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ABSTRACT:

Cohesion policy is the European Union's (EU) main investment policy and seeks to strengthen economic, social and territorial cohesion. While accomplishments in this regard are constantly measured, European citizens are not always aware of the policy's impact and the role the EU plays therein. This is especially relevant as the communication of EU policies is central to the emergence of a European public sphere, an acknowledged condition for European integration. In this paper, we aim at advancing research in this regard through the analysis of cohesion policy communication on the social media channels of ten Local Managing Authorities (LMAs) responsible for managing and communicating structural funds at the local level. By building on a bottom-up construction of shared meaning structures through semi-automatic analysis techniques, we make the following three observations: first, social media communication is indicative of 'horizontal Europeanization'; second, Europeanization occurs both in the form of the spontaneous amalgamation of shared discontent expressed by citizens and the institutionalization of top-down EU communication measures adopted by LMAs; and third, a cluster of topics articulated internationally and showcasing a negative attitude towards the EU funding scheme suggests that, counter-intuitively, Euroscepticism seems to facilitate the emergence of a European public sphere.

KEYWORDS: Cohesion policy; European Public Sphere; Topic Modeling; Social Media; Euroscepticism.
JEL CLASSIFICATION: R58; O19; Z18.

El uso de las redes sociales en la comunicación política de la UE y las implicaciones para el surgimiento de una esfera pública europea

RESUMEN:

La política de cohesión es la principal política de inversión de la Unión Europea (UE) y busca fortalecer la cohesión económica, social y territorial entre las regiones europeas. Aunque los logros en este sentido se miden constantemente, los ciudadanos europeos no siempre son conscientes del impacto de la política y del papel que desempeña en ella la UE. Esto es especialmente relevante ya que la comunicación de las políticas de la UE es fundamental para el surgimiento de una esfera de comunicación pública europea, una

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condición reconocida para la integración europea. En este artículo, nuestro objetivo es avanzar en la investigación en este respecto a través del análisis de la comunicación de la política de cohesión en los canales de redes sociales de diez Autoridades Administrativas Locales (LMA en inglés) responsables de administrar y comunicar los proyectos financiados a través de estos fondos estructurales a nivel local. En este artículo utilizamos técnicas de análisis semiautomáticos del texto para reconstruir la estructura de significados que constituye las comunicaciones de las LMA en las redes sociales, y llegamos a los siguientes tres resultados: primero, la comunicación en las redes sociales es indicativa de "europeización horizontal"; segundo, la europeización ocurre tanto en la forma de la combinación espontánea del descontento compartido expresado por los ciudadanos, como en la institucionalización de las formas de comunicación originadas centralmente en la UE y adoptada localmente por las LMA; y tercero, encontramos varios temas articulados internacionalmente y que muestran una actitud negativa hacia el esquema de financiación de la UE. Este resultado sugiere que, al contrario de lo que podría parecer, el euroescepticismo parece facilitar el surgimiento de una esfera pública europea.

Palabras clave: Política de cohesión; esfera pública europea; Topic Modeling; Medios de comunicación social; Euroescepticismo.

Clasificación JEL: R58; O19; Z18.

1. Introduction

Cohesion policy is the European Union (EU)'s main investment policy – setting aside EUR 347 billion in the 2007-2013 programming period (European Commission, 2010) – and seeks to strengthen economic, social and territorial cohesion. Tailored to reduce inequalities between regions through funding projects, it is major tool for local business and economic development (Bauhr & Charron, 2019). While accomplishments in this regard are constantly measured and documented, European citizens are not always aware of the impact that the policy has on their territories or the role the EU plays therein. With a view to the low levels of identification of EU citizens with the EU (European Commission, Standard Eurobarometer 90.4, 2018), effort has been made by the latter to improve communicative actions and set in place communication strategies conveying cohesion policy at the local level. This is largely done by Local Managing Authorities (LMAs), the institutions responsible for the efficient management, implementation and communication of the operational programs and operating – depending on the respective national legislative framework – at the national or regional level and either as private or public body. Despite the empirical relevance of cohesion policy and increased efforts dedicated to the communication of the policy, little research is devoted to and little is known about how its meaning is socially and linguistically constructed. This is particularly relevant as institutional organizations are increasingly confronted with the challenge of using new social media to target several groups of European citizens.

Conceptually, this issue pairs well with the recent rise in attention paid to communication matters in both European studies (e.g. Gaušis, 2017; Lev-On & Steinfeld, 2015) and institutional organization theory (e.g. Cornelissen et al., 2015). Previous research has focused on the strategic importance of new communication channels (e.g. Hofmann et al., 2013), or the effect that certain frames in public debates might exert on citizens' political behavior such as voting (e.g. DiGrazia et al., 2013; Usherwood & Wright, 2017). Still, little is known about the role of broadcast and social media in "not only transmitting or carrying but also shaping institutional logics and frames" (Cornelissen et al., 2015: 11; see also Triga & Vadratsikas, 2018). This gap is especially relevant in the case of European studies because the shaping of social knowledge – i.e. the social construction of policy – is to be understood as central to the emergence and content of the so-called European public sphere, an acknowledged condition to foster European integration. The European public sphere as a concept refers to the same issues being debated in different European national contexts with reference to similar meaning structures (Risse, 2009). While its importance has been recognized, research so far has mostly criticized its lack or fragmentation (Risse, 2003), rather than measured a European public sphere (and more so, the framing of issues within).

Therefore, in this work, we aim at advancing research on the European public sphere through a social media analysis which specifically builds on a bottom-up construction of shared meaning structures. Our approach builds on the idea of vocabulary structure (Loewenstein et al., 2012) which allows a coherent implementation of topic modeling (Blei et al., 2003; DiMaggio et al., 2013; Mohr & Bogdanov, 2013) as tool for modeling meaning. Due to the formalism of the implemented method, the proposed approach allows for the aggregation and comparative analysis of distinct (i.e. international inter-organizational) evidences, a fundamental element in further advancing studies on the European public sphere.

