greater media coverage of the European elections echoes what is observed by Broc and Verdier (2019) for TV news.

Moreover, as in Broc and Verdier (2019), we observe a growing interest in these elections. Such increased media attention could help explain the rise in voter turnout observed since 2009. However, such increased interest remains quite short-lived: we do not find any persistent effect in news coverage after the elections. Other major European events (such as the 2015 refugee crisis or the 2020 NGEU programme) failed to trigger any major interest.

The picture is similar when focusing on daily national newspapers for which we have full coverage over the period (Figure 4). As expected, given their focus on national and international issues,

they dedicate a higher share of their articles to the European Union (around 3.2% on average over the period). However, we do not find evidence of increased salience over time. Moreover, we observe the same peaks related to the 2005 referendum and to European elections.

Figure 4: Monthly share of EU articles in national daily newspapers

In a subsequent analysis on *TF1* (the main TV broadcaster in France), we find comparable results: the number of EU topics in TV news on this channel was broadly stable since 2005.[13] Our results are also in line with those of Broc and Verdier (2019). They show that national French television channels dedicate little of their time to EU affairs (around 2.7% in 2018).

When focusing on each individual newspapers, we find a rather large heterogeneity, with some editorial teams more inclined to cover European affairs than others. As expected, European-oriented sources (such as *Euractiv*) dedicate a larger share of their articles to European Union

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[13]More details in Appendix C.

(57.9%), whereas such topics are much less discussed in local newspapers (0.2% in *L'Éveil de la Haute Loire* or 0.4% in *Nice-Matin* for instance).

As for national daily newspapers (Figure 5), we also find divergent dynamics. *Les Échos* and *Le Monde* tend to devote more articles to the European Union. The difference appears to grow over time, with the share of the latter reaching more than 5% in 2023, as compared to constant or declining shares for other newspapers.

Figure 5: Monthly share of EU articles per national daily newspapers
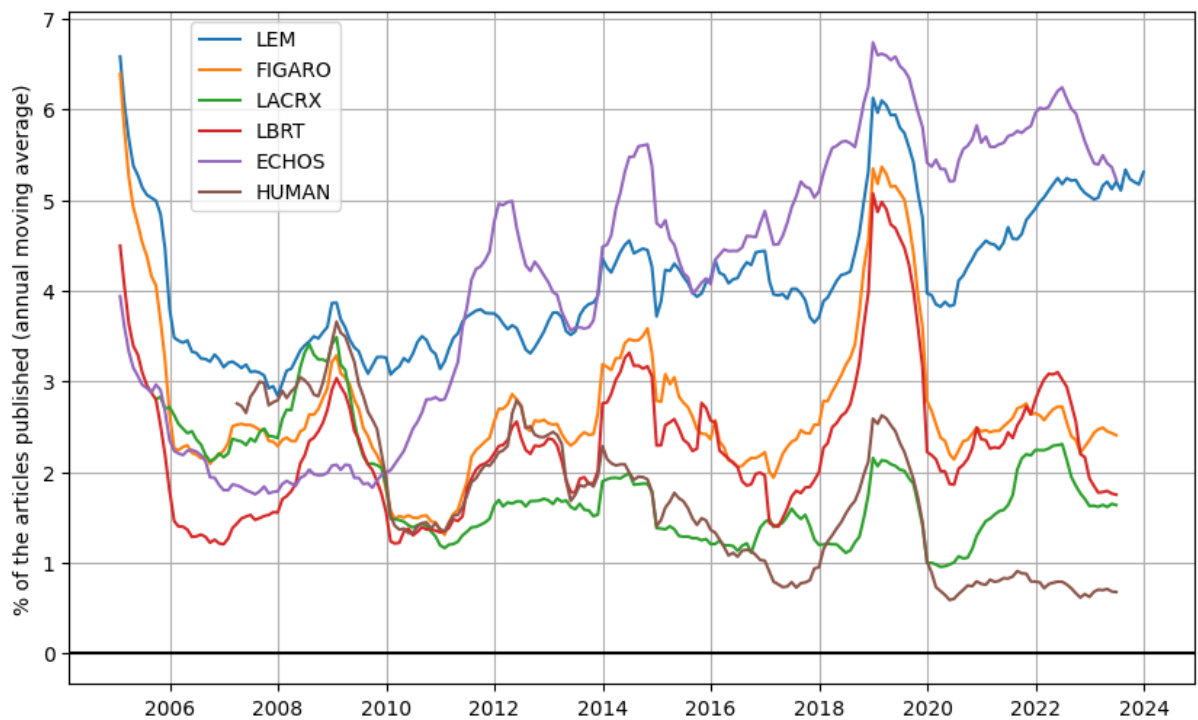
Sources: Factiva and *Le Monde*, authors' computations.

Note: *LEM* stands for *Le Monde*, *FIGARO* for *Le Figaro*, *LACRX* for *La Croix*, *LBRT* for *Libération*, *ECHOS* for *Les Échos*, *HUMAN* for *L'Humanité*.

Our estimated share of EU articles in *Le Monde* is relatively close to that found by Bergamini and Mourlon-Druol (2021), when they use a restricted field of subjects from their LDA to select EU articles. This underlines the advantage of our corpus, which is more complete than that of previous studies, since the dynamics of *Le Monde* does not appear to be representative of those of the French press as a whole.

4.2 What are we talking about? EU covered topics

4.2.1 Topic modeling

To assess topics covered in EU-related articles, we rely on topic modeling. This method aims at inferring latent topics from a corpus of texts. Text data are summarised through groups of words (called 'topics') and each document can then probabilistically be assigned to one (or several) of these groups.

Rather than relying on the standard Latent Dirichlet Allocation (LDA), we chose to implement the BERTopic algorithm from Grootendorst (2022). This unsupervised machine learning model combines BERT vector representations with a class-based TF-IDF to generate coherent themes. The use of embeddings enables us, in particular, to capture semantic similarity ("queen" and "king" for instance) and has proved to be efficient in uncovering latent topics in news headlines (see Babalola et al. (2024)). More specifically, texts are first embedded to create numerical representations of the documents. Following a reduction in the dimensionality, data are then clustered. Using a slightly modified version of the standard TF-IDF, latent topics are determined from these clusters. Finally, we can assign each article to the most likely topic.[14]

4.2.2 Topic interpretation

Thanks to this method, we obtain 69 topics covering each at least 500 articles.[15] The 10 most frequent topics account for half of the articles in our database (Figure 6).[16] The above-mentioned strong interest in European elections logically leads to the biggest topic being words related to politics. In second place, we find the topic of school and cultural exchanges for young people, with mention of the Erasmus programme in particular. This topic is first and foremost a local one, with some 70.4% of articles on this topic coming from local newspapers (although they only account for 24.5% of articles overall). This is also somehow the case for the third topic, dealing with agricultural affairs, which is also mainly a local one (35.0% of the articles published in the local press). We then find several topics linked to the crises recently experienced by the
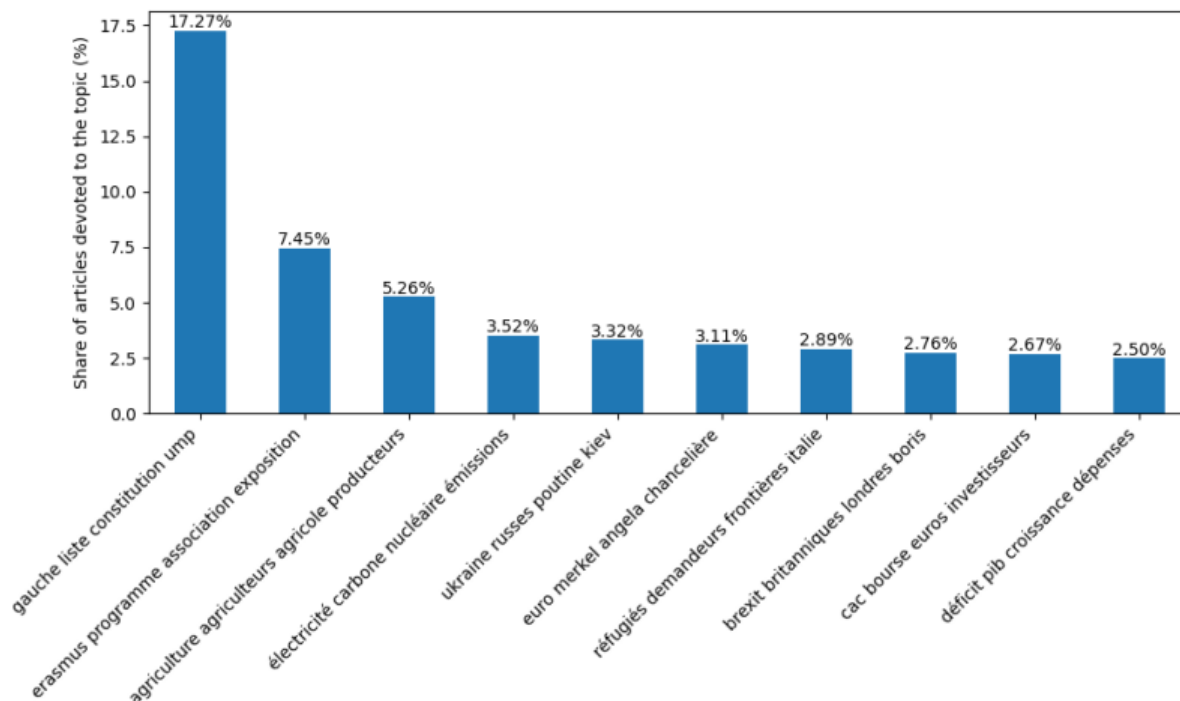
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[14]When creating topics, we require each of them to include at least 500 articles. The number of topics is then automatically chosen by the algorithm. More details on the specification of BERTopic used can be found in Appendix E.

[15]Given the extensive time span, we verify the consistency of the topics over the entire period using Dynamic Topic Modeling (DTM). See Appendix E for more details. We also test our model with a lower threshold (a minimum of 50 articles per topic), yielding 242 topics that largely overlap with the 69 topics previously identified. Results are available upon request.

[16]The complete list of topics and the translation of the keywords are provided in Appendix F.

European Union: the migrant crisis, the Euro area crisis, Brexit and the Ukraine-Russia war.

Figure 6: Top 10 topics mentioned in EU articles

Focusing on the top seven topics, Figure 7 shows their salience over time. As expected, the number of articles related to political parties closely followed the cycle of the European elections. The impact of the energy crisis is also clearly visible at the end of our sample around 2022 and after, as well as the refugees crisis at the end of 2015 and beginning of 2016. In contrast, the distribution of articles related to the topic of cultural exchanges for young people is more stable and less subject to peaks. There is a downward trend following the Covid-19 pandemic, which can be explained by the lower number of cultural exchanges that may have taken place during this period, due to various health restrictions in Europe.

Figure 7: Top 7 topics over time
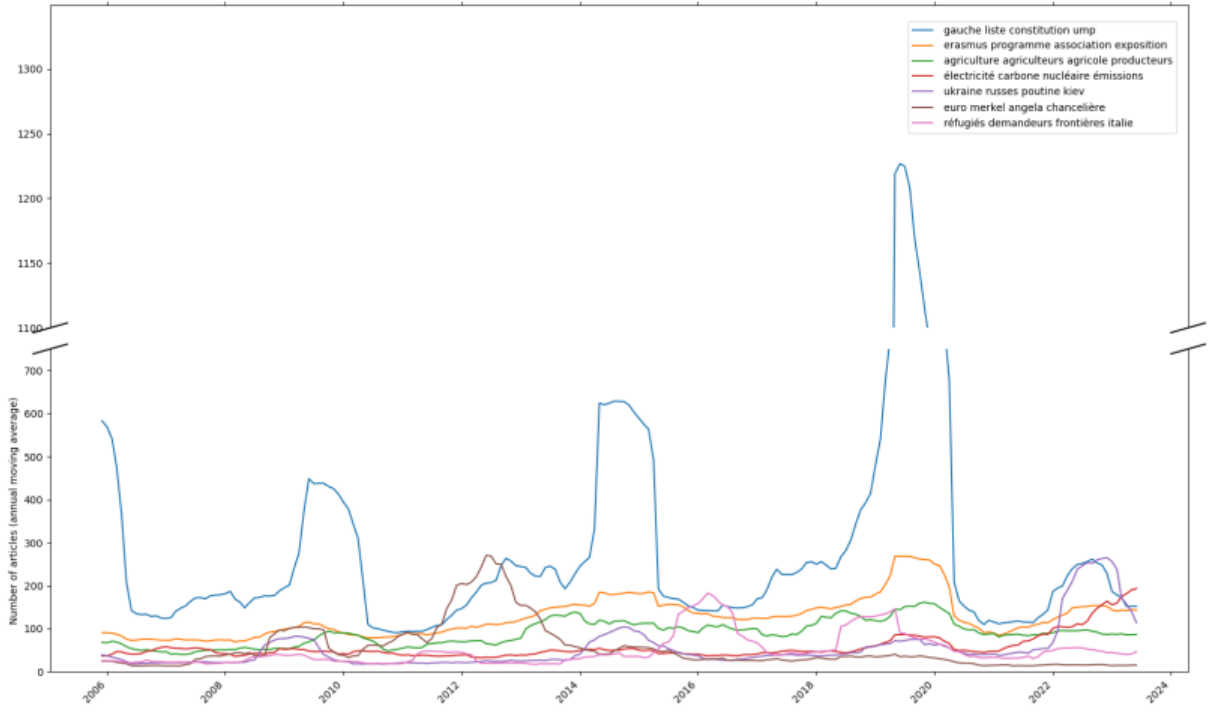
The breakdown between national and local newspapers (Table 1) shows that the latter devote more articles to everyday and concrete subjects. Beyond political issues, which seem to be of equal interest to all newspapers, many articles in local newspapers are related to cultural exchanges for young people, the organization of debates and conferences on the EU or the Common Agricultural Policy.[17] These findings echo those of Mendez et al. (2020), based on a sample of British and Spanish newspapers, which find that newspapers concentrate on practical policies aligned with local concerns. Conversely, daily national newspapers tend to focus on national and international issues and cover a broader range of subjects: the top 10 of the topics mentioned only accounts for 48.2% of articles published, compared with 63.3% for the local press.

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[17]A potentially surprising presence in the top 10 is a topic related to sports—more specifically, football. Manual inspection of the articles reveals that some indeed address sports through the lens of the European Union. For instance, one article reports on a legal challenge by FC Barcelona supporters before EU courts concerning Lionel Messi's transfer to PSG. However, the majority of these articles report on sports competitions and are therefore unrelated to EU affairs. Their inclusion is likely due to misclassification by the LLM. Such errors are to be expected, given that the model's recall is estimated at 0.92. It is worth noting, however, that the classification step significantly reduces the number of football-related articles: 2% of EU-related articles contains the character string "foot", compared to almost 6% across the entire corpus.

Table 1: Top 10 topics in local and national newspapers (in %)

(a) Local newspapers

erasmus programme association exposition	19.7
gauche liste constitution ump	19.3
agriculture agriculteurs agricole producteurs	6.9
débats thème consultations débats	2.7
championnat uefa football joueurs	2.7
réfugiés demandeurs frontières italie	2.6
ukraine russes poutine kiev	2.5
brexit britanniques londres boris	2.4
électricité carbonne nucléaire émissions	2.3
vaccin covid coronavirus doses	2.1

(b) National daily newspapers

gauche liste constitution ump	16.9
ukraine russes poutine kiev	4.1
agriculture agriculteurs agricole producteurs	3.8
électricité carbone nucléaire émissions	3.7
cac bourse euros investisseurs	3.7
breixt britanniques londres boris	3.5
réfugiés demandeurs frontières italie	3.4
euro merkel angela chancelière	3.3
grèce grec athènes tsipras	3.0
erasmus programme association exposition	2.8

Sources: Factiva and *Le Monde*, authors' computations.

4.2.3 EU personalities and institutions

As regards EU affairs, the question arises as to which politicians or institutions embody EU policy in the eyes of French people. To answer this question, we conduct a Named-Entity-Recognition (NER) analysis to automatically identify the personalities mentioned in the articles, using the French version of spaCy's NER model. Figure 8 shows the top 30 most cited personalities.

Figure 8: Top 30 most cited personalities
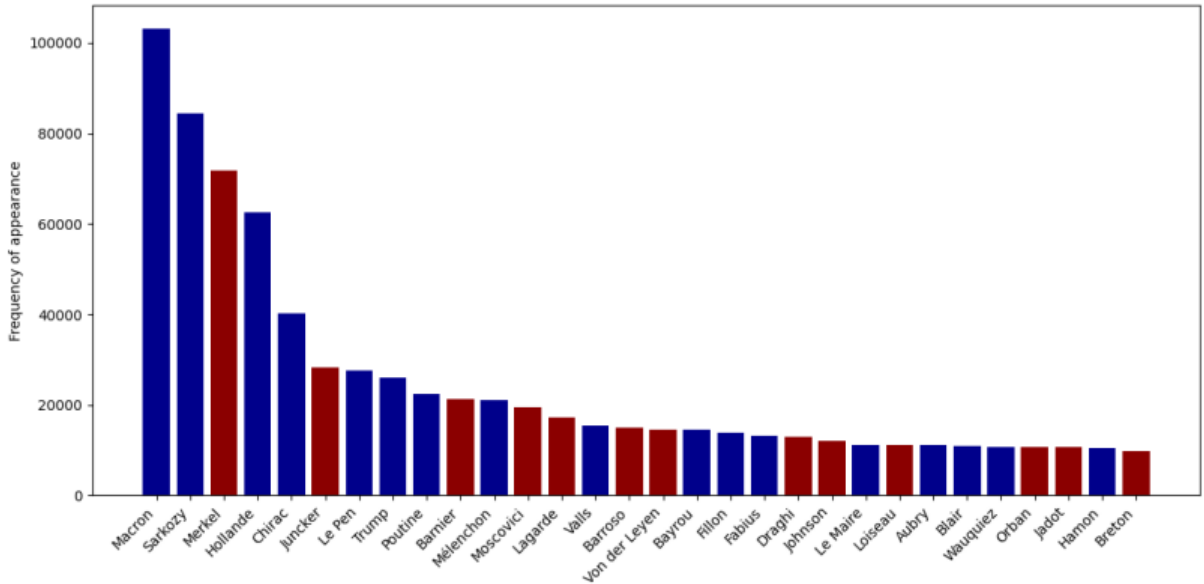
Sources: Factiva and *Le Monde*, authors' computations.

Note: European political figures (at least at some point in their carrer) are highlighted in red.

As in Broc and Verdier (2019), it underlines the primacy of national news and its actors in the

presentation of European news. Among the articles devoted to EU news, the four Presidents of the French Republic are among the most visible. However, it should also be borne in mind that national Heads of State and Government are also full European actors when sitting in the European Council or the Council of the European Union for the ministers. Many bilateral or multilateral meetings are also related to EU affairs. The former German Chancellor Angela Merkel is the only non-French personality among the top 5: her longevity and Germany's leading role in the European Union certainly help to explain this.

Even when it comes to politicians at the European level, articles focus primarily on French European Commissioners and MEPs. Only the Presidents of the European Commission and of the ECB regularly appear in the French media. The top 30 of the most cited personalities does not count any Council President, non-French Commissioner or MEPs.[18] We can assume that the lack of understanding of European political players' role and the language barrier are the main obstacles to the visibility of European Union decision-makers.

However, some progress has been made, particularly in the case of the Presidents of the European Commission. As shown in Figure 9, the appointments of Jean-Claude Juncker (Novembre 2014) and Ursula von der Leyen (December 2019) raised a great deal of interest, compared to the renewal of José Manuel Barroso. In addition, this interest has tended to persist throughout their terms of office. The President of the European Commission seems to have become part of the political landscape of French newspapers.[19]

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[18]Despite being relatively well-known former Commissioner for Competition Margrethe Vestager, is for example only mentioned around 5,000 times over the period.

[19]As a robustness check, we produce the same analysis only on daily national newspapers for which our sample is stable over the period. The results are qualitatively the same, showing an increased interest in the appointments of Jean-Claude Juncker and Ursula von der Leyen. See Figure 31 in Appendix.

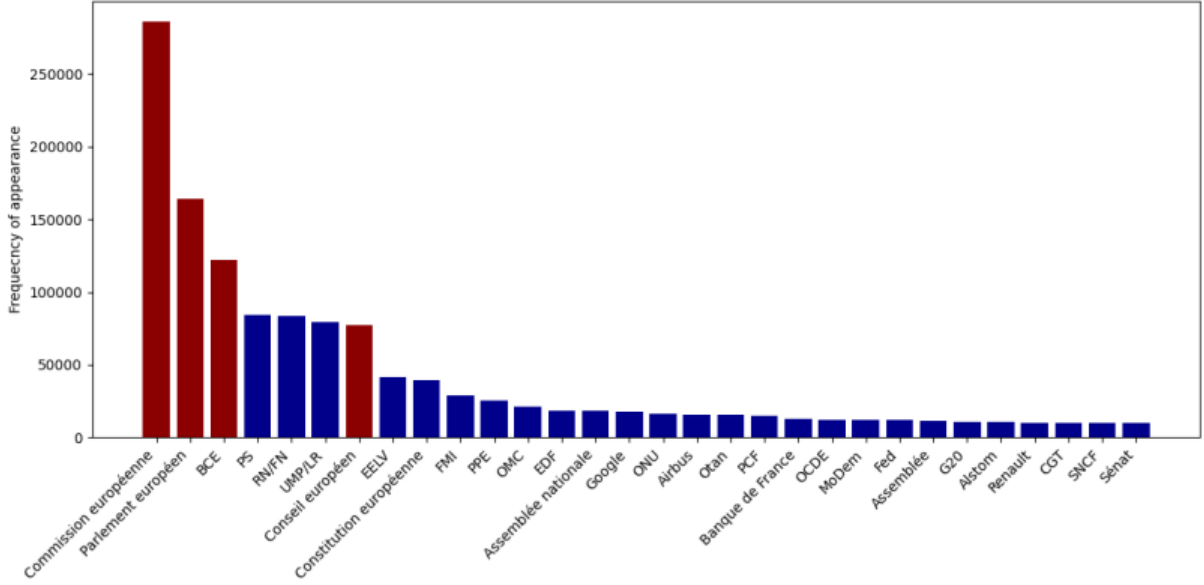**Figure 9:** Frequency of appearance of Presidents of the European Commission
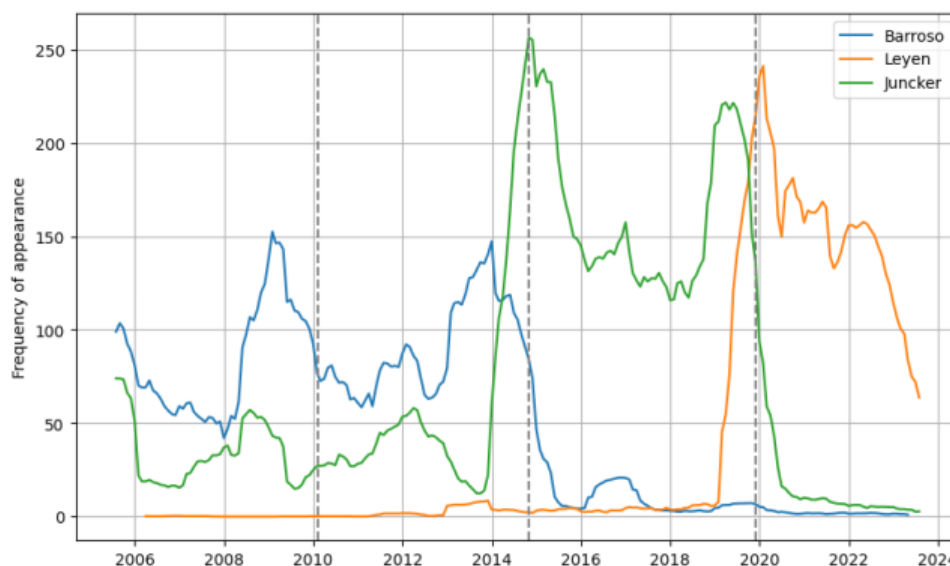
Note: The vertical bars represent the dates of appointment of the Presidents of the European Commission. Jean-Claude Juncker was mentioned several times prior to his appointment as President of the European Commission, given that he had participated in EU summit as Prime Minister of Luxembourg.

We also conduct a Named-Entity Recognition (NER) on organisations. Three of the four main institutions of the European Union (European Commission, European Parliament and ECB) are the most mentioned organisations: they are referred to respectively in around 30%, 20% and 9% of the articles related to the European Union. This contrasts with the results found by Broc and Verdier (2019), who noted the absence of European institutions in French TV news, in particular for European Parliament and the ECB. The interest raised by the European elections (see previous section) easily explains the number of times the European Parliament is mentioned in press articles. The strong presence of the ECB can be explained by the inclusion in our sample of economic newspapers (*Les Echos* accounts for example for 8% of the articles in our database, but 15% ECB's mention), the high profile of the financial and sovereign debt crises (40% of references are concentrated between 2011 and 2015) and the recurrent references following the Governing Council meetings setting euro area interest rates at regular intervals.

Figure 10: Top 30 most cited organisations

Note: The red bars represents the four main EU institutions (European Commission, Council, Parliament and ECB). We excluded the "European Union" as an organisation.

Finally, this top 30 includes the names of several companies that have been the subject of European Commission investigations on state aid (*Alstom* or *SNCF*) or competition issues (*EDF* or *Google*). We can see here the signs of the recurring debates in France on European industrial policy.

4.3   An opinion balance

Finally, we assess whether articles in the press express opinions about the European Union. This could help to improve our knowledge of French citizens' views of the European Union.

4.3.1   Methodology: how to label sentiments?

Assessing sentiment requires a database of polarised articles. This means that we have to label each article and determine whether it conveys a positive, neutral or negative feeling towards the European Union. Once again, we choose the LLM *Mistral 8x7B* to classify our articles into these three categories (positive, neutral, negative). We use the following prompt:[20]   *Your role:*

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[20]Our polarity classification is conducted at the article level, in particular for computational reasons given our large amount of data. We further discuss below (see section 4.3.2) the implications of this choice for our results.

to indicate the polarity of the article towards the European Union - you can only answer with 'positive', 'neutral' or 'negative'.[21]

On 400 random articles, the LLM achieves an accuracy of 83.3% (F1-score: 0.83). This result outperforms those reported by Rambaccussing and Kwiatkowski (2020) or Shapiro et al. (2022) in their polarisation of economic press articles using a Linear Support Vector Machine and a dictionnary approach, respectively. Performances across classes are relatively similar (Figure 11). In addition, most of the incorrect predictions correspond to articles classified as neutral although they were polarised. The model's performance appears relatively stable over the entire period, with an accuracy of 82.0% on articles from 1994 to 2014 (representing approximately half of the database in terms of article volume) and 85.4% on those published after 2015.

Figure 11: Confusion matrix for the LLM predictions
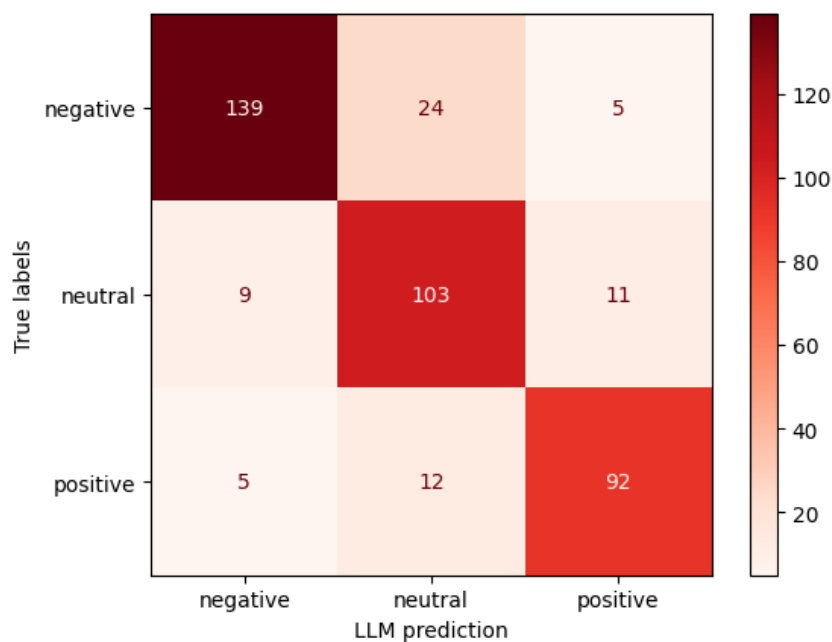
Sources: Factiva and *Le Monde*, authors' computations.

As a robustness check, a zero-shot classification based on CamemBERT is also tested.[22] On a validation dataset of 200 articles, it has a 41% accuracy, much lower than the LLM. Moreover, the

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[21]In French: Ton rôle : indiquer la polarité de l'article envers l'Union européenne. Tu ne peux répondre autrement que par "positif","neutre" ou "négatif". The prompt is designed to ensure that the LLM specifically returns the article's polarity towards the EU, rather than its overall tone. We also test a more general prompt, whose performance is inferior.

[22]A Camembert-base model is fine-tuned on the French part of XNLI dataset. See CamemBERT-base-XLNI for more details.

model clearly understates the share of neutral articles (less than 8% are classified as neutral).[23] Using the French version of the sentiment dictionary TextBlob, we finally demonstrate the overall consistency between the LLM and lexicon approaches: articles classified as positive by the LLM contain a higher proportion of positive words listed in the dictionary, while those classified as negative include a greater number of negative terms.[24]

From this polarity, we can build a simple monthly sentiment index $SentEU_t$ as the difference between the number of positive articles Pos_t and the number of negative articles Neg_t, divided by the total number of articles $Total_t$:[25]

$$SentEU_t = \frac{Pos_t - Neg_t}{Total_t}$$

This measure provides a score that lies between -1 and +1 by construction: -1 if all articles are negative, +1 if all are positive.

4.3.2 An EU sentiment index

When applied to the entire dataset, the LLM returns 30.0% of the articles labeled as positive, 33.6% as neutral and 36.4% as negative. Figure 12 reflects the evolution over time of the sentiment of French newspapers towards the European Union.

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[23]This method yields qualitatively similar results regarding the evolution over time of the press's opinion towards the EU.

[24]See Figure 33 in Appendix for the density of the dictionary polarity scores.

[25]Our index applies equal weights to each article, irrespective of the newspaper's circulation. We test the impact of this hypothesis using circulation data from the *Alliance pour les chiffres de la presse et des médias (ACPM)* on national daily newspapers. We also consider an alternative index calculated only over polarised articles. Both robustness checks yield similar results. See Appendix I for more details.

Figure 12: Monthly French newspapers' EU sentiment index
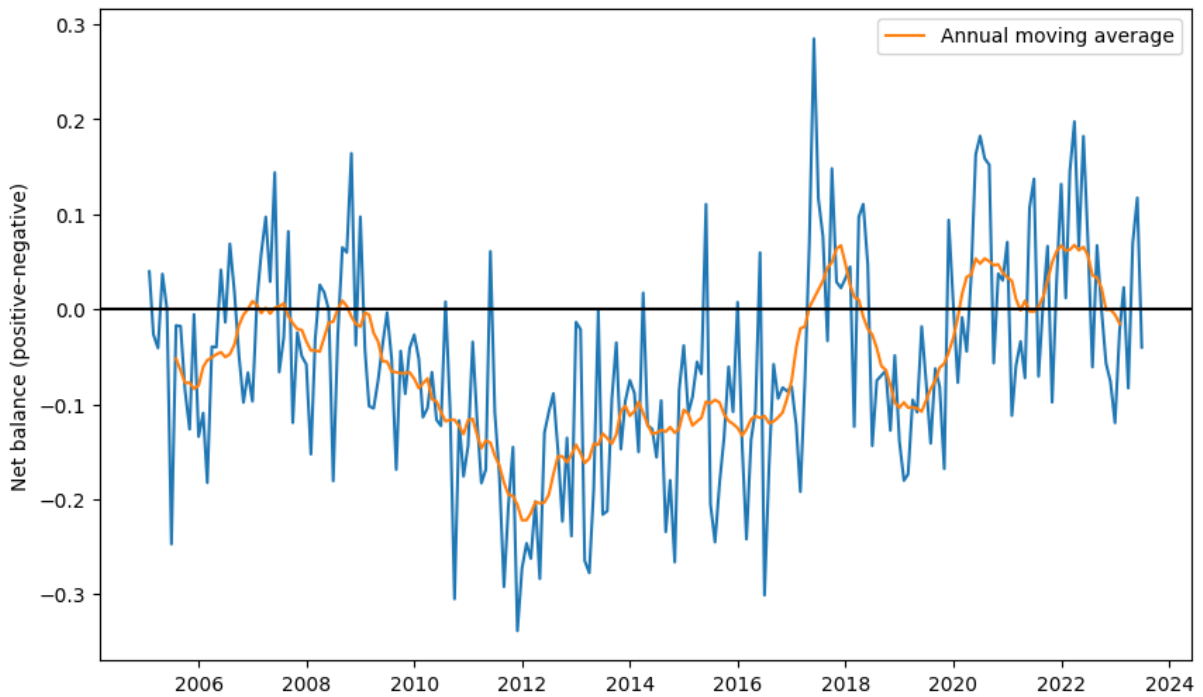
As a relative majority of press articles are labelled as negative, the sentiment index is mostly negative. More positive articles than negative ones were published during only 62 months, representing 27.9% of the period. This contrasts with the widespread belief that the French media are generally pro-European - which would imply they tend to speak positively about the European Union. However, it is in line with the findings of Alarcón (2010), who finds, on a much smaller dataset, that European newspapers publish more negative than neutral and positive news in their coverage of the European Union.

The index peaked in May 2017 with a value of 0.28, corresponding to the period following the 2017 French presidential election. The victory of Emmanuel Macron, with his pro-European positions, and his first steps as President of the French Republic are reflected in the many positive articles. In contrast, we do not find any positive impact after Brexit. While this episode may have led, according to some, to a European awakening, it may also have raised doubts about the future of the Union, which could explain why, in balance, we observe no effect.

Focusing on the global evolution of the index, we can distinguish different phases: a sharp decrease between 2009 and 2012, an uneven recovery between 2012 and 2017, followed by a new

period of decline in 2018 and 2019. Finally, since 2021, the sentiment index appears to have been more stable around unprecedented levels. The sharp drop in sentiment between 2009 and 2012 can be explained by the various crises that the European Union experienced during this period. As a result, we can see that topics related to the Euro area and deficits take on a more prominent role during this period. These latter topics contribute largely to the degradation of the balance of our sentiment index.