Empirically, we focus on the communication of EU cohesion policy and analyze the content of the Facebook pages of ten LMAs communicating the policy locally. In particular, these ten LMAs comprise our six national cases, in which we collected and analyzed posts and comments in six languages, and further compared the national cases in order to inquire the possible existence of common topics, which highlight common themes in the different local cases.

Our results show that formal semi-automatic ways of modeling social media conversations are informative regarding the content and structure of social meanings (i.e. which sort of topics there are and how semantically similar they are to each other). Also, we show that by using this approach we can map international similarities and areas of meanings (i.e. clusters of topics). In particular, we conclude by high-lighting three findings: first, 'horizontal Europeanization' of discourse emerges on social media. Second, we find two different kinds of Europeanization: on the one hand, the emergence of a public sphere is the spontaneous result of shared discontent, which occurs when citizens comment on LMAs' posts; on the other hand, horizontal links may be the outcome of institutionalized communication procedures that result from the top-down dissemination of communication guidelines and the like. Third, and finally, the emergence of a cluster of topics articulated internationally and conveying a negative attitude towards the EU funding scheme suggests that, counter-intuitively, Euroscepticism seems to facilitate the building of a European public sphere. This finding brings about a connection between research on the emergence of a European public sphere and neo-institutional literature that addresses fields as arenas of power dependen-cies and strategic interactions where actors' politics shape institutional settings (Fiss & Zajac, 2004; Henisz & Zelner, 2005; Ingram & Clay, 2000; Schneiberg & Bartley, 2001). In particular, the emergence of a European issue field (Hoffman, 1999; Meyer & Höllerer, 2010) may enact struggles in which actors pursue 'politics of signification' over the framing of reality (Benford & Snow, 2000) and the meaning to be assigned to the contested issues (Meyer & Höllerer, 2010; Seo & Creed, 2002). The idea of 'politics of signification', more specifically, refers to the fact that struggles over the media produce representations of reality that give events particular meaning, more than simply reflecting a reality 'out there' (Hall, 1982). From this perspective, while the creation of a European public sphere may contribute to the building of a European identity, it may also contribute to the coalescence of dispersed discontent. On the other hand, the fragmentation of the European public sphere may avoid the coalescence of the malcontent dissemi-nated in European regions. Additionally, we discuss the implication of our methodology for further research on European public spheres and institutional communication. In particular, we focus on the interpretive possibilities offered by some features of the analytical approach such as: a) the degree of inter-nationality of the elicited topics, b) the active/passive (i.e. comment/post) proportions of communication and c) the sentiment connected to posts and comments.

The paper is structured as follows: first we review our theoretical background regarding the European public sphere and media frames. Then, we present the data collected and the methods used for analysis. We then move to findings, before we conclude with a discussion and conclusion.

2. THEORETICAL BACKGROUND: EUROPEAN PUBLIC SPHERE AND MEDIA FRAMES

Practice-oriented literature generally recommends that European public institutions 'get out of the ivory tower of the EU' and use new, and in particular, social media by emphasizing the benefits thereof,

namely: moving to where the citizens are and accelerating the process of interaction and engagement by means of receiving valuable feedback. Academic literature has predominantly explored social media from a political communication-perspective, focusing on the use of social media by European institutions (e.g. Gaušis, 2017), national representatives of EU institutions or national and sub-national political figures and institutions. This use of social media has been studied from different viewpoints, broadly distinguishable between content (studied mostly through properties and topics of a post) and citizen participation (through the means of sentiment analysis along with the frequency or amount of citizens' reactions) (for a similar, yet more defined categorisation, see Bryer, 2013).

While the practical importance of social media as a strategic communication channel is largely acknowledged (witnessed also in the academic interest in content and citizen participation), less is known about how communication through social media contributes to the social construction of European policy, integration and identity. We understand this construction to somewhat coincide with the Europeanization of national discourse or, in other words, with the emergence of a European public sphere. As Risse (2009: 150) emphasizes, "the emergence of a transnational public sphere is a social construction par excellence" and "the ability to communicate meaningfully across borders depends crucially on the extent to which the same issues are debated at the same time with similar frames of reference or meaning structures".

This public sphere can then be understood along three dimensions, as described by Koopmans and Erbe (2004; see also Koopmans & Stratham, 2010): first, and following an understanding of the EU as supranational institution, a Europeanized public debate would imply a supranational European public sphere in which European-level institutions and European-wide mass media interact with one another. Second, a Europeanized public debate might follow 'vertical Europeanization', in which communication interlinks the European and national level. Third, Europeanization might follow 'horizontal Europeanization' with communication linkages between different member states. Europeanization in this latter regard might, then, not entail direct reference to European actors or European themes, but the increased attention towards public debates in other member states.

Another important issue in this regard concerns the way in which European issues penetrate national public opinions. In this regard, Peter and De Vreese (2004) have performed a cross-national comparative content analysis looking at the coverage of EU politics in five member states' television news. In the majority of countries, EU politics and EU officials were only marginally represented. However, in the cases in which the EU was covered, EU politics were more prominently presented when compared to other political news. This could essentially be traced back to three factors, namely the prominence in countries with higher levels of public satisfaction with democracy, in public broadcasting news programs, and during periods around EU summits. The findings suggest that Europeanization of television news coverage is rather 'illusion than reality'. In a similar manner, Adam (2007) concludes that empirical research emphasizes three points: first, Europe and with it European actors enter national media in those issue fields in which competencies are at the European level. Second, and in line with Peter and De Vreese (2004), European issues gain visibility during summit meetings or political crises. And third, European issues and actors are more visible in quality newspapers and public broadcasting news than in tabloid press and private channels. Adam (2007) further showcases considerable differences in issue salience and actor prominence between and within countries. Hence, besides mere definition problems of a Europeanized public sphere, public spheres tend to be fragmented at the national level as well.