Due to the document-level sentiment analysis method we conduct, it is difficult to distinguish whether the negative polarity is linked to the overall context or whether it is actually a negative sentiment expressed towards the European Union. However, during the Covid-19 crisis—when many negative general articles could also be expected—we do not observe a comparable decline in the sentiment index, which decreases only marginally. This contrast tends to support the interpretation that the drop observed between 2009 and 2012 genuinely reflects a deterioration in the European Union's image. Moreover, one can argue that a repetition of negative sentiment in articles about the European Union can also lead to a deterioration in the image of the European Union without this being the main intention of the authors of the articles.[26]

Figure 13: Monthly EU sentiment index by type of newspapers
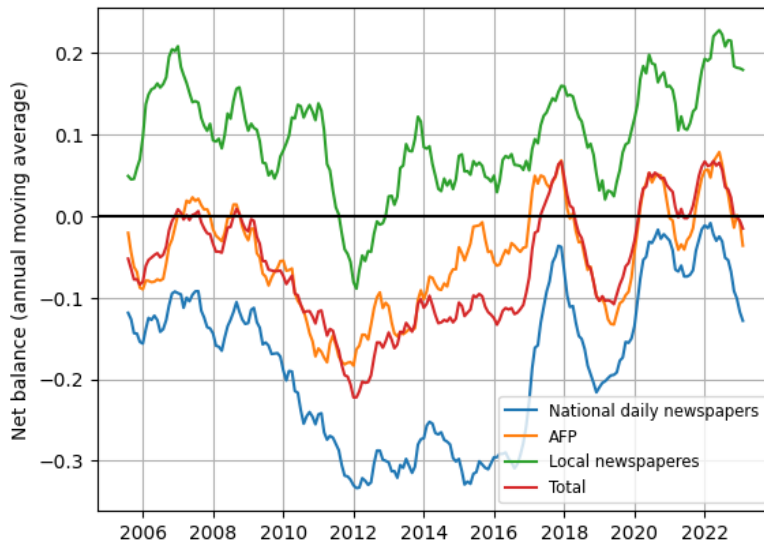
Sources: Factiva and *Le Monde*, authors' computations

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[26]Lecheler et al. (2015) for example show that the repetition of a negative frame can lead to a significant deterioration of opinions over time, even when the articles do not directly aim to discredit the subject. Another possible problem is that our measure does not distinguish between the journalist's opinion and that of the people quoted in the article, notably politicians. However, as argued by Mirza et al. (2025), the journalist has often the ability to soften or even contradict the arguments he disagrees with.

Figure 13 shows the evolution of the sentiment index for different types of newspapers. It appears clearly that local newspapers publish more positive articles about the European Union. This phenomenon can be explained by two elements: the local press tends to cover more positive topics and has a positive bias towards the European Union (compared to national newspapers). First, local newspapers tend to focus on concrete EU achievements, notably local, such as youth-oriented initiatives, agricultural affairs which are the object of subsidies from European development funds or debates and consultations at the local level. Such topics are generally covered in a more favourable tone: as illustrated in Table 2, the top 10 topics in the local press are on average more positive than the top 10 for daily national newspapers.

In fact, local topics are among the subjects with the highest positivity rate overall and with a relative constant opinion balance over time.[27] In contrast, national topics are on average more negative and more prone to variations - for instance, on topics such as the energy crisis or Ukraine.

Table 2: Sentiment index for the top 10 topics mentioned in the local and national press (average score)

(a) Local newspapers

erasmus programme association exposition	0.51
gauche liste constitution ump	-0.12
agriculture agriculteurs agricole producteurs	-0.23
débat thème consultations débats	0.19
championnat uefa football joueurs	0.04
réfugiés demandeurs frontières italie	-0.27
ukraine russes poutine kiev	0.11
brexit britanniques londres boris	-0.32
électricité carbone nucléaire émissions	-0.04
vaccin covid coronavirus doses	-0.01

(b) Daily national newspapers

gauche liste constitution ump	-0.12
ukraine russes poutine kiev	0.11
agriculture agriculteurs agricole producteurs	-0.23
électricité carbone nucléaire émissions	-0.04
cac bourse euros investisseurs	-0.13
brexit britanniques londres boris	-0.32
réfugiés demandeurs frontières italie	-0.27
euro merkel angela chancelière	-0.07
grèce grec athènes tsipras	-0.29
erasmus programme association exposition	0.51

Sources: Factiva and *Le Monde*, authors' computations.
Note: As we focus here on topic preferences, the average polarity is computed on the overall dataset (including both local and national newspapers).

Second, the difference between national and local newspapers can also be explained by the latter's more favourable treatment of each topic. For 90% of the topics, the average polarity score of local press articles is higher than that of articles from national newspapers (average difference of +0.14 in the sentiment index). An example of this positive bias is the topic of immigration (*"réfugiés demandeurs frontières italie"*): whereas the polarity of articles on this subject in local and national newspapers was broadly similar prior to 2015, it dropped sharply in national

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[27]See Table 1 and Figure 7 in Appendix J for more details.

newspapers following the refugee crisis of that year and never returned to its previous levels. By contrast, the crisis appears to have had no discernible impact on coverage in local newspapers (see Figure 39).

As regards the evolution of the sentiment index in the different categories of newspapers, similar trends can be observed even if the post-crisis increase starts somewhat earlier for local newspapers than for national newspapers.

Finally, we carry out an analysis by national newspapers. While *L'Humanité* stands out for its negative and persistent bias, the trends are more similar for other newspapers. Even *Le Monde* and *Les Echos*, which devote a larger share of their articles to the European Union (see Section 4), show an overall negative balance over the period. Only *La Croix* stands out as displaying more positive sentiments towards the European Union over the period, which is consistent with its globally pro-EU positioning.

Figure 14: Monthly EU sentiment index by national daily newspapers
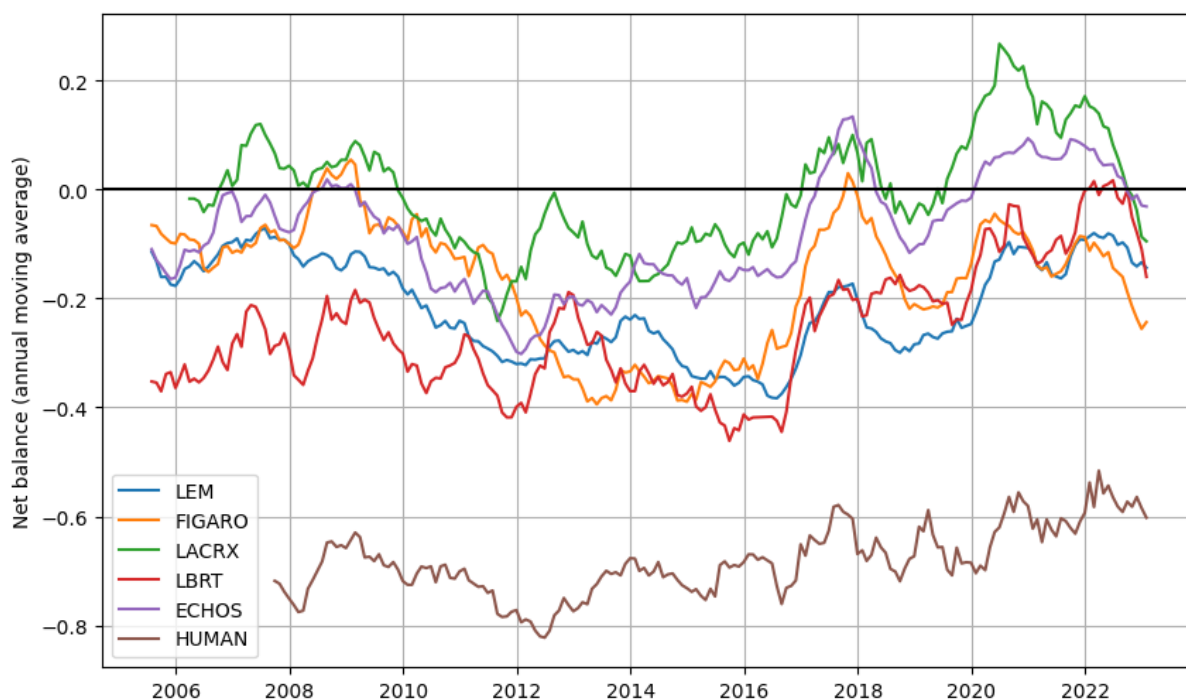
Sources: Factiva and *Le Monde*, authors' computations.

Note: *LEM* stands for *Le Monde*, *FIGARO* for *Le Figaro*, *LACRX* for *La Croix*, *LBRT* for *Libération*, *ECHOS* for *Les Échos*, *HUMAN* for *L'Humanité*.

4.4 Comparison with the Eurobarometer

Finally, we seek to find out whether the sentiment indicator constructed from the press sheds light on French citizens' attitudes towards the European Union. To do this, we compare our sentiment index with the results obtained from the Standard Eurobarometer in France.

The Eurobarometer Standard is a biannual opinion survey from the Eurobarometer survey collection.[28] This benchmark survey is frequently used in studies in the field of eurosepticism, given its temporal and geographical availability (see Section 1).

We use the French part of the Eurobarometer survey and more specifically the following question: *In general, does the EU conjure up for you a very positive, fairly positive, neutral, fairly negative or very negative image?*[29]

Figure 15: Public attitudes toward the European Union and newspaper sentiment index
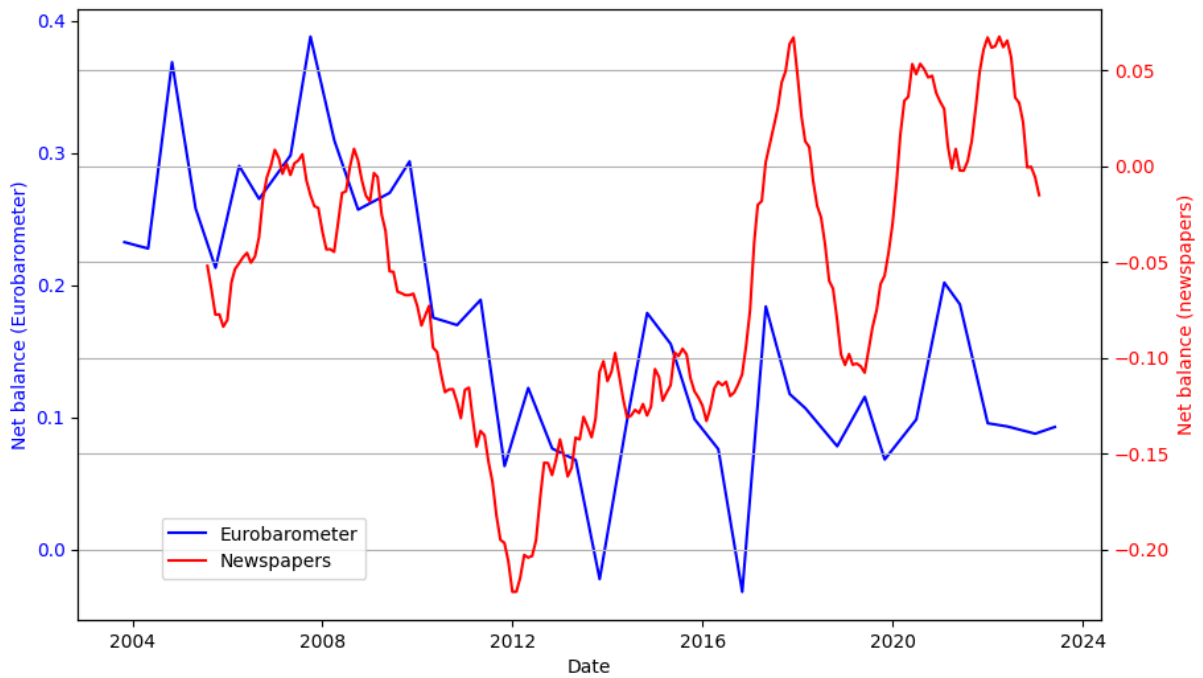
Sources: Factiva and *Le Monde* and Eurobarometer, authors computations

Note: The blue curve (lhs) represents French citizens' perception of the EU as measured by the Eurobarometer (net balance of positive and negative opinions), while the red curve (right-hand side) shows the annual moving average of our sentiment index computed from the French written press.

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[28]It relies on a randomly selected sample of at least 500 people aged 15 and above per country. The sample is weighted to ensure demographic and geographical representativeness.

[29]In French: *En général, l'image que vous avez de l'UE est-elle très positive, assez positive, neutre, assez négative ou très négative ?*

By aggregating fairly positive/very positive and fairly negative/very negative responses, we can then compute a sentiment index of French citizens towards the European Union and compare it with our newspaper sentiment index (Figure 15).

While our index of sentiment from newspapers is largely negative over the period, French people's opinion of the EU is generally positive (only two vintages have a negative response balance, in 2013 and 2016).

Even if survey-by-survey developments are sometimes difficult to interpret (in particular because of the large confidence intervals for the survey), we can broadly distinguish two periods. First an initial period from 2005 to 2013, where the two sentiment indexes broadly follow the same trends (stability between 2005 and 2009, followed by a sharp decline during the financial and sovereign crises). Second, from 2013 onwards, a form of disconnection is observed: while the index obtained from the press returns to (then exceeds) the levels reached previously, the French citizens' image of the European Union no longer changes significantly and remains globally stable, below pre-crisis levels.

This divergence does not appear to be attributable to a deterioration in the performance of our LLM. Although the accuracy of our classification decreases slightly (-2.6pp) between the periods 2005–2014 and 2015–2023, performance across the different classes remains broadly similar between the two sub-periods. The improvement in the sentiment index therefore cannot hardly be linked to a tendency of our LLM to classify a greater number of articles positively towards the end of the period. We can also rule out a potential bias related to the changing composition of our newspaper sample. Indeed, when focusing exclusively on national newspapers (for which we have full coverage), we observe a similar divergence at the end of the period between the press-based index and the image of the EU among French citizens (Figure 16).

**Figure 16:** Public attitudes toward the European Union and daily national newspaper sentiment index
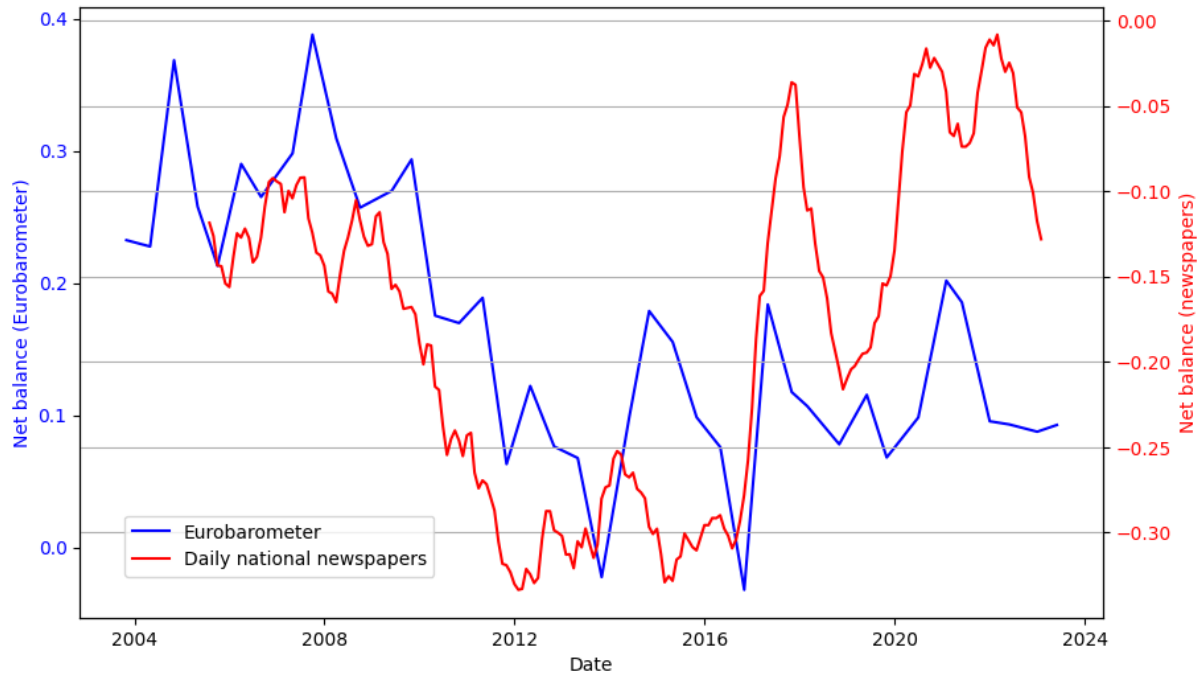
To check for the robustness of this disconnection, we also consider the alternative question of trust in the European Union, which is also present in the Eurobarometer: *For each of the following media and institutions, please tell me if you tend to trust it or tend not to trust it: the European Union.*[30] Figure 17 shows a similar development, with French confidence in the European Union stalling after the 2009-2013 period,[31] as opposed to our index which increases significantly.

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[30]In French: *Pour chacun des médias suivants et chacune des institutions suivantes, pourriez-vous me dire si vous avez plutôt confiance ou plutôt pas confiance en lui/elle : l'Union européenne ?*

[31]It is worth noting that the trust index among the French is predominantly negative, despite their generally more positive overall image of the European Union. This apparent contradiction can be linked to the analysis of Cautrès et al. (2020), which highlights the existence of an ambivalent form of support for the EU in France: a significant share of citizens express attachment to the values it upholds, yet simultaneously display a deep mistrust regarding how it functions.

Figure 17: Comparing the Eurobarometer and the newspaper sentiment index: confidence in the European Union
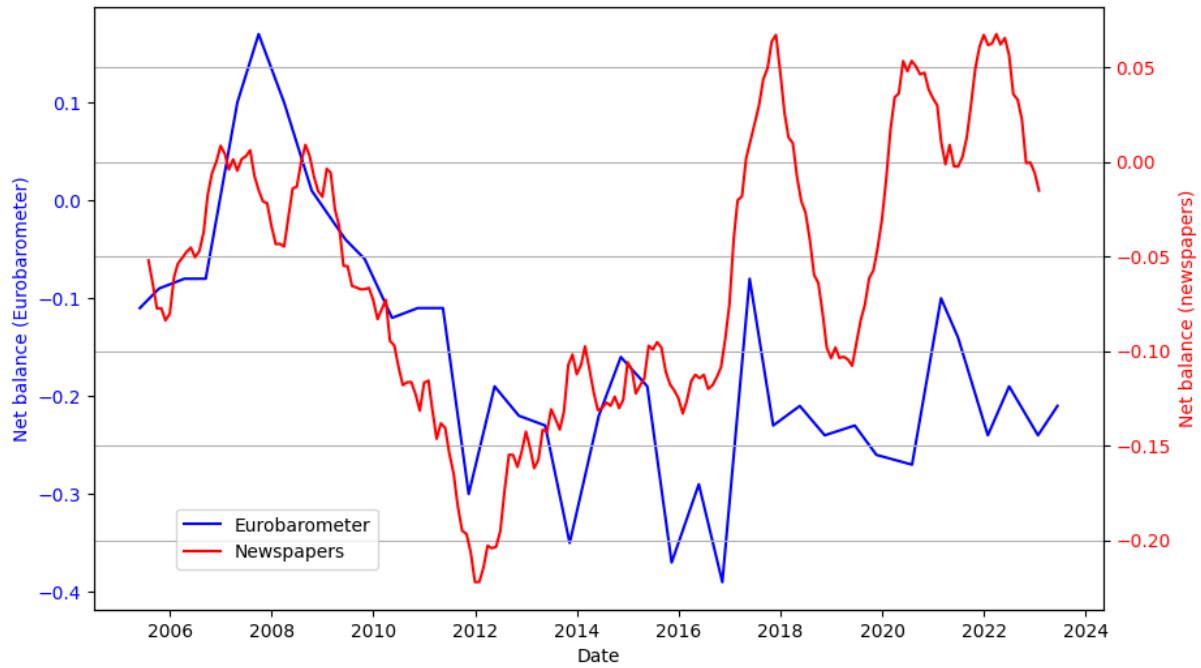
Sources: Factiva and *Le Monde* and Eurobarometer, authors' computations

Note: The plotted newspapers sentiment plotted corresponds to the annual moving average presented above.