More recent studies on the European public sphere have highlighted the temporal dimension of the debates: for a European public sphere to exist it is not only important to have the same issues debated in different contexts, but also "at the same time and under similar aspects of relevance" (Kanter, 2015: 87). This issue is particularly relevant when dealing with social media, as they are not limited by geographical boundaries, thus permitting frames to spread transnationally (Ruzza & Pejovic, 2019). One particularly relevant example is the rise of right-wing populist parties in Europe and the US, who adopted similar discursive shifts in different countries and massively used social media to spread populist messages (Wodak and Krzyżanowski, 2017).

De Vreese (2007) further summarizes the current research on public spheres in the following: a) a first 'utopian' strand of research that focuses on the necessity and prerequisite for a 'truly' European public sphere, b) a second 'elitist' research stream that focuses on specific cases in which a European public sphere has come to exist, and c) a third 'realist' stream that centers on the indicators and extent to which Europeanization in the national public spheres can be identified. While we point the reader to that contribution for a more detailed description of the three strands of research, we want to follow up on one of the avenues that the author points out to further advance research. That is the issue of measuring the European public sphere: "one inhibiting factor stemming from previous research is the incompatibility and lack of comparability across studies. Key features of a communicative European space involve a classification of topics, actors, degree of cross-references, and the framing of issues [...] the notion of framing should be central in future assessments of Europeanization of media content and the public sphere. The underlying question is not only whether issues are addressed simultaneously, but also how these are discussed" (De Vreese 2007: 13).

We identify three main limitations to the current feasibility of this proposal: first, while a series of studies has indeed implemented the analytical concept of media frames (i.e. De Vreese, 2002; De Vreese & Kandyla, 2009), it has also pointed out that such frames tend to be given (Triga & Vadratsikas, 2017). Second, linguistic barriers seem to be effective, as empirical literature with an orientation to measurement has focused more on the Europeanization of national spheres than on actual international comparisons (i.e. De Vreese, 2007). Third and finally, existing research has only scarcely linked social media to public spheres specifically (for an exception, see Karantzeni & Gouskos, 2013: 408).

In order to overcome these limitations, we propose a different analytical angle which is rooted in institutional organization theory and cultural sociology in order to develop an alternative understanding of what is being said about EU matters – cohesion policy in the specific case – over social media.

We start from the concept of *vocabularies* which we consider as systems of words and their meanings in given social collectives. Burke (1937: 2-4) explains how vocabularies persuade and motivate action by creating frames or cues for relations among actors. Building on this and other seminal contributions (i.e. Mills, 1939; 1940) the importance of vocabularies is established through the fact that "by learning the vocabularies of social collectives, individuals learn the values, beliefs, and practices of the collective, shaping how they think and communicate" (Loewenstein et al., 2012: 47). The authors further propose the concept of vocabulary structure, that is: "the structure of conventional word use captured by the combination of word frequencies, word-to-word-relationships, and word-to example relationship that together demarcate a system of cultural categories" (ibid: 3).

We argue that the idea of assessing the structure of meaning as the embedding of words in networks of semantic relations (with other words) is of pivotal importance in order to build descriptions of textual data. This is because such co-occurrences can be counted and formal methods of analysis can be applied in a way that still preserves part of the interpretive depth of more qualitative methods (i.e. frame and discourse analysis).

3. DATA & METHODS

We focus, here, on the role of social media as an institutional communication tool of EU cohesion policy in connection with the (possible) emergence of a European public sphere. We hence analyzed the language used by LMAs and their audiences on social media put in place to communicate cohesion policy, make audiences understand funding schemes and evoke reactions and participation. As part of a wider project funded under the Horizon 2020 program, the PERCEIVE project, we conducted a comparative analysis of the Facebook pages in six national cases, which are constituted by ten LMAs and provide PERCEIVES's sample. For each case, local partners of the PERCEIVE project were involved in selecting relevant institutions to focus on, and, hence, one or two regions were selected. Moreover, in the case of

Romania for instance, communication responsibilities were shared between several institutions, amounting to a larger amount of pages to consider. More specifically, we analyzed the following ten Facebook pages[1]:

- Italy: Regione Emilia-Romagna

- Italy: Regione Calabria POR

- Austria: Regionalmanagement Burgenland GmbH

- Poland: Warmińsko-Mazurskie region

- Poland: Dolnośląskie region

- Romania: Agentia pentru Dezvoltare Regionala Sud-Est (Sud Est Regional Development Agency)

- Romania: Ministerul Dezvoltarii Regionale, Administratiei Publice si Fondurilor Europene (Ministry of Regional Development, Public Administration and European Funds)

- Romania: Ministerul Fondurilor Europene (Ministry of European Funds).

- Sweden: Tillväxtverket

- Spain: Junta de Extremadura.

In total, this amounted to 29.173 posts, and 20.372 comments. We consider language as a tool able to shape thought and actions (Phillips et al., 2008). Therefore, to grasp the power of words and dictionaries (Ocasio & Joseph, 2005; Loewenstein et al., 2012), we combined Topic Modeling (Blei et al., 2003), sentiment analysis, and finally qualitatively clustered topics in our approach. We detail the procedure in the following sections.

3.1. Topic Modeling

Topic Modeling (Blei et al, 2003) is a semi-automated technique used to analyze a corpus of texts and induce the meanings contained therein. More specifically, Topic Modeling semi-automatically codes words into a set of 'topics' that are containers of words co-occurring frequently. Then, researchers have to qualitatively induce the meaning of each topic. This technique is particularly suitable to our case in view of the following reasons: First, Topic Modeling allows for analyzing corpora too big to deal with for a human being. Second, it does not analyze words based on their meaning, but only based on their co-occurrences. Induction and the interpretation of topics are thus an important part of the research. The third useful feature is that Topic Modeling recognizes that the meaning of a word depends on the surrounding words and that, hence, a word can have different meanings in different contexts. The fourth useful feature, here, is that topics are explicit and other researchers may reproduce the analysis, which improves reliability (DiMaggio et al., 2013). Moreover, being independent from vocabularies, Topic Modeling is able to analyze texts in different languages. Hence, we were able to analyze six cases, composed by texts in different languages, and obtain comparable results.

Following established literature, we used Topic Modeling based on an algorithm called Latent Dirichlet Allocation (Blei et al., 2003) which, through Bayesian statistics, places together terms that appear in the same texts more frequently than one would expect by chance. The idea is that these terms constitute topics, and, in particular, each word within the corpus is coded to a topic. Conversely, topics constitute textual sources in different percentages. Before analysing sources, for each language we developed a so-called stop-word list, which is a list of words that the software will ignore, and which were composed of words with scarce substantive meaning, such as articles and pronouns. For each case study, we downloaded all the posts and comments and cleaned data. To perform Topic Modeling, we used Mallet – an open-

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[1] See Table 1 for more details.

source software developed by the University of Amherst Massachusetts (McCallum, 2002)". For each national case we developed a 20 topic model[2]. Topic Modeling results include:

- a list of the most important words constituting each topic;

- a list describing how each word was coded in each text analyzed;

- a composition file, which describes the percentage of the composition of the original sources, topic by topic;

- a diagnostic file.

Based on these results, we then induced the meanings of topics together with PERCEIVE's partners, who are academics trained in cohesion policy-related issues, as they are able to navigate the local knowledge needed to interpret each topic in its national context.

3.2. SENTIMENT ANALYSIS

Topic models are meant to enhance our understanding of the public debate on cohesion policy in different national contexts. Such a representation can be enriched by assessing the characteristics of the words constituting topics. In particular, we examined whether contents produced by the LMAs somehow differed from contents produced by their external audiences in terms of positive, neutral and negative words used in the content production. This task was performed through sentiment analysis, which is based on *lexicons* – collections of words coded according to the sentiment they potentially express. We tried several lexicons in order to strengthen the reliability of our interpretation of results, and finally present results based on the VADER lexicon, as it is especially tailored for social media communications (Hutto & Gilbert, 2014). In particular, for each topic, we analyzed the 100 most important words and present results computing the ratios of negative/positive words. This ratio is particularly interesting, as we will show in the next section, as topics mostly used in posts (i.e. as a proxy for the voice of the LMA) and topics mostly used in comments (i.e. as a proxy for the voice of the external audiences) clearly differ in terms of sentiment.

3.3. CLUSTERING

We finally clustered topics in seven main clusters in order to inquire the different discourses characterizing LMAs at the national level. Our aim was twofold: first of all, we wanted to inquire the (possible) existence of a European public sphere, which we understood as the extent to which the same issues are debated with similar topics, at the same time, in different local cases (Risse, 2009). Second, we wanted to characterize this emerging European public sphere, by analyzing which kind of themes and topics populate it. We qualitatively clustered topics based on i) the meaning of each topic, as qualitatively induced together with project partners; ii) the sentiment associated with each topic; iii) the prevalent usage of each topic in posts or comments. In the following paragraph we detail the findings made.

4. FINDINGS

The first step of our research consisted of the development of a 20-topic model for each case and the interpretation of the meanings thereof. While certainly important, this is not the focus of our paper. Therefore, the list of the 20 most important words and the description of each topic for the six national cases can be found in Appendix 1. Here, as we focus on the European public sphere, we deal with a comparison of the different cases. Therefore, in the remainder of the paper, we tackle the clustering that we performed and the insights that we derived from it.

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[2] We tried different models, and finally selected 20 topic models in order to balance in-depth analysis and parsimony. Also, we decided to develop models with 20 topics for each case in order to ensure comparability.

In the following seven tables we present the clusters of topics that we induced. The first column is a cluster identifier, while the second column acts as topic identifier. For example, the first topic in the first table is 09AT, meaning that it is topic number nine within the Austrian case. The third column presents the name of each topic that was labeled together with the project partners. The fourth column presents the sentiment of the topic which is calculated as a proportion of negative vocabulary over positive vocabulary used in the topic. The fifth and sixth columns describe the usage of a certain topic in posts and comments respectively. For example, the first topic, which is the above-mentioned 09AT, constitutes 4,7% of the posts and 3,7% of the comments for the Austrian case. The topic 09AT, thus, is used more in posts than in topics, and exhibits rather negative sentiment. At the end of each table, averages regarding the sentiments and the average usage in posts and comments summarize the characteristics of topics within each cluster.

4.1. Cluster 1: Euroscepticism and negative interaction with audiences

The first cluster, that we named *Euroscepticism and negative interaction with audiences*[3], comprises topics from five national cases: only the Polish case is not included. On average, topics in this cluster have the most negative sentiment in our sample. Also, the cluster comprises topics which on average are much more used in comments than in posts. The average usage for comments of topics pertaining to this cluster is 6,2%, while the average usage for posts of topics is 3,6%.

The topic with the most negative sentiment is 02IT, 'Europe and the earthquake', which is centered on the region Emilia-Romagna having used European funds for reconstruction work after the 2012 earthquake. This topic displays negative sentiment because of the presence of earthquake-related words, but it is also used in comments complaining about the reconstruction phase. Another very negatively loaded topic, which is especially used in comments, is topic 09IT, 'Vaccines', which describes a very heated debate in Italy following the approval of a law to increase the number of mandatory vaccines for children and in which an anti-vaccination movement took place on Facebook to support their stance against the local and EU government. Negative sentiment also emerges in topic 16IT, which deals with the protection of the territory and coast of the region Emilia-Romagna. Words such as "emergency", "bad weather", "security" and "territory" highlight this emphasis. Another heated topic, which signals a very specific complaint by citizens and is used a lot more in comments than in posts is topic 00SE, 'Misuse of structural funds', which is mainly centered on a Swedish politician that had to resign over misuse allegations in connection with her role as Director General of Tillväxtverket when it was discovered that she approved the expenditure of almost 7.5 million Swedish krona (about 700.000€) for seminars and representation activities. Within this cluster, we also find several topics that are used in complaints in a number of countries. This is the case for 16ES, 'general complaints (Spanish case)' against the LMA, 01IT, 'general complaints (Italian case)' against the LMA, 08IT, 'specific complaints' regarding cohesion policy-related issues. Other topics which are loaded negatively specifically deal with European funds and the usage thereof: this is the case for 12IT in the region Calabria, 14IT, concerning youth unemployment and the European Social Fund, or 17SE, regarding EU-funded programs in Sweden. A number of topics from the Romanian case, too, are characterized by negative sentiment and by being used in comments rather than in posts. This is the case for 03RO, which deals with bureaucratic issues with funding, 6RO, which is centered on disputes concerning a new law regarding LMAs' remuneration, and 11RO, covering a political scandal. Other topics group complaints around social services and healthcare: this is the case in Spain (health system and social services) and Italy (health care administration, disinfestation). Social aspects, in general, are also discussed here.