The situation in the European Union generally improves from 2013-2014 (in particular, following the end of the sovereign debt crisis), a development that we find in press articles. However, this is not perceived as such by French citizens. This decrease is specific to France and does not occur at the European level. In fact, when aggregating all Eurobarometer responses at the national level, we observe that, after a drop in opinion during the 2008-2013 period, the EU level balance improves and returns to the levels previously observed (Figure 18).[32]

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[32]In practice, the correlation between our French press-based indicator and the Eurobarometer at the EU level is stronger than at French level. Our result is robust to the exclusion of the United Kingdom and Member States which joined after 2004.

Figure 18: Public attitudes toward the European Union and newspaper sentiment index: the EU level
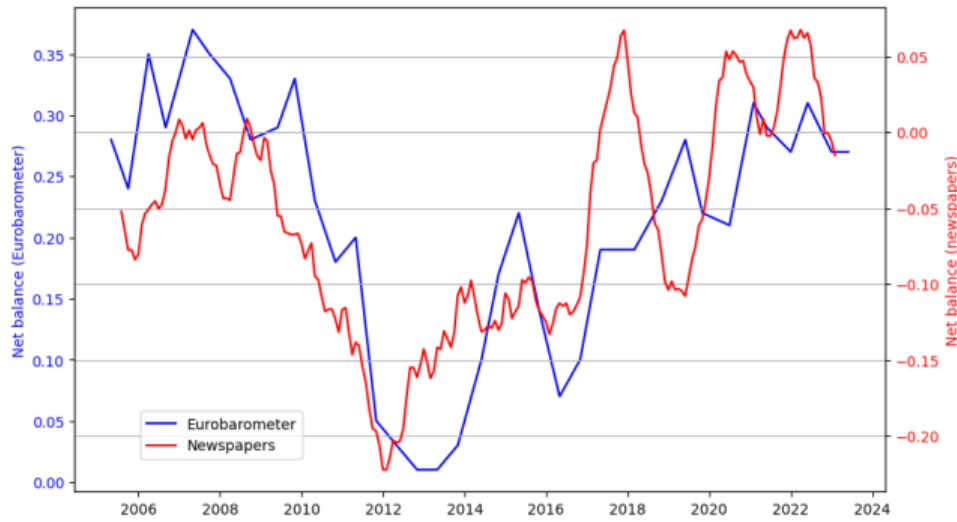
Note: The newspapers sentiment index plotted correspond to the annual moving average presented above.

In order to investigate this disconnection, we further study the answers to a question asked annually in the Eurobarometer between 2005 and 2021 on the coverage of the European Union in the written press: *Do you think that the French written press presents the EU too positively, objectively or too negatively?*[33]

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[33]In French: *Pensez-vous que la presse écrite française parle de l'Union européenne de façon trop positive, de façon objective ou de façon trop négative ?*

Figure 19: How does the written press treat the European Union?

Sources: Eurobarometer, authors' computations.
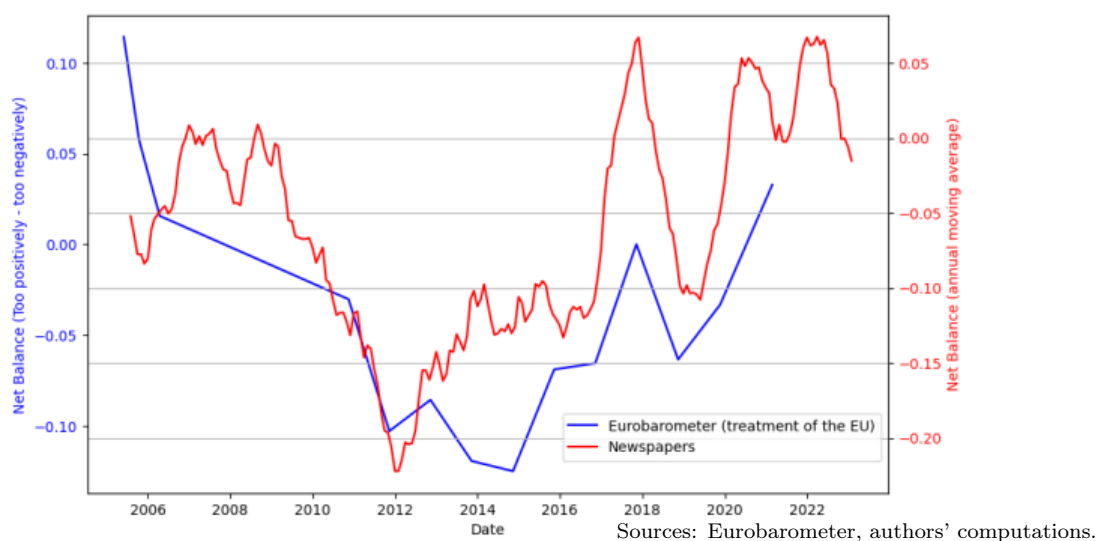
Although most respondents (around 60% on average) report that the press covers European issues objectively, an analysis of the net balance between those who consider the press to be too positive when covering the European Union and those who view it as too negative shows a post-crisis rebound that mirrors the trend in our sentiment index derived from newspaper content (Figure 19). Even though their opinion of the European Union has not changed, French citizens seem to have nonetheless perceived and acknowledged the shift in how the European Union is portrayed in the press.

This last finding leads us to assume a form of public distrust towards the opinions expressed by the press regarding the European Union. Such a possibility could be reflected in the decline in the level of trust that French citizens have in newspapers. Indeed, this trust in the written press (as measured by an additional question in the Eurobarometer) dropped sharply during the 2008 crisis and has since remained at this lower level.[34]

Furthermore, when considering perceptions of the EU solely among individuals who responded positively to the question regarding trust in the print press,[35] we find no such divergence between the sentiment index derived from the press and the Eurobarometer (Figure 20). The views of those who trust the press broadly continue to align with the image conveyed by the press itself.

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[34]See Figure 40 in the Appendix.

[35]These data are drawn from the Eurobarometer primary microdata made available by GESIS.

Figure 20: EU perceptions among those trusting the written press

Sources: Eurobarometer, authors' computations.
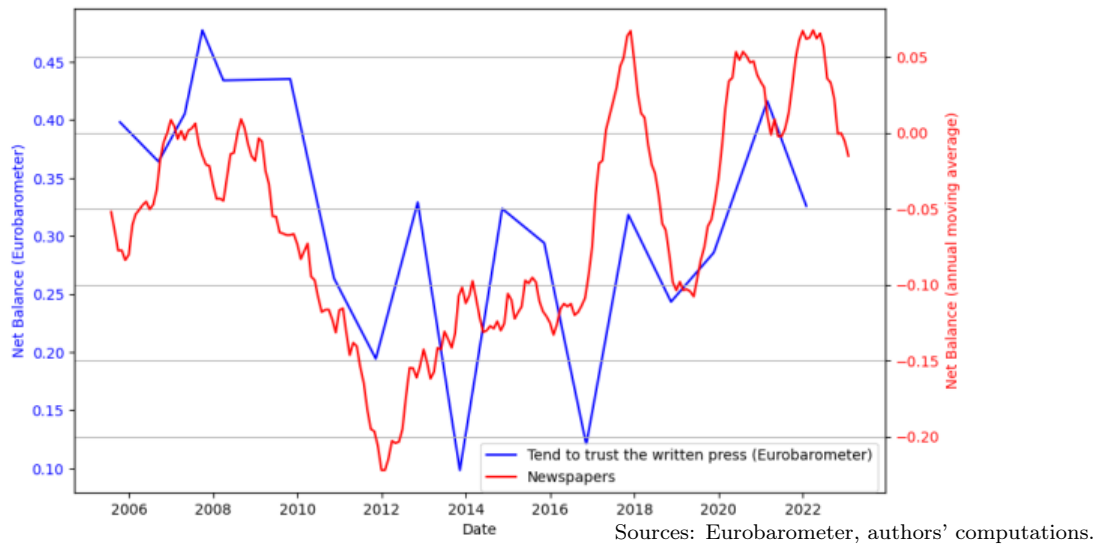
An additional assumption would be a decline in the representativeness of the print media. The number of daily readers has clearly decreased since 2011 (from 30% to 18%).[36] We also observe a smaller divergence between the index derived from the press and the image of the EU among daily readers of the print press (see Figure 21).

Figure 21: EU perceptions among daily readers

Sources: Eurobarometer, authors' computations.

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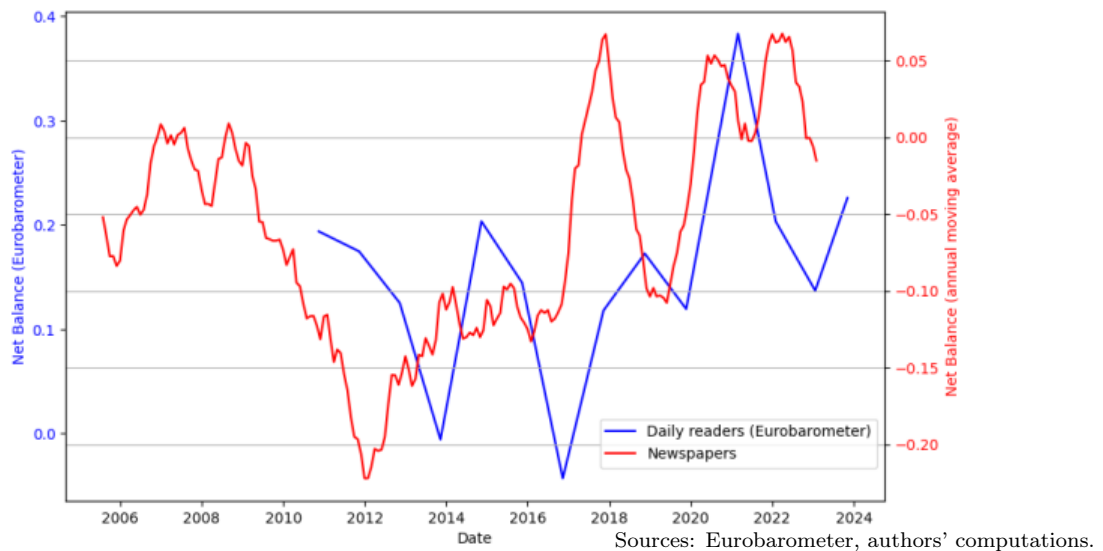
[36]See Figure 41 in the Appendix. The question of the frequency of reading the written press is only available since 2012.

While it is not possible to determine which of these two factors is most decisive,[37] both may help explain the divergence observed between our press sentiment index and French citizens' views of the European Union.

5   And the Euro area?

Finally, we take a closer look at the single currency, which is the most complete example of Europe's integration process. Following the Greek crisis and the possible "Grexit", monitoring public support for the euro has become as much a part of the debate as that for the EU. This question is particularly relevant for central banks as managing authorities of the single currency within the European System of Central Banks.[38]

The literature on this subject is scarcer and often focused on national media coverage of the eurozone crisis (see Müller et al. (2018), Marek and Meislová (2022), Nina and Belchior (2025) or Schmidt (2022)) whereas we want to look at a longer time-frame.

5.1   Methodology

We used the same LLM based on our dataset of EU-related articles to determine whether an article treats the question of the monetary union with the following prompt: *Your role: to indicate whether the main subject of the article is the euro area. You can only answer with 'yes' or 'no'.*[39]

Following our previous checks, we test the performance of the LLM on 200 randomly sampled articles. It achieves an accuracy of 95.5% (F1-score: 0.86). The model exhibits a slight tendency to overestimate the proportion of Euro area (EA)-related articles, while maintaining strong overall performance.

We also verify the consistency between the classification and the topics identified in Section 4.2.2. Figure 22 displays the 10 most recurrent topics (representing 75% of the volume of EA articles) among the articles classified by the LLM as pertaining to the euro area.

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[37]In particular, there is a potential correlation between trust in the press and regular readership of it.

[38]The European Central Bank and the national central banks of the European Union form together the European System of Central Banks, in which the Eurosystem - the ECB and the national central banks of the Euro area members - decides on monetary policy for the whole Euro area

[39]In French: *Ton rôle : indiquer si le principal sujet de l'article est l'article est la zone euro.Tu ne peux répondre autrement que par 'oui' ou 'non'.*

Figure 22: Top 10 topics for EA articles
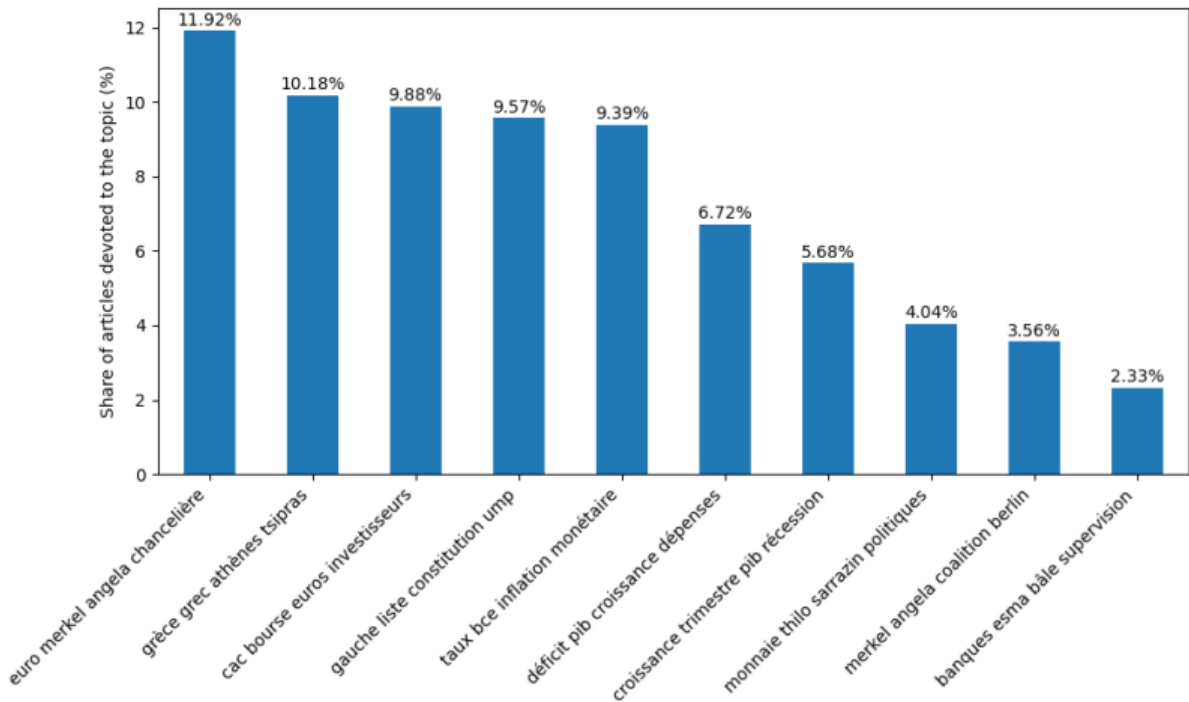
Note: The topics correspond to those presented in Section 4.2.2. We do not compute new topics based on the articles specific to the euro area.

The two most important topics are the Euro area and the Greek crises (Topics 1 and 2), while the remaining topics primarily refer to economic and financial themes (ECB, banking supervision, etc.), thereby supporting the coherence of the LLM's classification.[40]

5.2 Results

5.2.1 Euro area salience

61,366 articles are selected, corresponding to 16.0% of our EU dataset and less than 0.2% of the total number of articles published in France over the period. Figure 23 shows that the share of articles related to the Euro area peaked at around 0.6% between November 2011 and January 2012, in the midst of the sovereign debt crisis. During this period, more than 80% of articles

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[40]A manual review of the articles within Topic "*gauche liste constitution ump*" reveals that they address, in particular, political debates on the strengthening of fiscal rules implemented in the aftermath of the sovereign debt crises. Similarly, Topic "*monnaie thilo sarrazin politiques*" refers to political and intellectual debates on the merits of the single currency, with Thilo Sarrazin notably having published in 2012 a book against the euro (*Europa braucht den Euro nicht*).

published on the EU addressed the Euro area crisis. The impact of the Greek crisis in 2015 is also clearly visible, in particular in July 2015 when Greek Prime Minister Alexis Tsipras organized the bailout referendum. The years 2011, 2012, and 2015 alone account for approximately one third of all articles published on the Euro area over the past two decades, illustrating the impact of these crises.

Following the Greek crisis, the share of articles devoted to the euro area stabilized at lower levels than those observed prior to 2008, on average below 0.1%. Even the recent inflationary crisis, which had different repercussions from one State to another, did not lead to an increased coverage of the Euro area and thus appears to have been addressed primarily from a national perspective.