Overall this cluster is very interesting: first of all, we trace similar topics in several national cases, with the only exception of Poland. Secondly, most of these topics are very negatively loaded in terms of

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[3] From now on, we will call this 'Euroscepticism' only for sake of space and understandability.

sentiment, and are used more in comments than in posts. Interestingly, the topics making critical remarks are the mostly internationally distributed.

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
1	09AT	COOPERATION	0,5	4,7%	3,7%
1	06ES	CULTURAL ACTIVITIES: PEOPLE	0,5	4,7%	5,1%
1	11ES	HEALTH SYSTEM AND SOCIAL SERVICES	0	5,0%	4,1%
1	14ES	DATA IN THE REGION OF EXTREMADURA	0,8	4,8%	4,8%
1	16ES	GENERAL COMPLAINTS (SPANISH CASE)	1	2,4%	17,3%
1	17ES	SOCIAL SERVICES	0,4	4,6%	4,2%
1	18ES	LETTERS TO THE JUNTA	0,1	3,5%	6,9%
1	01IT	GENERAL COMPLAINTS (ITALIAN CASE)	1,1	1,8%	8,0%
1	02IT	EUROPE AND THE EARTHQUAKE	2,3	5,6%	4,2%
1	04IT	INFRASTRUCTURE	0,5	3,7%	4,7%
1	07IT	DISINFESTATION	0,7	2,1%	6,2%
1	08IT	SPECIFIC COMPLAINTS	0,5	1,8%	8,9%
1	09IT	VACCINES	1,8	1,9%	6,4%
1	12IT	(DISCONTENTMENT WITH) FUNDING APPLICATION PROCESS IN CALABRIA	0,6	5,6%	5,4%
1	14IT	YOUTH UNEMPLOYMENT	0,5	5,3%	4,6%
1	16IT	PROTECTION OF EMILIA-ROMAGNA	1,6	5,7%	3,9%
1	01RO	EU FUNDING: ACCELERATING INFRASTRUCTURE TO OBTAIN FUNDING	0,1	3,3%	18,7%
1	03RO	EU FUNDING: ISSUES WITH FUNDING	0,2	1,7%	4,6%
1	06RO	LEGISLATION: DISPUTE ON REGIONAL DEVELOPMENT AGENCIES' REMUNERATION	0,4	1,4%	3,7%
1	11RO	POLITICS: POLITICAL SCANDAL INVOLVING THE FORMER PRIME MINISTER	0,3	1,0%	4,5%
1	12RO	EU FUNDS (ROMANIAN CASE)	0,4	2,4%	3,1%
1	14RO	INTEGRATED DEVELOPMENT	0,8	3,5%	4,2%
1	00SE	MISUSE OF STRUCTURAL FUNDS	1,6	2,3%	9,6%
1	02SE	SOCIAL ENTERPRISES	0,4	5,9%	4,6%
1	15SE	CONFERENCE OF THE BALTIC SEA REGION	0,4	3,9%	4,7%
1	17SE	EU-FUNDED PROGRAMS	1,3	5,8%	4,6%
		Average	**0,72**	**3,6%**	**6,2%**

4.2. Cluster 2: Positive interaction with audiences

The second cluster, that we labeled *Positive interaction with audiences,* centers on topics from only three national cases: Austria, Poland and Sweden. Cluster 2 shares with cluster 1 the fact that it groups topics which are used more for comments (6,5%) than for topics (4,2%). Yet, this cluster is very different from the previous one as it collects topics which are on average quite positively charged. Given the fact

that cluster 1 contains negative topics used in comments, and cluster 2 contains positive topics especially used in comments, the difference in the number of topics is striking; here, only seven topics can be found. Topic 06AT, for example, is used for interaction regarding events for communicators and cohesion policy implementers. Topic 17AT, instead, is used for interaction regarding dissemination events related to cohesion policy. The Polish case is interesting, as the four topics from the Polish case center on reactions to commercials or to mundane events. What is interesting is that topics from the Polish case do not nurture Cluster 1, and instead are mostly characterized by positive words. As for topic 16SE, what is interesting to note is that a topic dealing with infrastructure funded under cohesion policy generates positive interactions with audiences.

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
2	00AT	COVERAGE OF PRESS ANNOUNCEMENTS	0,3	5,2%	6,4%
2	06AT	COMMUNICATING EUROPE	0	4,3%	8,5%
2	17AT	IMPRESSIONS FROM A RECENT EVENT	0,1	4,8%	6,5%
2	02PL	HOTEL AND CONFERENCE CENTER	0	4,2%	5,0%
2	03PL	CONGRATULATIONS	0,1	3,2%	6,0%
2	09PL	ELBLĄG CHANNEL	0,2	3,2%	5,9%
2	16PL	HOTEL	0,1	5,8%	5,1%
2	16SE	INFRASTRUCTURE AND SAFETY	0,1	2,8%	8,7%
		Average	0,11	4,2%	6,5%