Figure 23: Monthly share of EA articles in the French Press
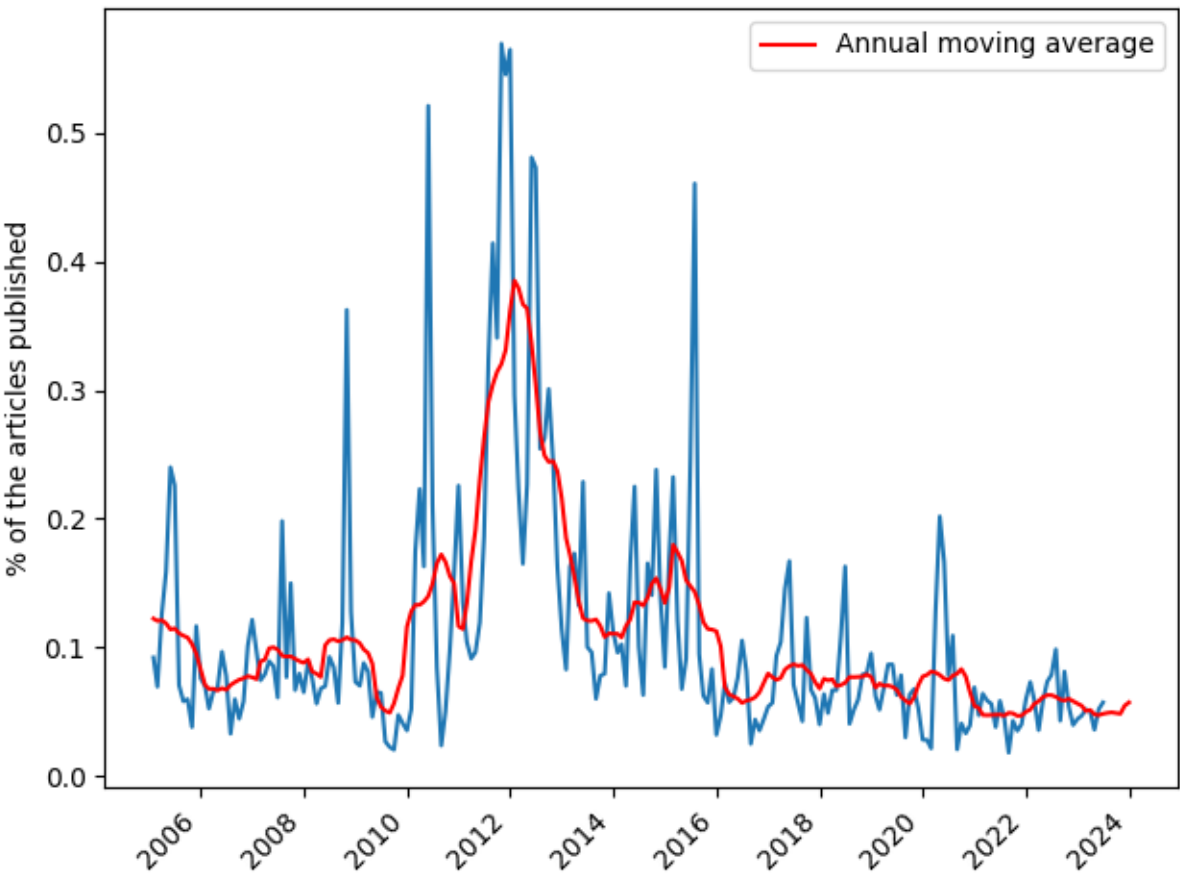
Note: The newspapers sentiment index plotted correspond to the annual moving average presented above.

Local press outlets are significantly under-represented, accounting for only 11% of published articles (compared to 24.5% for articles on the EU). This finding is consistent with the insights from Section 4.2.2, which showed that regional newspapers primarily focus on local effects of EU policies (such as cultural exchanges, agriculture, etc...).

Among national newspapers, observed patterns mirror those found in EU-related coverage, with greater interest from *Les Échos* and *Le Monde*, in contrast to *L'Humanité* and *La Croix*. Business daily newspaper *Les Échos* stands out from the rest of the sample due to a noticeable hysteresis effect: it is the only newspaper in which the share of articles related to the Euro area remains consistently above pre-2008 levels after the Greek crisis.

Figure 24: Monthly share of EA articles per national daily newspapers
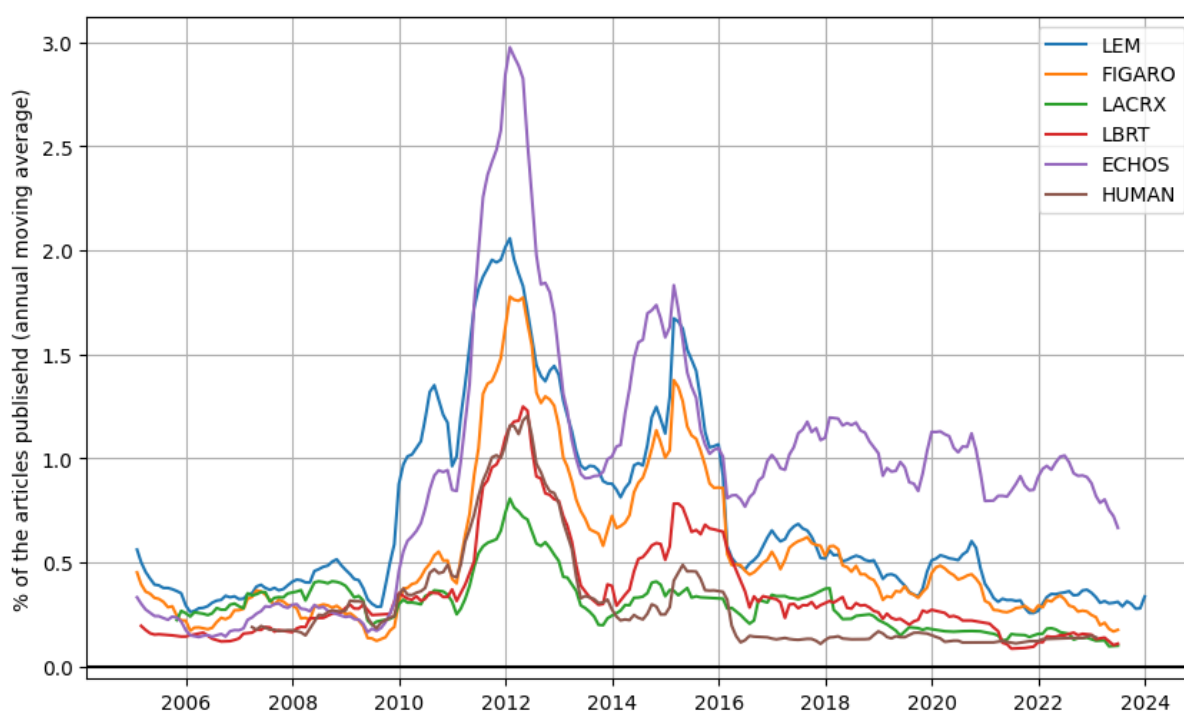
Figure 25 then presents the number of mentions of the European Central Bank over time. In a way, this institution embodies in a itself the Euro area. Reflecting the overall trend of articles on the Euro area, the ECB is first at the center of the attention during the sovereign debt and Greek crises. In December 2011, the number of mentions nearly reached 600, coinciding with the start of Mario Draghi's mandate as President of the European Central Bank. Likewise, the announcement of the non-conventional monetary policy "Asset Purchase Programme" (APP) in

March 2015 generated a substantial number of articles.

In contrast, the 2022 inflationary crisis led to a much more limited increase of mentions of the European Central Bank. For instance, the announcement in January 2020 of the ECB's strategic review — which sets its objective and tools, in this case particularly on climate-related aspects, which was very new and potentially controversial — received comparatively more media coverage. The figure also highlights the prominent role assumed by the European Central Bank compared to the national central banks of the Euro area. The number of mentions of France's national central bank, the Banque de France — which, like all national central banks of the euro area, is fully part of Eurosystem decision-making process — is significantly lower than the number of mentions of the ECB. The European Central Bank has successfully established itself within the media landscape and has become closely associated with the Euro area as a whole. Notably, the number of mentions of the Bundesbank, Germany's national central bank, is almost comparable to that of the Banque de France in French press. This latter finding echoes the results of Schmidt (2022), who underlines a recurring pattern in French media coverage on a supposed "German specific influence on ECB policy", notably as opposed to French views on monetary policy.

Figure 25: Frequency of appearance of the ECB, *Banque de France* and *Bundesbank*
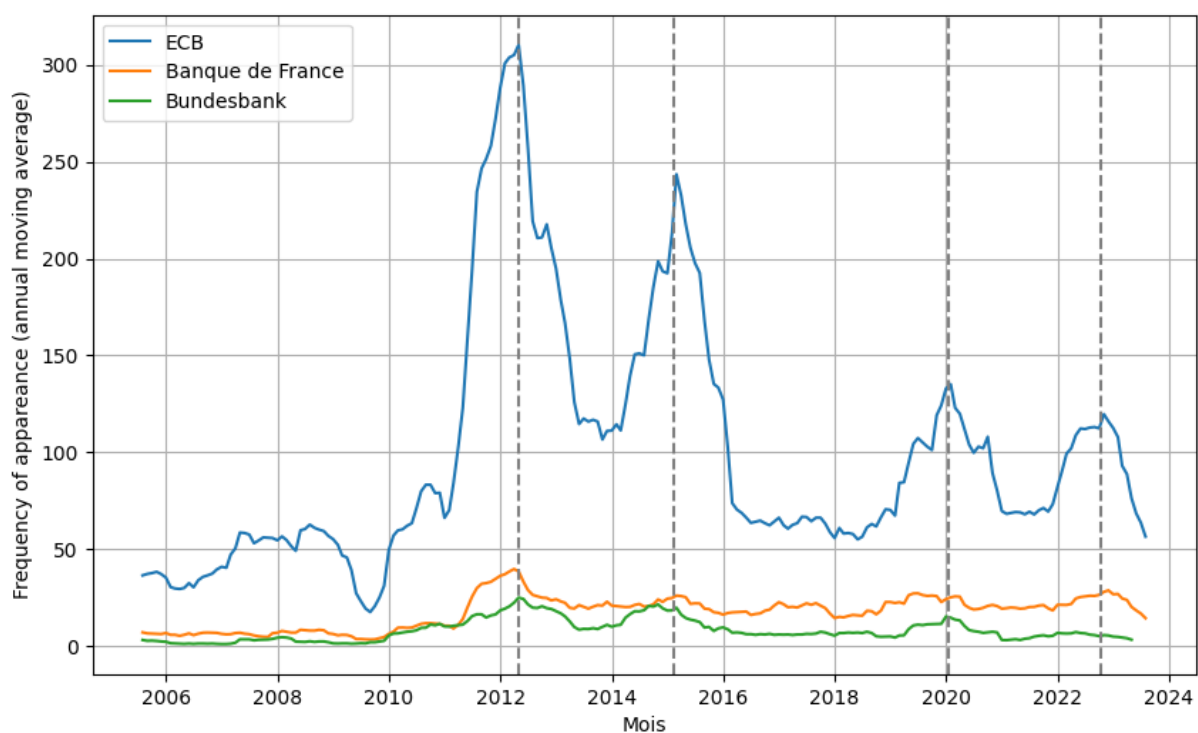
Sources: Factiva and *Le Monde*, authors computations.

5.2.2 Euro area polarity

As in the case of the EU, we next examine the polarity of articles related to the Euro area, using the same polarity scores computed in the previous step. 23.6% of the articles are classified as positive, 32.6% as neutral, and 43.8% as negative. On average, media sentiment towards the Euro area is more negative than that towards the EU. The index decreased following the Great Financial Crisis, maintaining thereafter a stable but negative sign until 2017. The index peaked in July 2017 with a value of 0.37 (see Figure 26), corresponding to the period following the 2017 French presidential election. Indeed, the victory of Emmanuel Macron, with his pro-Euro positions are reflected in numerous articles, as well as reports on reform proposals for the Eurozone discussed between the new president and Angela Merkel (creation of a Eurozone finance minister position in particular). After 2018, the index showed a brief improvement lasting until 2022, followed by a sharp decline, likely driven by the inflationary crisis linked to rising energy prices in the wake of Russia's invasion of Ukraine.

Figure 26: Monthly French newspapers' EA sentiment index
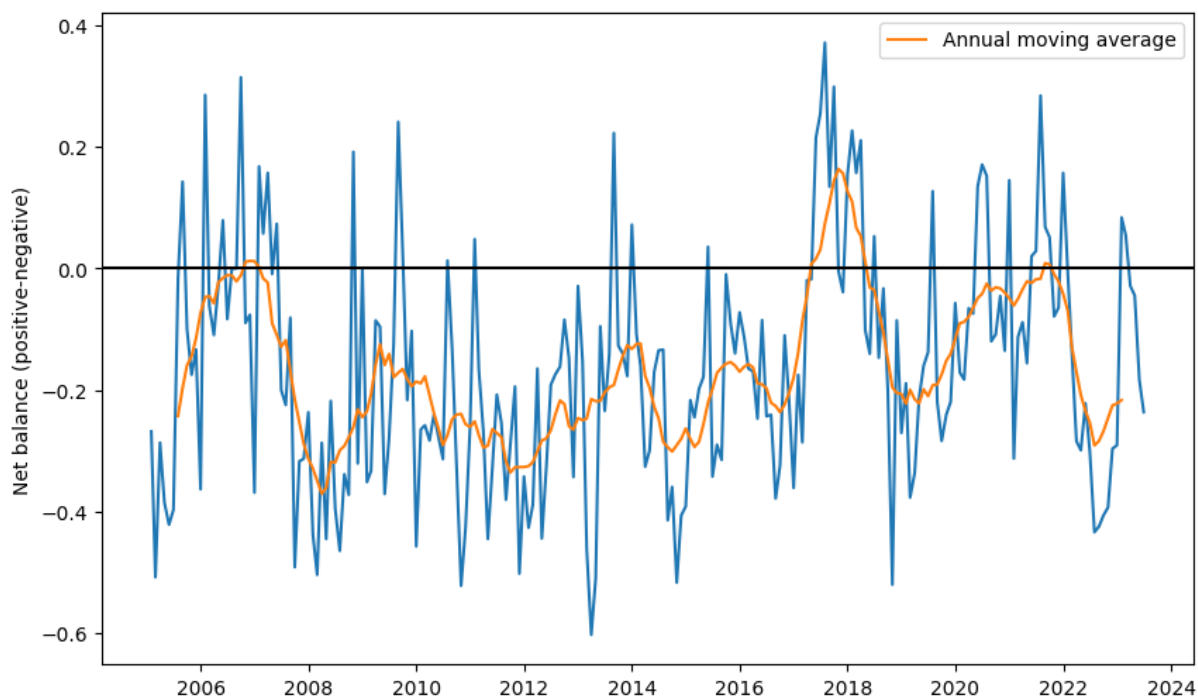
Sources: Factiva and *Le Monde*, authors computations.

We can then compare our polarity results with those of the Eurobarometer, based on the specific question: *Please tell whether you are for it or against it: A European Economic and Monetary*

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Union with one single currency, the euro?. The results show that, at least up until 2023, we find a stronger correlation between sentiments from newspapers and from the Eurobarometer than for European affairs in general (see Figure 27). Whereas the Eurobarometer stalls after 2016 for the EU at large, it increases significantly to reach pre-2008 crisis level for the Euro area. The dynamics of the net balance opinion from newspapers on the Euro area is relatively similar than for the European affairs, with an increase of support after 2012. Unlike the EU as a whole, the Euro area appears to have enjoyed a more favorable perception in recent years, as reflected in its media coverage. The fact that the Euro area topic is much less discussed in the written press (as shown in Figure 23) may also explain the smaller possibilities of opinion divergences.

Figure 27: Public attitudes toward the Euro area and newspaper sentiment index
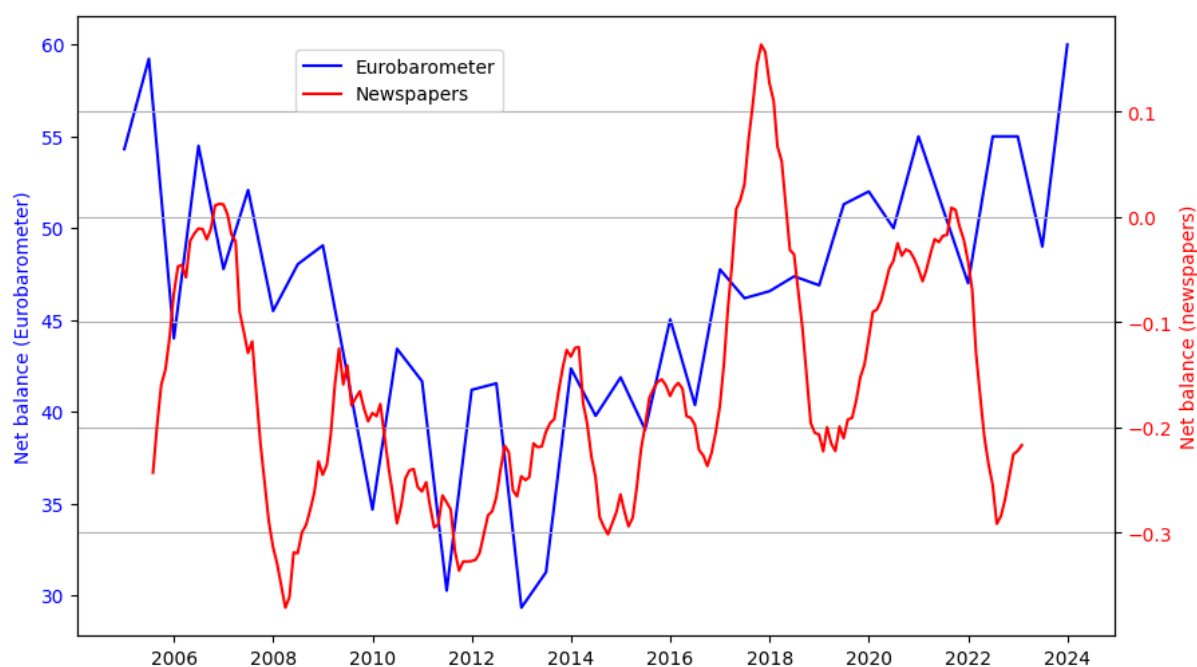
Sources: Factiva, *Le Monde* and Eurobarometer, authors computations.

6 Conclusion

This paper investigates the way in which the French written press has treated European issues since 2005. Building on natural language processing techniques, we begin by creating a corpus of approximately 400,000 articles related to the European Union, published over the past two decades in more than 100 French newspapers. In particular, we rely on a recent large language model (LLM) to optimise the selection of relevant articles, and demonstrate the advantages of this approach compared to alternative methods commonly employed in the literature. Drawing on this unique dataset, we provide several contributions to the still relatively scarce literature on EU coverage in French media.

First, we find that the share of articles that cover the European Union has remained broadly stable over the past 20 years — below 1% overall — with strong seasonality around European elections. Interest in these elections within the French media has increased over time, reflecting in particular a growing visibility of European institutions. Our disaggregated analysis by newspaper further highlights the value of our large corpus, as the trajectory of the newspaper *Le Monde* — often used as a benchmark for the French press — is not representative of the press landscape as a whole.

Second, when examining the topics addressed in EU-related articles, we show how political issues and successive crises have dominated coverage. Local newspapers tend to focus on everyday EU initiatives (such as cultural exchanges or the Common Agricultural Policy) conveying a generally more positive image of the European Union. In contrast, national newspapers cover a broader and often more critical range of topics.

Third, we analyse the tone of coverage in order to construct a sentiment index reflecting the French press' opinion towards the European Union, which we compare with the results of the Standard Eurobarometer survey for France. While French citizens generally hold a relatively positive view of the Union, the press (particularly daily national newspapers) tends to report badly on the European Union. This negative portrayal probably results from the extensive coverage of the successive crises that have occurred over the past two decades.

Fourth, our dynamic analysis further shows that media sentiment towards the European Union deteriorated significantly following the financial and sovereign debt crises, mirroring the trend observed in the Eurobarometer. However, since 2013, a divergence has emerged between these two indicators: while sentiment in the press has gradually recovered and eventually exceeded

its pre-crisis level, public image of the European Union as measured by the Eurobarometer has remained broadly stable and below its pre-crisis level. The improvement in sentiment, which is visible in media coverage and perceived by other European citizens, is not reflected in French public attitudes. This divergence may be explained by a decline in the representativeness of the written press over the period or by growing distrust among citizens towards media. By highlighting this disconnection, our sentiment indicator offers a valuable complement to the insights provided by the Eurobarometer.

Finally, regarding the more specific topic of the Euro area, we show that media interest was highly concentrated during the sovereign debt crisis period (notably the Greek crisis), and has since declined. However, we demonstrate that the divergence between the media-based index and the Eurobarometer survey is not observed in the more specific case of the Eurozone.

This study, based on a large corpus of French press articles related to the European Union since 2005, opens up several avenues for future research. First, the analysis could be extended to other European countries, drawing on the capacity of recent LLMs to process multilingual textual data. Second, a more in-depth investigation is needed to uncover the mechanisms behind the divergence between the written press sentiment index and French public opinion. Finally, the indicators developed in this study, which capture both the frequency and polarity of EU articles, could further be integrated into causal frameworks aimed at assessing the effects of eurosceptic or pro-European discourse on citizens' opinions.

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Appendix A   List of keywords and web-scrapping of *Le Monde*

Table 3: EU keywords

Union européenne	UE	Europe	Bruxelles
européen	BCE	zone euro	ZE
	Francfort	monnaie unique	

Keywords   We rely on regular expressions, in particular to account for plural and feminine. An article containing *directive **européen**ne* will therefore, for example, be selected. It should be noted that our decision to use regular expressions also results in the inclusion of articles containing, for instance, the term *lait**ue*** (lettuce) because of the last two letters. We do not include the keyword *euro* as it appears in too many articles relating to prices of a good or a company's revenue.

***Le Monde* web-scrapping**   We retrieve articles from *Le Monde* using a keyword search on the archive search page. The following keywords are used: *UE, Union européenne, Europe, européen* and *zone euro*. We retrieve the title, snippet and body of the article, as well as the publication date. We exclude articles with audio or video content and news feeds. Figure 28 presents the yearly distribution of retrieved articles. The overall count was obtained from the archives' homepage.

Figure 28: Number of articles retrieved per year from *Le Monde* archives

Sources: *Le Monde* archives, author's computations

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Density of EU keywords   Figure 29 presents the density of EU-keywords related (see list above) in our articles whether they were classified as EU or non-EU by our LLM.

Figure 29: Number of EU-related keywords per article
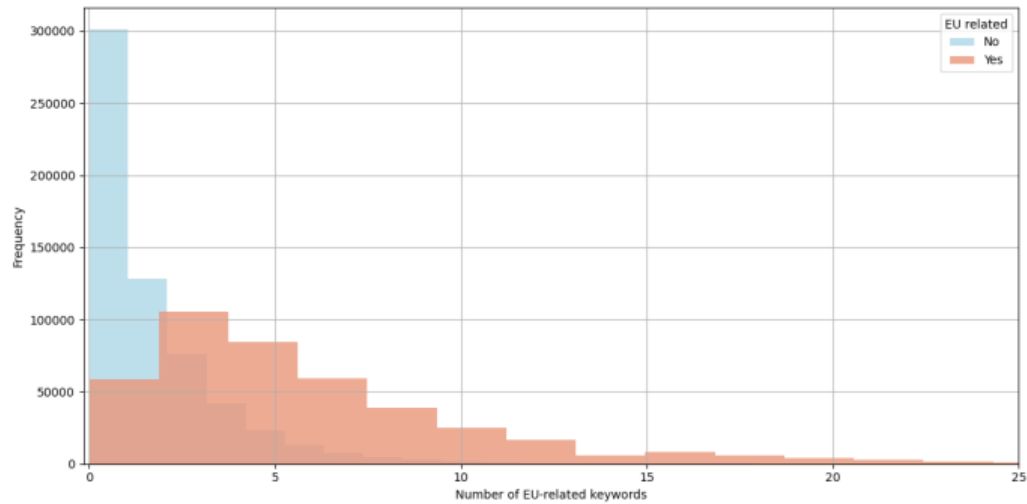
<div align="right">Sources: Factiva and Le Monde, authors' computations.</div>

Appendix B List of newspapers available

Table 4 lists all the newspapers in our database with at least one article. *LN* stands for local newspapers, *DNN* for daily national newspapers and *OTH* for others. The *First issue* column gives the date of the first article in the Factiva database.

Table 4: List of available newspapers

Code	Name	First Issue	Type
ATLANT	Atlantico	01/07/2013	OTH
ECHOS	Les Echos	11/06/1997	DNN
NOUREP	La Nouvelle République du Centre Ouest	12/01/2011	LN
VARMAT	Var-Matin	17/10/2017	LN
VOINOR	La Voix du Nord	01/02/2011	LN
BERREP	Le Berry Républicain	02/04/2010	LN
SOUEST	Sud Ouest	27/09/2003	LN
EURAC	EurActiv.fr	08/03/2010	OTH
ECHOFR	Les Echos.fr	20/08/2002	DNN
MIDLIB	Midi Libre	02/09/2006	LN
AFPFR	Agence France Presse	02/05/2003	AGE
AFPECOFI	Agence France Presse ECOFI	06/03/2013	AGE
HUMAN	L'Humanité	02/03/2007	DNN
LACRX	La Croix	14/09/2005	DNN
DEPEMID	La Dépêche du Midi	12/10/2012	LN
LECREP	L'Echo Républicain	14/04/2012	LN
REPCEN	La République du Centre	05/05/2011	LN
AGEFIF	L'AGEFI Quotidien	03/05/2004	OTH
BULQUO	Bulletin Quotidien	02/01/2009	AGE
PROGRS	Le Progrès	27/10/2003	LN
TRDS	La Tribune	02/01/1996	OTH
LOPINIO	L'Opinion	18/07/2014	OTH
ESTREP	L'Est Républicain	28/02/2008	LN
AEFR	Bulletin Quotidien Europe	14/09/1994	AGE
CHARLI	La Charente Libre	07/05/2005	LN
POINFR	LePoint.fr	18/06/2008	OTH
TBNWEB	La Tribune.fr	05/07/2001	OTH
JDCFR	Lejdc.fr	13/06/2011	LN
CORECO	La Correspondance Economique	08/01/2009	OTH
FIGPRE	Le Figaro Premium	31/03/2017	DNN
EUROPUN	Europe1.fr	12/03/2012	OTH
CORSMAT	Corse-Matin	19/01/2018	LN
NOBCOM	Nouvelobs.com	01/04/2005	OTH
COPRES	La Correspondance de la Presse	19/01/2009	OTH
PEBLOGA	Le Petit Bleu de Lot-et-Garonne	13/10/2012	LN
FIGARO	Le Figaro	31/01/1997	DNN
SOUSTD	Les Suppléments de Sud Ouest	20/01/2003	LN
ECPYR	L'Eclair des Pyrénées	20/04/2013	LN
LAMONT	La Montagne	01/04/2010	LN
INVTFR	Les Echos Investir online	28/01/2002	DNN
LBRT	Libération	01/01/1998	DNN

Code	Name	First Issue	Type
LAPROV	La Provence	06/03/2014	LN
LINDEP	L'Indépendant	02/09/2006	LN
PETJOU	Le Petit Journal	15/01/2018	OTH
LBRTONL	Libération.fr	22/04/2014	DNN
AUFRA	Aujourd'hui en France	21/05/2020	OTH
TELEG	Le Télégramme	01/12/2017	LN
LECHOFR	Lechorepublicain.fr	22/04/2015	DNN
POPCEN	Le Populaire du Centre	20/04/2010	LN
CHALGE	Challenges	23/09/2004	OTH
CNPRES	Centre Presse	10/09/2006	OTH
LENOV	L'Obs	24/03/2004	OTH
REPLOR	Le Républicain Lorrain	09/11/2017	LN
PARIN	leParisien.fr	22/10/2010	LN
COUPIC	Courrier Picard	26/01/2014	LN
LYONFR	Lyonne.fr	22/07/2011	LN
RUEFR	Rue89	01/06/2011	OTH
NIMAT	Nice-Matin	15/10/2017	LN
LEJD	Lejdd.fr	09/09/2010	OTH
LUNARD	L'Union / L'Ardennais	09/09/2017	LN
DELEBL	L' Est Eclair	12/09/2017	LN
PYREN	La République des Pyrénées	10/04/2013	LN
ECHWE	Les Echos Week-End	28/06/2002	DNN
CHALCOM	Challenges.fr	09/07/2013	OTH
HTFRFR	France24.com	31/01/2020	OTH
PANORM	Paris Normandie	29/04/2014	LN
MARIAN	Marianne	30/01/2010	OTH
PAYRO	Le Pays Roannais	26/03/2015	LN
MARNFR	Marianne.net	20/10/2009	OTH
LAINOUV	L'Aisne Nouvelle	17/02/2014	LN
NOREPY	La Nouvelle République des Pyrénées	13/10/2012	LN
EVHOTH	L'Eveil de la Haute Loire	16/03/2016	LN
EURNFR	Euronews	04/03/2011	OTH
CROICOM	La-Croix.com	28/02/2021	DNN
REPFR	Larep.fr	01/02/2015	LN
NORDLIT	Nord Littoral	28/12/2013	LN
FIGMAG	Le Figaro Magazine	01/12/2017	DNN
EURACF	EurActiv.com	03/09/2012	OTH
POPFR	Lepopulaire.fr	16/05/2011	LN
CONTCOM	Contexte	07/05/2017	OTH
SDUFR	Sudouest.fr	09/06/2022	LN
YONREP	L´Yonne Républicaine	02/04/2010	LN
ECLAGAT	L'Eclaireur du Gâtinais	25/03/2015	LN
CONVFR	The Conversation	19/11/2019	OTH
MONTFR	Lamontagne.fr	15/03/2011	LN
LECERC	Le Cercle Les Echos	24/02/2017	DNN
NORDEC	Nord Eclair	31/12/2013	LN
HUMAND	L'Humanité Dimanche	01/03/2007	DNN
HAVDIMA	Normandie Havre Dimanche	03/05/2015	LN
LEPARIS	Le Parisien	10/06/2022	LN
BERFR	Leberry.fr	30/08/2011	LN
LHPROF	Le Progrès de Fécamp	02/05/2014	LN
LPOINT	Le Point	02/01/2004	OTH
VOSMAT	Vosges Matin	10/11/2017	LN

Code	Name	First Issue	Type
RFIFRN	RFI.fr	15/04/2020	OTH
JOUCEN	Le Journal du Centre	29/03/2012	LN
CROIHEB	La Croix l'Hebdo	06/06/2020	DNN
DELUAF	L'Usine Nouvelle	03/05/2012	OTH
LHAVPRE	Le Havre Presse	02/05/2014	DNN
FIGBOUR	Le Figaro Bourse Premium	17/11/2015	DNN
ECHOBFR	Les Echos Business.fr	11/12/2014	DNN
REGCOS	Le Régional de Cosne et du Charitois	09/12/2015	LN
JOUGIEN	Le Journal de Gien	21/05/2015	LN
VINMINFR	20Minutes.fr	11/07/2013	OTH
VINMIN	20 Minutes	25/06/2013	OTH
GAZTHI	La Gazette de Thiers et d'Ambert	04/06/2015	LN
NEXTFR	Next.liberation.fr	05/10/2015	DNN
FIGETU	Le Figaro Etudiant	12/07/2016	DNN
LIBDIM	Normandie Liberté Dimanche	28/06/2015	LN
NODIEU	Normandie Dimanche Eure	03/05/2015	LN
LEJDEM	Le Journal de demain (newsletter du JDD)	11/05/2023	OTH
MOMAT	Monaco-Matin	19/01/2019	LN
VOIXSAN	La Voix du Sancerrois	10/06/2015	LN
COURLOI	Le Courrier du Loiret	02/04/2015	LN
PARFR	Leparticulier.fr	29/11/2018	LN
INTNOTH	L'InternOTHe.com	26/11/2020	OTH
ECHOB	Les Echos Executives	16/03/2015	DNN
PARISM	Parismatch.com	23/08/2010	OTH
LEPAR	Le Particulier	23/01/2019	LN
CHEPOL	Chez Pol (Libération newsletter)	25/09/2018	DNN
NODIDBC	Normandie Dimanche Dieppe-Bray-Caux	21/09/2014	LN
LHAVLIB	Le Havre Libre	03/05/2014	LN
ECHARI	L'Echo Charitois	18/11/2015	LN
PARWEK	Le Parisien - Aujourd'hui en France Week-End	15/07/2022	LN
DELLAU	La Lettre Valloire	13/02/2013	OTH
LEM	Lemonde.fr	02/01/2000	DNN

In the case of national daily newspapers, we merge the various editions together, in particular the print and digital versions, but also weekend and week versions, specialised version, etc...

Le Figaro group: FIGARO, FIGMAG, FIGPRE, FIGBOUR, FIGETU

La Croix group: LACRX, CROICOM, CROIHEB

Libération group: LBRT, LBRTONL, NEXTFR

*Les Echos* group: ECHOS, ECHOFR, LECERC, ECHOB, ECHOBFR

L'Humanité group: HUMAN, HUMAND

Appendix C   The European Union in TV news: the case of *TF1*

We web-scrap the different *TF1* news items from the catalog of the *Institut National de l'Audiovisuel (INA)*. Each topic is tagged with keywords, and we select only those containing the keyword 'UE'.

Figure 30 shows the number of TV news items related to the European Union per month.

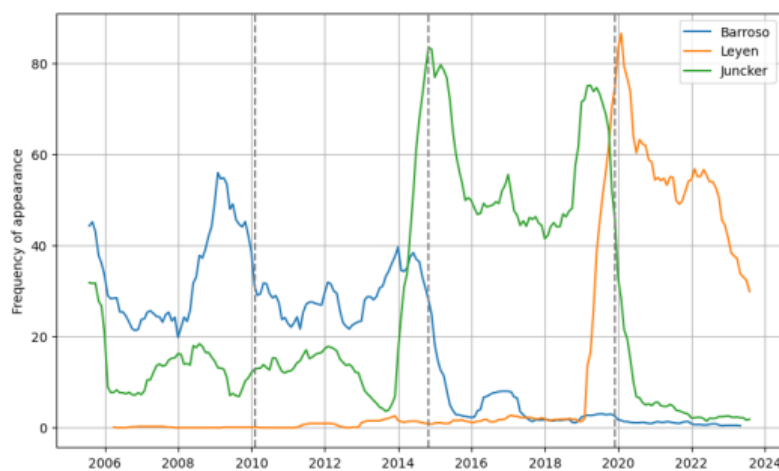**Figure 30:** EU topics in *TF1* news programmes per month
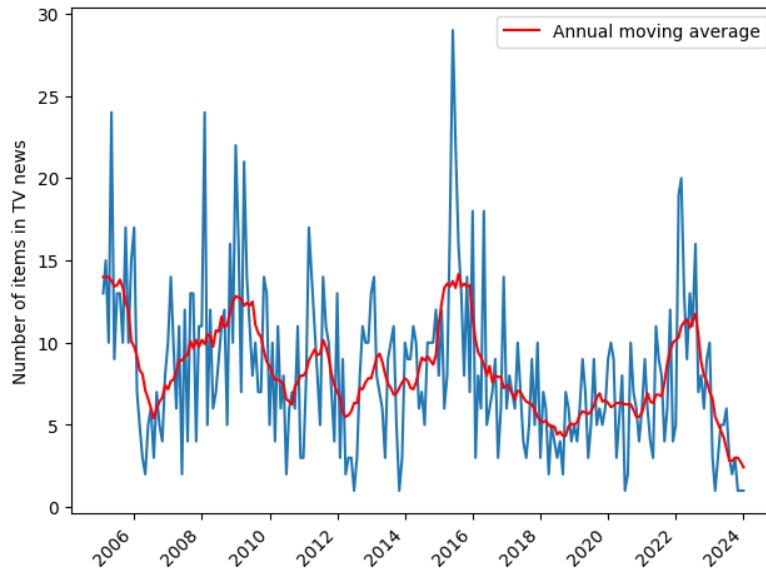
Appendix D Visibility of the European Commission President

Figure 31 shows the frequency of appearance of the names of the European Commission Presidents in French national daily newspapers.