4.3. Cluster 3: Tourism, events, prizes

Clusters 3 comprises topics that are mostly used in posts made by LMAs to communicate and disseminate cohesion policy. In particular, it collects topics dealing with events, festivals, tourism, competitions, photos, postcards and, in general, 'light-hearted' ways of positive communication related to cohesion policy. This cluster, labeled *Tourism, events, prizes,* collects topics from five countries and has, on average, the most positive sentiment in our sample. All the topics in this cluster have a similar focus: 02AT, 'Events', 04AT, 'Specialist events', 12AT, ' LMA will be at xyz this year', 05ES, ' Cultural activities: dates and places', 01PL, 'Open days EU-funded projects', and 02RO, 'Celebration of Romania's national day', for example, all deal with specific events. 18AT, 'Lotteries and prize draws', and 19RO, 'European blogging competition', instead, focus on competitions and raffles. 04PL, 'Region of Masuria', 07PL, 'Regional specialties', and 13PL, 'Regions Warmia and Masuria' are used to describe the beauty of Masuria, its dishes and specialties. Similar topics advertise the beauty of the regions under analysis: this is the case, for example, for 07AT, 'Bath tour during summers', 01ES, 'Cultural activities in Extremadura', and 06IT, 'Local cultural policy'. Overall, topics within this cluster seem to be a shortcut to talk about cohesion policy: although they speak of cohesion policy-related or funded events, the topics do not emphasize the core of cohesion policy, such as operational programs, open calls and further initiatives.

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
3	02AT	EVENTS	0,1	6,6%	4,4%
3	04AT	SPECIALIST EVENTS (RESEARCH CLIMATE PROTECTION)	0,1	5,2%	4,7%
3	05AT	MUSIC EVENTS	0,2	4,6%	5,1%
3	07AT	BATH TOUR DURING SUMMER	0,2	5,2%	4,6%
3	08AT	ANNOUNCEMENTS	0,2	4,4%	5,0%
3	12AT	LMA WILL BE AT XYZ THIS YEAR	0	5,2%	5,1%
3	18AT	LOTTERIES AND PRIZE DRAWS	0	4,2%	4,3%
3	19AT	TODAY, AGAIN, WE ARE DOING XYZ	0,2	6,4%	4,2%
3	01ES	CULTURAL ACTIVITIES IN EXTREMADURA	0	5,0%	3,5%
3	05ES	CULTURAL ACTIVITIES: DATES AND PLACES	0,3	5,6%	3,4%
3	07ES	TOURISM AND EMERGENCY ALERTS	0,3	5,2%	3,4%
3	06IT	LOCAL CULTURAL POLICY	0	8,2%	3,5%
3	10IT	EMILIA-ROMAGNA AND THE EXPO	0	6,0%	3,7%
3	01PL	OPEN DAYS EU-FUNDED PROJECTS	0	6,6%	3,9%
3	04PL	REGION OF MASURIA	0,1	3,0%	6,2%
3	07PL	REGIONAL SPECIALTIES	0,1	3,0%	6,3%
3	08PL	REGIONAL TOURIST ATTRACTIONS	0	3,1%	5,7%
3	13PL	REGIONS WARMIA AND MASURIA	0	3,5%	7,0%
3	14PL	PHOTO CONTEST	0,1	8,6%	4,2%
3	18PL	EVENTS	0	3,3%	4,9%
3	19PL	PHOTOS	0,1	3,9%	6,1%
3	02RO	CELEBRATION OF ROMANIA'S NATIONAL DAY	0,1	1,9%	4,3%
3	16RO	EU-FUNDED PROJECTS	0	17,5%	6,4%
3	19RO	EUROPEAN BLOGGING COMPETITION	0,1	2,0%	6,7%
		Average	0,09	5,3%	4,9%

4.4. CLUSTER 4: POSITIVE EFFECTS OF COHESION POLICY

This cluster, which we named *Positive effects of cohesion policy*, contains all topics in which LMAs deal with cohesion policy, its technicalities and results. Topic comprised in this cluster come from all national cases. Also, topics in this cluster are used in posts by LMAs (6,2%) more than they are used for comments by audiences (4,4%). The average sentiment is positive (0,11).

In this cluster we find topics that provide details on funds and on how to take part in open calls. This is the case for several topics such as, for example, 10RO, that relates to examples of EU-funded projects regarding education, culture and leisure. Other examples are topics 10PL, 'EU grants', and 11PL, 'Programs'. Also, this cluster features entrepreneurship-related topics, which is apparent in topics such as 09ES, 'Business sector and entrepreneurship', 07SE, 'Digital start-ups', 12SE, 'Cultural and creative companies and export', and 18SE, 'Conditions for companies'. Other topics deal specifically with the communication of Europe, its funds and programs. This is the case for topics 10ES, 'Development programs', 13IT, 'Using structural funds in Calabria', 15 IT, 'Using structural funds in Emilia-Romagna', 05PL, 'EU funds (Polish case)', and 19SE, 'Seminars on growth and society'. Other topics deal with

specific sectors of activities and with job opportunities created through cohesion policy. This is the case, for example, for topics 12PL, 'EU info point and job offers', and 13SE, 'Job ads for structural funds related employment'. 09RO, 'EU funds (Romanian case)', instead, clarifies instructions for technical applications for funding. It is not surprising that the topics in this cluster, which generally aim at prospective