Figure 31: Frequency of appearance of European Commission Presidents in daily national newspapers

Appendix E   BERTopic parameters

In order to uncover latent topics in our dataset, we implement the BERTopic algorithm from Grootendorst (2022). This unsupervised machine learning model combines BERT vector representations with a class-based TF-IDF to generate coherent and easily interpretable themes.

Figure 32: Sequence of steps to create BERTopic thematic representations
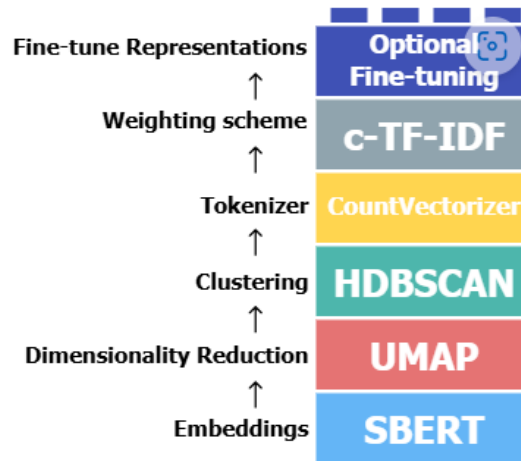
Sources: BERTopic

There are six steps in the process (see Figure 32):

- Embeddings: to transform the articles text into numerical representations. Based on the results of Ciancone et al. (2024) for the performance of sentence transformers in French, we use the *bilingual-embedding-small* model rather than the default *all-MiniLM-L6-v2* one.

- Dimensionality reduction: to reduce the dimensionality as clustering performs poorly on high-dimensional data. We rely on the default Uniform Manifold Approximation and Projection (UMAP) algorithm.

- Clustering: to find clusters while identifying possible outliers. We use the default Hierarchical Density-Based Spatial Clustering (HDBSCAN) algorithm. We set the minimum size for each cluster at 500 to guarantee that each topic contains at least 500 articles.

- Tokenizer: to create a bag-of-words representation of each cluster while accounting for the size of the different clusters. We rely on the default CountVectorizer algorithm.

- Weighting Scheme: to define which words are the most distinctive for each cluster, we use a version of the TF-IDF at the cluster level (rather than document level).

- Fine-tuning topics representation: to decrease the redundancy and improve the diversity of keywords, we rely on the Maximal Marginal Relevance (MMR) algorithm (with a diversity parameter of 0.3).

Finally, we assign each article to the most likely topic (including for those which are excluded as outliers in the clustering step).[41]

Maximum sequence length It should be noted that our embedding model can process sequences of up to 512 tokens only.[42] For longer articles, only the first 512 tokens will be encoded and taken into account. Given that French text typically requires approximately 1.7 tokens per word, the embedding model therefore captures, on average, only about 52% of the content of the articles. To ensure that this computationally motivated choice does not significantly influence our results, we perform a comparison, on a sample of 10,000 articles, between the output of our BERTopic model using only the first 512 tokens with the results obtained by chunking the texts and then averaging the embeddings obtained. On this random sample, the topics produced by both approaches are very similar, with a cosine similarity between the topic embeddings exceeding 0.98.

Dynamic topic modeling Given that our analysis spans approximately 20 years, we also consider employing dynamic topic modeling (DTM) in order to examine potential evolutions in the representation of topics. Indeed, for instance, the theme related to agriculture does not necessarily encompass the same realities in 2005 as it does in 2020.
Such a model can be directly implemented using BERTopic on an almost annual basis. Table 5 presents the topic representation over time for the three main topics.[43]

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[41]We adopt a max-share topic approach. This choice, common in the topic modeling literature, may lead to a loss of information (as some articles could be associated with multiple topics) but this is primarily done for reasons of interpretability and computational efficiency.

[42]The default embedding model can only process up to 256 tokens.

[43]For reasons of space, we present results only for the three most significant topics in terms of volume. The complete set of results is available upon request.

Table 5: Dynamic topic modeling: top 3 topics

Period	Topic 1	Topic 2	Topic 3
jan-05 to feb-06	chirac, référendum, constitutionnel	jeunes, lycée, heures	agriculteurs, agriculture, agricole
feb-06 to feb-07	constitutionnel, gauche, référendum	jeunes, lycée, jumelage	distillation, agriculteurs, agricole
feb-07 to mar-08	sarkozy, simplifié, constitution	culture, jumelage, lycée	agriculture, pac, agricole
mar-08 to mar-09	sarkozy, gauche, nicolas	lycée, marseille, programme	pac, agricole, agriculteurs
mar-09 to apr-10	liste, ump, gauche	lycée, exposition, fête	producteurs, agriculteurs
apr-10 to mai-11	gauche, verts, cantonales	lycée, heures, exposition	agriculture, pac, producteurs
mai-11 to mai-12	sarkozy, gauche, candidat	projets, association, jumelage	légumes, bactérie, producteurs
mai-12 to jun-13	gauche, ump, mélenchon	jeunes, lycée, région	viande, agriculture, agricole
jun-13 to jul-14	ump, gauche, liste	programme, exposition, jumelage	agriculteurs, agricole, producteurs
jul-14 to jul-15	gauche, ump, marine	erasmus, programme, projets	producteurs, agriculteurs, éleveurs
jul-15 to aug-16	gauche, marine, référendum	erasmus, région, programme	agriculteurs, éleveurs, producteurs
aug-16 to sep-17	macron, gauche, mélenchon	erasmus, programme, jumelage	lait, agricole, producteurs
sep-17 to sep-18	macron, liste, gauche	élèves, erasmus, lycée,	glyphosate, agriculteurs, agricoles
sep-18 to oct-19	liste, gauche, européenne	lycée, erasmus, programme	agriculteurs, glyphosate, agricoles
oct-19 to nov-20	gauche, politique, rassemblement	erasmus, patrimoine, programme	pac, agricole, pesticides
nov-20 to nov-21	macron, présidentielle, gauche	erasmus, lycée, ville	agriculteurs, pac, glyphosate
nov-21 to dec-22	macron, emmanuel, présidentielle	erasmus, lycée, projets	agriculture, pac, agriculteurs
dec-22 to jun-23	nupes, liste, gauche	bourges, lycée, erasmus	néonicotinoïdes, betteraves, semences

The temporal representations of the topics appear to be primarily shaped by short-term national and international events. For instance, the political topic (Topic 1) globally reflects the evolution of French politics over recent years. Similarly, the topic related to Russia (not presented here) focuses on issues concerning Georgia in 2008 and 2009, before addressing the Ukrainian question only from 2012 onwards.

However, it is worth noting that certain themes emerge on a longer-term context: for example, the gradual appearance of environmental issues within topics related to agriculture or energy. Likewise, the topic on cultural cooperation initially concerns school exchanges, which appear to have declined in prominence in favor of the Erasmus program. In this respect, they mirror shifts in the concerns of the press.

Overall, however, although the representations evolve over time, the topics remain consistent throughout the entire period, and our analysis confirms the robustness of the results presented in Section 4.2.2.

Appendix F   Topics list

Topic representation	English translation	Share (%)
gauche liste constitution ump	left list constitution ump	17.3
erasmus programme association exposition	erasmus program association exposition	7.5
agriculture agriculteurs agricole producteurs	agriculture farmers agricultural producers	5.3
électricité carbone nucléaire émissions	electricity carbon nuclear emissions	3.5
ukraine russes poutine kiev	ukraine russians poutine kiev	3.3
euro merkel angela chancelière	euro merkel angela chancellor	3.1
réfugiés demandeurs frontières italie	refugees seekers borders italy	2.9
brexit britanniques londres boris	brexit british london boris	2.8
cac bourse euros investisseurs	cac bourse euros investors	2.7
déficit pib croissance dépenses	deficit gdp growth spendings	2.5
grèce grec athènes tsipras	greece greek athens tsipras	2.3
merkel angela coalition berlin	merkel angela coalition berlin	2.1
travailleurs travail détachement salariés	workers work posting employees	2.0
taux bce inflation monétaire	rate ecb inflation monetary	2.0
vaccin covid coronavirus doses	vaccine covid coronavirus doses	1.9
banques esma bâle supervision	bank esma basel supervision	1.8
débat thème consultations débats	debate theme consultations debates	1.6
données google rgpd numérique	data google gdpr digital	1.5
croissance trimestre pib récession	growth trimester gdp recession	1.5
avocat parquet justice magistrats	laywer prosecutor justice magistrate	1.2
sncf ferroviaire rail cheminots	sncf railway rail railway workers	1.2
championnat uefa football joueurs	championship uefa footbal players	1.1
automobile renault ventes acea	automobile renault sales acea	1.1
ceta canada accord transatlantique	ceta canada agreement transatlantic	1.1
attentats terrorisme terroristes terroriste	attacks terrorism terrorists terrorist	1.1
pêche pêcheurs poissons bateaux	fishing fishers fishs boats	1.0
médicament laboratoires pharmaceutique sanofi	drugs laboratories pharmaceutical sanofi	1.0
conseiller cabinet ministère conseillère	advisor cabinet ministry advisor	1.0
compagnies ryanair aéroports aérien	companies ryanair airport air	0.9
interet gmt conférence agenda	interest gmt conference agenda	0.9
frugaux plan subventions prêts	frugal plan subsidies loans	0.9
fiscaux paradis multinationales fiscales	tax paradise multinationals fiscal	0.9
monnaie thilo sarrazin politiques	money thilo sarrazin politics	0.9
auteur éditeurs youtube plateformes	autor publishers youtube platforms	0.9
pluriannuel cfp cohésion rabais	multi-annual mff cohesion discount	0.9
galileo orbite arianespace satellite	galileo orbit arianespace satellite	0.8
ankara adhésion turque chapitres	ankara accession turkey chapters	0.8
baignade eaux rivières natura	swin waters rivers natura	0.7
gaz gazprom gnl gazoduc	gas gazprom lng gas pipeline	0.6
jeunes chômage apprentissage formation	young unemployement apprenticeship formation	0.6

Topic representation	English translation	Share (%)
mots papier general gmt	words paper general gmt	0.6
banques ratio créances actifs	banks ratio credits assets	0.6
opérateurs télécoms orange telecom	operators telecoms orange telecom	0.6
calmels poste neutraliseraient mba	calmels position neutralize mba	0.6
kosovo serbe belgrade albanie	kosovo serb belgrade albania	0.6
pen marine fictifs légier	pen marine fictitious légier	0.5
airbus eads aéronautique avions	airbus eads aeronautics airplanes	0.5
pollution particules azote dioxyde	pollution particles nitrogen dioxide	0.5
jinping chinoise multilatéralisme rival	jinping chinese multilateralism rival	0.5
taxe ttf tobin assiette	tax tt tobin base	0.5
ogm maïs monsanto transgénique	gmo mais monsanto transgenic	0.5
viktor hongrois budapest fidesz	viktor hungarian budapest fidesz	0.5
syrie régime makhlouf syriens	syria regime makhlouf syrians	0.5
strasbourg siège parlement strasbourgeois	strasbourg seat parliament citizens of strasbourg	0.5
mali sahel malienne malien	mali sahel malian malian	0.4
bombardier fusion concurrence signalisation	bombardier merger competition signalling	0.4
viviane expulsions roumains renvois	viviane expulsion romanians dismissals	0.4
iran iranien sanctions iraniens	iran iranian sanctions iranians	0.4
pologne polonais varsovie kaczynski	poland polish warsaw kaczynski	0.4
hamas abbas palestine israélien	hamas abbas palestine israelian	0.4
paiements cartes mastercard visa	payments cards mastercard visa	0.4
omc mandelson commerce agricoles	wto mandelson trade agricultural	0.4
démunis aide associations fead	deprived assistance associations fead	0.3
cromme compétitivité potier doivent	cromme competitivness potier should	0.3
gafa taxe numérique google	gafa tax digital google	0.3
fayolle juncker projets pme	fayolle juncker projects sme	0.3
mercosur accord uruguay déforestation	mercosur agreement uruguay deforestation	0.3
sncm compagnie veolia ferries	sncm company veolia ferries	0.3
vonroll arcelormittal acier visserie	vonroll arcelormittal steel screw	0.2

Appendix G   TextBlob sentiment analysis dictionnary

We rely on the French version of the TextBlob sentiment dictionary. After tokenization and lemmatization, a polarity score (between -1 and +1) is derived from the number of occurrences of positive and negative words present in the lexicon. Figure 33 presents the density of polarity scores given the polarity predicted by the LLM.

Figure 33: Polarity score using TextBlob dictionary
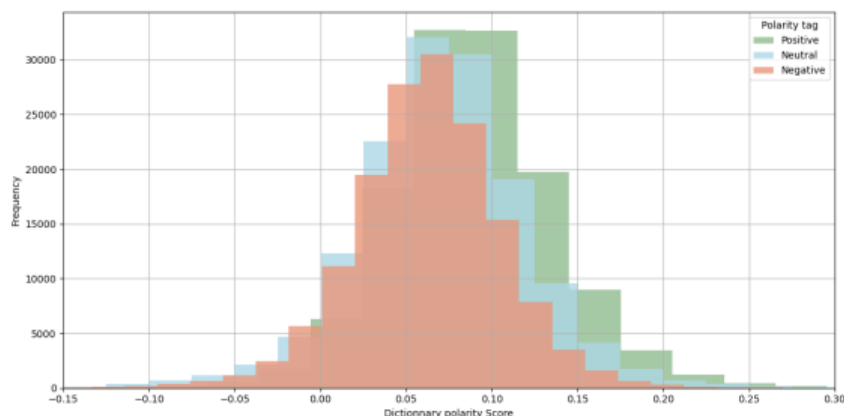
Appendix H   Duplicates and *AFP* press releases

Our database excludes strict duplicates between articles. However, browsing through the database, we notice that some articles are present "twice": before and after the correction of a spelling mistake, for example. Our first naive approach (eliminating strictly identical articles) may fail to detect certain articles that are very close but not exactly identical (for instance correction of a spelling error or change in the layout).

In order to control for the impact of such an issue and given our large amount of articles, we implement the MinHash Locality Sensitive Hashing (LSH) algorithm. After hashing our data (transformation of our texts into numerical values, which are easier to compare), we use the LSH algorithm to compute a similarity score (based on the Jaccard distance) between each pair of texts. A key parameter of the algorithm is therefore the threshold (between 0 and 1) above which similarity can be concluded. Figure 34 shows the number of duplicates found depending on the threshold chosen.

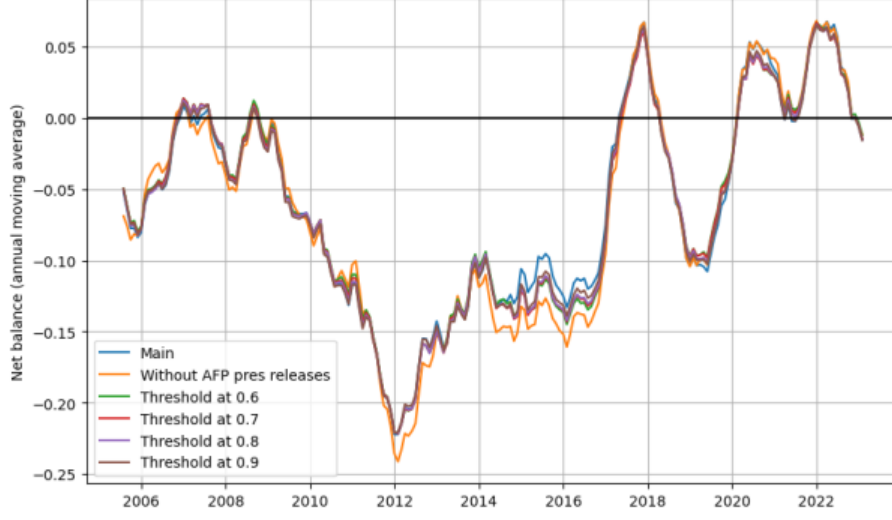**Figure 34:** Number of duplicates depending on the threshold chosen in the LSH algorithm
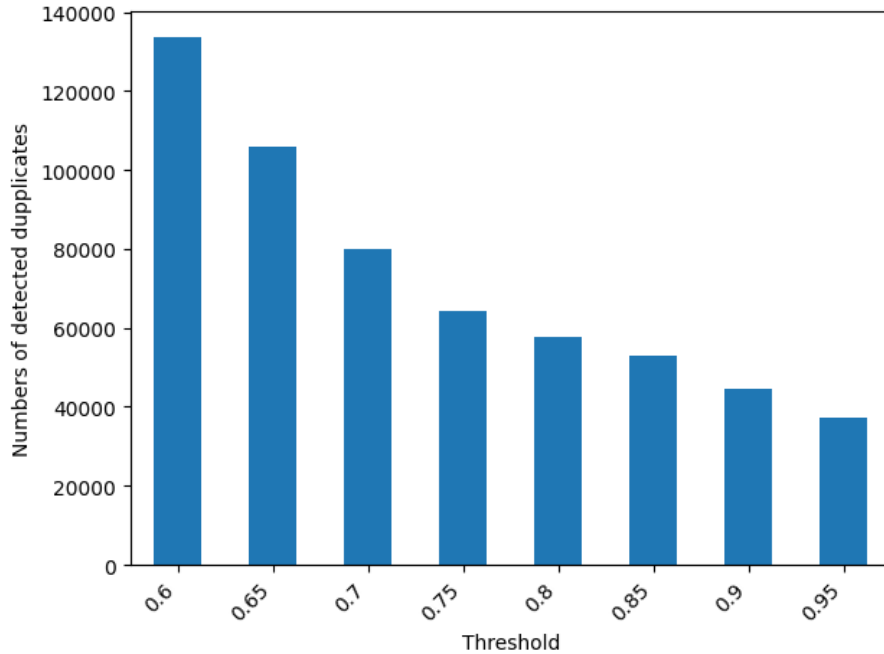
We choose to conduct our main estimations in the paper retaining potential duplicate articles. Indeed, we observe that a significant share of the identified duplicates corresponds to articles published in different newspapers belonging to the same media group. For instance, an article from *Le Berry Républicain* may be reused in *La Montagne* - as both belong to the *Centre France* press group. Although the algorithm rightly classifies these articles as similar, they are intended for different audiences and cannot be considered as true duplicates. We estimate that this situation concerns approximately 45% of the detected duplicates. However, we check their possible impact on our results (see below).