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
4	10AT	BEING PROUD, CONGRATULATIONS	0	5,7%	4,2%
4	13AT	SOCIAL FUND AND COOPERATION	0,1	4,7%	5,1%
4	14AT	INITIATIVES WITH SCHOOLS	0	5,2%	5,5%
4	15AT	CROSS-BORDER PROJECTS	0	4,6%	4,7%
4	00ES	EUROPEAN YOUTH POLICIY IN EXTREMADURA	0	5,5%	3,3%
4	09ES	BUSINESS SECTOR AND ENTREPRENEURSHIP	0	6,8%	3,2%
4	10ES	DEVELOPMENT PROGRAMS	0	5,6%	3,4%
4	12ES	AGRICULTURE AND ENVIRONMENTAL ISSUES	0,4	5,4%	3,7%
4	13ES	ECONOMICS AND SOCIETY	0,1	5,4%	4,7%
4	05IT	REGION OF EMILIA-ROMAGNA	0	5,2%	4,7%
4	13IT	USING STRUCTURAL FUNDS IN CALABRIA	0,2	8,3%	3,6%
4	15IT	USING STRUCTURAL FUNDS IN EMILIA-ROMAGNA	0,3	9,1%	4,0%
4	00PL	BRIDGE	0,1	4,2%	4,8%
4	05PL	EU FUNDS (POLISH CASE)	0,2	4,4%	4,2%
4	06PL	AMPHITHEATER	0,1	3,0%	6,2%
4	10PL	EU GRANTS	0,1	8,1%	3,6%
4	11PL	PROGRAMS	0,3	8,6%	3,6%
4	12PL	EU INFO POINT AND JOB OFFERS	0	7,6%	3,6%
4	15PL	EU-FUNDED INVESTMENTS	0	5,6%	4,2%
4	17PL	EU-FUNDED RESCUE SERVICES	0,3	7,3%	3,7%
4	04RO	EU FUNDING: PROCEDURES FOR SMES	0	2,9%	3,0%
4	07RO	INSTRUCTING CAMPAIGN	0,3	4,0%	4,0%
4	9RO	EU FUNDS (ROMANIAN CASE)	0	4,8%	6,0%
4	10RO	EU FUNDING	0	11,0%	5,0%
4	15RO	EU FUNDING PROCEDURES	0	26,8%	4,6%
4	18RO	CULTURAL HERITAGE	0,1	2,0%	4,2%
4	03SE	INNOVATION AND ENTREPRENEURSHIP	0	4,5%	4,7%
4	04SE	MINING PROJECTS	0,2	5,4%	5,4%
4	05SE	INVESTMENT IN GLASSWORKS	0,4	2,9%	7,0%
4	06SE	TOURISM AND GROWTH	0	5,8%	4,0%
4	07SE	DIGITAL START-UPS	0,1	5,2%	4,3%
4	09SE	START-UPS	0,1	5,2%	4,7%
4	10SE	INTERNATIONALIZATION AND GROWTH	0	5,7%	4,2%
4	11SE	COMPETITION FOR STUDENTS	0	5,2%	4,2%
4	12SE	CULTURAL AND CREATIVE COMPANIES AND EXPORTS	0,2	5,2%	3,8%
4	13SE	JOB ADS FOR STRUCTURAL FUNDS RELATED EMPLOYMENT	0	6,0%	3,9%
4	14SE	ENVIRONMENT AND POVERTY REDUCTION PROGRAMS	0	6,6%	3,9%
4	18SE	CONDITIONS FOR COMPANIES	0,5	5,3%	4,6%
4	19SE	SEMINARS ON GROWTH AND DIGITIZATION	0,2	4,4%	4,9%
		Average	0,11	6,1%	4,4%

beneficiaries and explain EU funds and programs, are rather used in posts than comments. Unexpectedly, these topics are not used much in comments, which is indicative of little interaction and the audience not asking questions concerning funding. It seems as if topics disseminating programs and their results and characterized by positive sentiment are not as conducive to citizen engagement.

4.5. CLUSTER 5: POLITICS

We named cluster number 5 *Politics,* as it collects seven topics from four national cases that specifically deal with the agenda of the president of the region (as in 11AT and 15ES), regional voting (as in the case of 19IT), regional politics and legislative processes (as in the cases of 08ES, 00IT, and 13RO) or political meetings (05RO). These topics are slightly more used in posts (4,7%), than in comments (4,0%) and, on average, have quite a positive sentiment. Nonetheless, the two topics within this cluster which have a more negative sentiment are the ones used more in comments. This cluster tell us that a minor debate on cohesion policy regards its relation with politics.

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
5	11AT	PRESIDENT OF THE REGION	0,3	4,4%	5,2%
5	08ES	GOVERNMENT AGREEMENTS	0	5,7%	3,4%
5	15ES	AGENDA OF THE PRESIDENT OF EXTREMADURA	0	5,4%	3,6%
5	00IT	REGIONAL POLITICS IN EMILIA-ROMAGNA	0	8,0%	3,6%
5	19IT	REGIONAL VOTING	0,3	2,7%	5,5%
5	05RO	POLITICS: MEETING WITH CHINA	0	2,9%	2,4%
5	13RO	LEGISLATIVE PROCESS	0,1	3,9%	4,4%
		Average	0,10	4,7%	4,0%

4.6. CLUSTER 6: OTHER

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
6	01AT	EMPLOYEES OF THE LMA	0	5,0%	4,4%
6	03AT	INFORMAL SETTING AT WORK	0,1	5,4%	4,7%
6	03ES	CONSTRUCTION SECTOR	0	5,7%	3,5%
6	04ES	EDUCATION	0,3	5,5%	3,7%
6	19ES	SECURITY AND CIVIL PROTECTION	0,1	5,5%	3,5%
6	03IT	HEALTH CARE ADMINISTRATION	0,3	4,0%	5,5%
6	11IT	LOCAL EDUCATION POLICY	0,2	6,0%	3,9%
6	17IT	GENDER EQUALITY INITIATIVES	0,3	7,5%	3,8%
6	00RO	EMERGENCY WARNING	2	2,9%	2,7%
6	08RO	LOCAL PUBLIC INVESTMENTS	0	2,1%	3,7%
6	01SE	SUSTAINABLE URBAN DEVELOPMENT	0	6,2%	4,2%
6	08SE	ENTREPRENEURSHIP AND TEACHERS	0,1	5,7%	3,9%
		Average	0,28	5,1%	4,0%

We named Cluster 6 *Other,* as it contains topics from five national case which are not related to previous clusters and not enough to create more clusters. 01AT and 03AT, for example, are used by the Austrian LMA to inform about its daily activities and internal workspace. Topics 04ES, 11IT and 08SE deal with education. Topic 17IT centers on gender equality. Although all these topics are related to cohesion policy, the fact that they are not enough to entice new clusters signals that they are not shared amongst all regions. The topics are of quite negative nature, with 17IT, 'Gender equality' and 03IT, 'Education' being the more negatively loaded. Topic 00RO is very negatively loaded, which does not come as a surprise as it comprises hydrogeological warnings for rivers in Romania.