Another issue concerns AFP wire reports, as they are not directly read by the general public. Instead, they are first processed by newspapers, which use them as a basis for writing their own articles. We estimate that, regardless of the threshold chosen for the LSH algorithm, around 20% of the duplicates come from the *Agence France Presse (AFP)*. These articles are probably simple "copies" from press releases.

Finally, we estimate the impact of these potential duplicates and *AFP* press releases by retrieving them when computing our sentiment index. Figure 35 show that, regardless of the thresholds chosen, our results remain comparable.

Figure 35: Sentiment index when excluding duplicates and *AFP* news wires

Appendix I Press circulation and alternative sentiment index

Newspaper circulation Our first sentiment index $SentEU_t$ equally weights each article, irrespective of the journal dissemination. This might bias our measure, if less read newspapers tend to be more positive or negative regarding the European Union.

In order to check for the possible impact of such an issue, we retrieve publicly available data on the circulation of French national daily newspapers in 2023 from the *ACPM* (*Alliance pour les chiffres de la presse et des médias*, in English Alliance for Media and Press Data). It provides certified measures of market shares (both the number of printed version sales and online subscriptions) for many newspapers.[44]

We then compute a new weighted sentiment index $WSentEU_t$ as the weighted sum of each newspaper sentiment index:

$$WSentEU_t = \sum_i w_i \frac{Pos_{t,i} - Neg_{t,i}}{Tot_{t,i}}$$

where w_i is the market share of newspaper i in 2023 and $Pos_{i,t}$, $Neg_{i,t}$, $Tot_{i,t}$ the number of positive, negative and total articles respectively.

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[44]In the absence of available data for previous years, we are limited to using 2023 market shares as a weighting scheme.

**Figure 36:** Taking newspapers circulation into account: the case of daily national newspapers
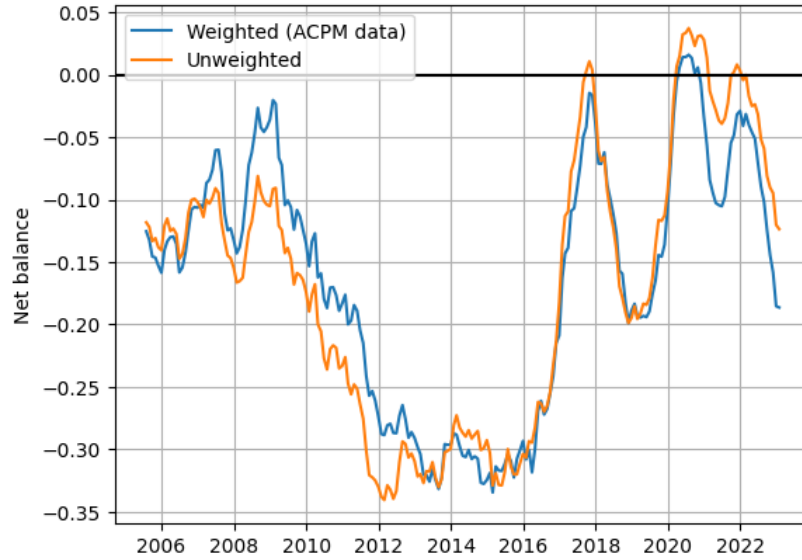
As shown in Figure 36, the impact of weighting is relatively minor: the dynamics and the magnitude of the sentiment remain similar with and without weights. The correlation between the two indexes is therefore very high (around 0.95).

Alternative sentiment index   We also consider an alternative indicator $SentEU_t^*$ where the index is only calculated over polarised articles. $SentEU_t^* = \frac{Pos_t - Neg_t}{Pos_t + Neg_t}$

Figure 37: Alternative EU sentiment index
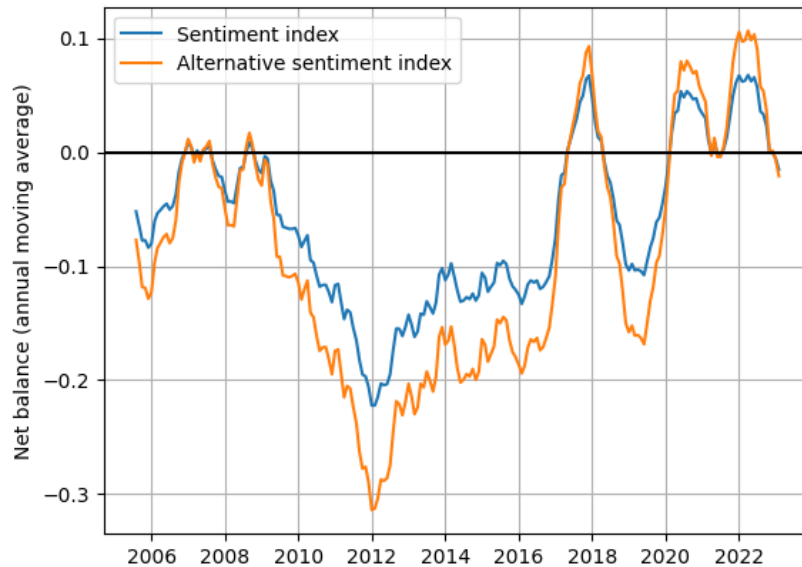
This option tends to reinforce the observed decrease in EU sentiment over the 2009-2012 period (Figure 37). However, the two indexes are once again highly correlated, and it has no impact on the interpretation of our results.

Appendix J   Topic polarity

Top 10 most positive/negative topics   Table 6 shows the top 10 topics with the most positive and negative average polarity score.

Table 6: Top 10 topics with the most positive and negative polarity score (average polarity score)

<table>
<tr><td colspan="2" align="center">(a) Most positive topics</td><td colspan="2" align="center">(b) Most negative topics</td></tr>
<tr><td>fayolle juncker projets pme</td><td>0.55</td><td>pen marine fictifs légier</td><td>-0.65</td></tr>
<tr><td>erasmus programme association exposition</td><td>0.51</td><td>sncm compagnie veolia ferries</td><td>-0.48</td></tr>
<tr><td>galileo orbite arianespace satellite</td><td>0.40</td><td>mercosur accord uruguay déforestation</td><td>-0.40</td></tr>
<tr><td>baignade eaux rivières natura</td><td>0.23</td><td>viktor hongrois budapest fidesz</td><td>-0.40</td></tr>
<tr><td>débat thème consultations débats</td><td>0.19</td><td>ogm maïs monsanto transgénique</td><td>-0.38</td></tr>
<tr><td>cromme compétitivité potier doivent</td><td>0.19</td><td>ankara adhésion turque chapitres</td><td>-0.33</td></tr>
<tr><td>frugaux plan subventions prêts</td><td>0.18</td><td>déficit pib croissance dépenses</td><td>-0.33</td></tr>
<tr><td>airbus eads aéronautique avions</td><td>0.16</td><td>pêche pêcheurs poissons bateaux</td><td>-0.32</td></tr>
<tr><td>kosovo serbe belgrade albanie</td><td>0.11</td><td>brexit britanniques londres boris</td><td>-0.32</td></tr>
<tr><td>mali sahel malienne malien</td><td>0.11</td><td>bombardier fusion concurrence signalisation</td><td>-0.32</td></tr>
</table>

Sources: Factiva and *Le Monde*, authors' computations.

The topic n°6 "*cromme compétitivité potier doivent*" pertains to issues of industrial competitiveness of the European economy. The associated keywords notably reference Gerhard Cromme, co-chair of the Franco-German working group "Competitiveness and Growth in Europe" (which convened in 2013), as well as Benoît Potier, Chairman of the Board of *Air Liquide*. The majority of the 1,100 articles adopt a predominantly positive tone, emphasizing the efforts undertaken to enhance competitiveness and to address the EU's technological lag vis-à-vis its global competitors

Temporal dynamics of topic polarity   Figure 38 illustrates the temporal evolution of our sentiment index for the five most prominent topics.

Figure 38: Evolution of the sentiment index for the top 5 topic over time
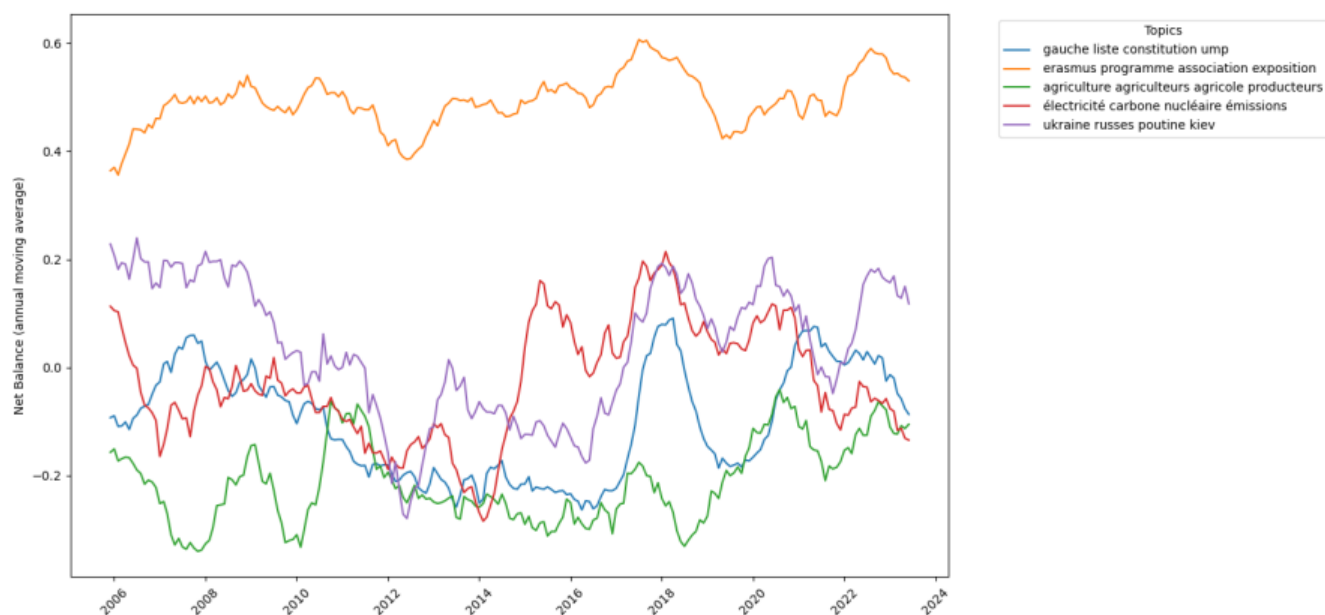
Sources: Factiva and *Le Monde*, authors' computations.

Figure 39 depicts the temporal evolution of the average polarity of articles published in the local press and national newspapers covering migration-related issues.

Figure 39: Sentiment index of articles adressing the topic of immigration
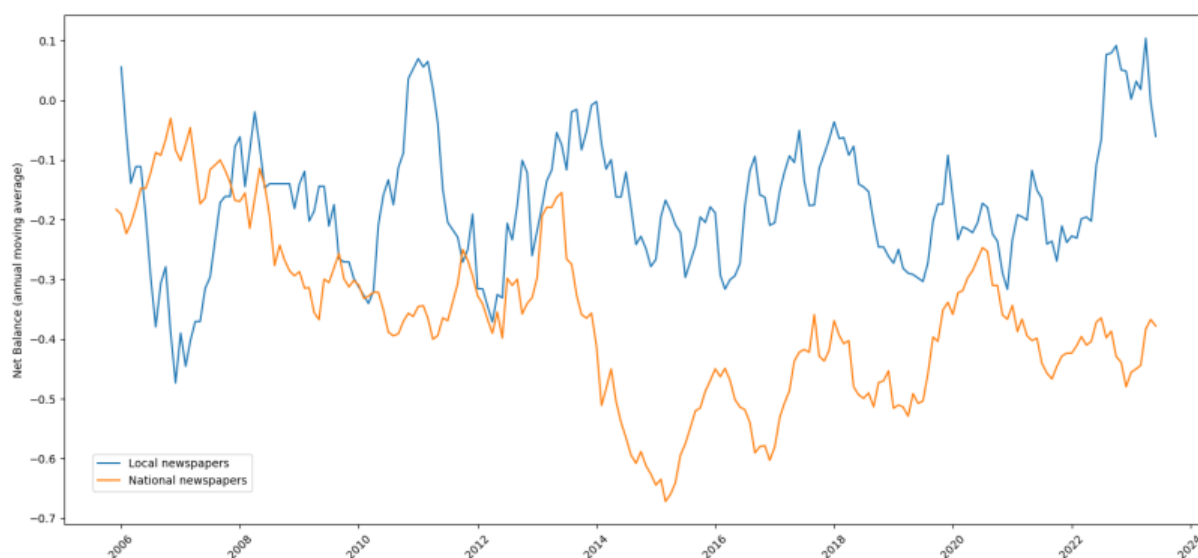

Sources: Factiva and *Le Monde*, authors' computations.

Appendix K   Trust and frequency of reading the written press and the use of social networks

Trust in the written press   Figure 40 shows the net balance (Tend to trust - Tend not to trust) to the Standard Eurobarometer question: *For the following institution, please tell me if you tend to trust it or tend not to trust it. The written press.*
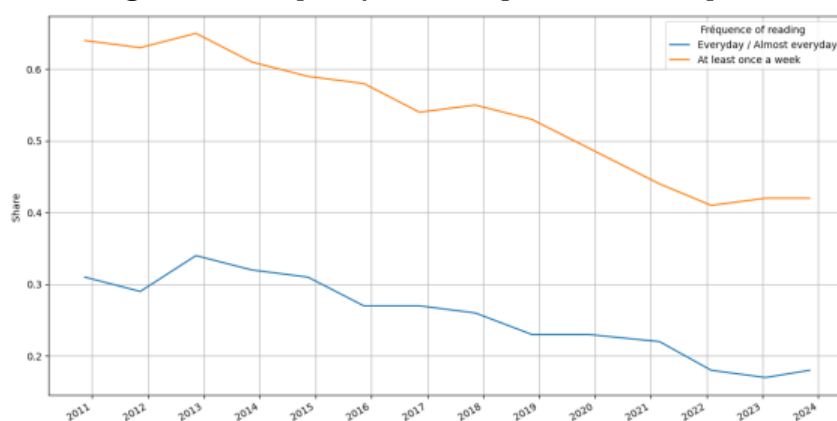
Figure 40: Trust in the written press
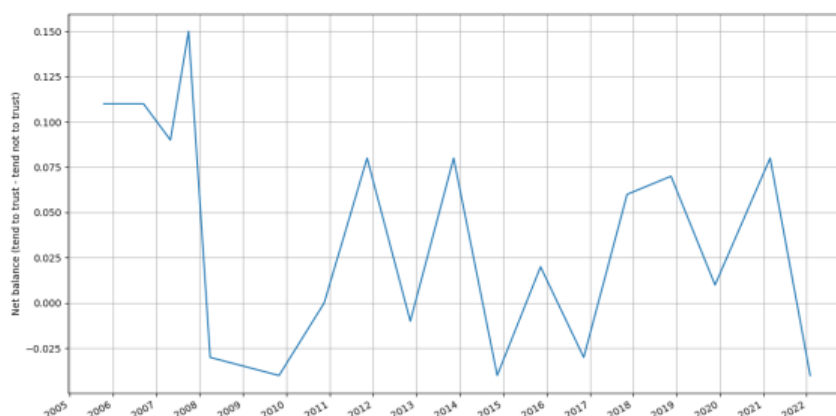
<div align="right">Sources: Eurobarometer, authors' computations.</div>

Share of newspapers regular readers   Figure 41 shows the evolution of the share of regular readers of newspapers, based on the following Standard Eurobarometer question: *Could you tell me to what extent you read the written press?*
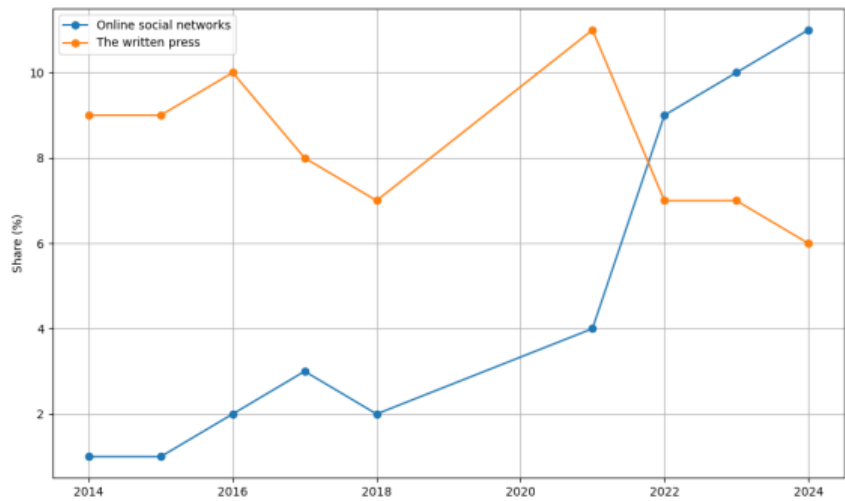
Figure 41: Frequency of reading of the written press

<div align="right">Sources: Eurobarometer, authors' computations.</div>

Information sources on European affairs Figure 42 shows the compared evolution of the use of the written press and online social media to get information on the European affairs, based on the following Standard Eurobarometer irregular question: "*Where do you get most of your news on European political matters? Firstly?*".

Figure 42: Share of information sources on European affairs

Sources: Eurobarometer, authors' computations.