4.7. CLUSTER 7: NOISE

CLUSTER ID	TOPIC ID	TOPIC NAME	Sentiment (negative words/pos. words)	Average use in posts	Average use in comments
7	16AT	NOISE (AUSTRIAN CASE)	0,1	4,2%	3,9%
7	02ES	NOISE (SPANISH CASE)	0,1	2,6%	11,3%
7	18IT	NOISE (ITALIAN CASE)	0,1	1,6%	6,0%
7	17RO	NOISE (ROMANIAN CASE)	0	1,9%	3,8%
		Average	0,08	2,6%	6,3%

The last cluster incorporates topics labeled 'noise' and comprising 'ill-fitting' words. The presence of these topics is well expected (DiMaggio et al., 2013), as with Topic Modeling noisy topics serve to improve the internal coherence and strength of other topics.

5. DISCUSSION & CONCLUSION

The first finding of our work contains the description of topics characterizing the debate on LMAs' Facebook pages. We performed a qualitative comparison between countries asking trained academics with the respective background to analyze the elicited topics which are constituted by words in their respective local language, and to provide a label and a description in English, functioning as the *lingua franca* adopted for the comparison. A first result, thus, entails the substantive content of the elicited topics.

Topic modeling analysis highlighted a different usage of topics by LMAs and commenters. Topics mostly used by LMAs are generally connected to events, constitute information on funding opportunities or deal with politics. Comments, on the other part, are mostly complaints with few exceptions of positive interaction. In Italy and in Spain, comments coalesce into two topics targeting specific actions or decisions taken (or not taken) by LMAs, and comprising complaints blaming the dishonesty or incompetence of politicians. Along these lines, topics mostly used in comments refer to complaints such as the misuse of structural funds (Sweden), or political scandals (Romania). Ultimately, on Facebook, it seems as if LMAs inform and advertise while citizens complain.

Our second finding is built on sentiment analysis through which we analyzed all elicited topics. Sentiment analysis, here, confirms the qualitative results obtained by analyzing topics and highlights a difference in the tone of communication between LMAs and their external audiences. The language of LMAs seems to be not as negatively connoted than those of external audiences. While not entirely surprising, this result indicates a relevant fact for policy communicators. That is: there seems to be misalignment between the 'tone' that LMAs and their audiences use on social media, being that the tone of external audiences tends to be more 'emotional' or 'sentiment-loaded' than the tone of LMAs. Also, and referring more specifically to negative sentiments, our results suggest that comments are more likely where to expect

negatively loaded vocabulary: LMAs' external audiences are more likely to use vocabulary that potentially expresses negative opinions about topics concerning cohesion policy.

The central aim of our analysis, however, is to understand if a European public sphere emerges. As to what regards this aim, we suggest that our work makes two main contributions: both in terms of methodology and findings.

From a methodological point of view, we propose a three-step procedure to analyze the European public sphere. In a first step, we induced topics from discourse that takes place in different countries. In this vein, while in previous studies on cohesion policy, researchers analyzed discourses with the aim of recognizing frames that tend to be given (Triga & Vadratsikas, 2018), we reconstructed the meaning inductively. Second, we characterized topics through sentiment analysis. In this step, also, we qualitatively inquired topics' characteristics, so as to better understand them. Third, we qualitatively clustered topics according to the way they are used in communication on LMAs' Facebook pages. This step was meant to assess the international distribution of topics in clusters. In other words, we examined the extent to which topics in the same cluster were elicited in different countries. In this way, we could speculate about the different international articulations of specific discourses. For example, clusters 1 and 2 are mostly used in comments. Cluster 1, moreover, which comprises more topics and from more countries (five in total), is the most negatively charged. On the other hand, clusters 3 and 4 are mainly used by LMAs. Cluster 3, in particular, aggregates topics from all the national cases. We suggest that, in particular, clusters 1 and 3 capture discourses that span over different countries and, therefore, elicit segments of a European public sphere. Finally, thanks to our methodology, we are able to directly take into account the tensions between fragmentation and aggregation of discourses at the level of civil society: the social impact of such a methodology is relevant, as it is able to take into account not only what the elite is thinking or writing (which is the case with newspaper analysis) but also comprises citizens' voices. Of course, this is a first step, and future research might better disentangle the relationship between institutional communication and citizens' responses[4].

Building on this methodology, we suggest that our work makes the following contribution to the emergence of a European public sphere. Following the analysis of Koopmans and Erbe (2004; see also Koopmans & Stratham, 2010), the European public sphere is articulate over three dimensions: i) a supra-national dimension in which European-level institutions and European-wide mass media interact with one another; ii) a 'vertical Europeanization', in which communication interlinks the European and national European level, and iii) a 'horizontal Europeanization' with communication linkages between different member states. The evidence collected in our study confirms a 'horizontal Europeanization' in social media discourse: we find evidence of the same topics being discussed at the same time in different countries. In particular, cluster 1, *Euroscepticism and negative interaction with audiences,* groups topics from five of our national case studies that, using similar words and dealing with similar issues, portray similarly negative stances regarding cohesion policy specifically and Europe, more generally. Our results confirm and correspond to other recent studies that highlight the Europeanization of media discourses through shared Euroscepticism in newspapers from six European countries (Dutceac Segesten & Bossetta, 2019).

However, we suggest that our study highlights two further issues in the analysis of horizontal Europeanization. First, our analysis reveals a new dimension in analyzing horizontal Europeanization. The emergence of communication linkages between member states may occur at different, not necessarily connected, levels. For example, Euroscepticism and negative attitudes towards the EU denote cluster 1 and the most negatively loaded topics are found in comments, thereby indicating the emergence of horizontal links among citizens in different countries. On the other hand, in cluster 3, which shows a positive attitude towards the benefits derived from EU funds, the most positively loaded topics occur as posts, thereby capturing the horizontal formation of links among LMAs that may share a common communication policy. This consideration points at the different nature that the emergence of a public sphere may be characterized by. In this first instance, the emergence of the public sphere is the spontaneous result of

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[4] We thank an anonymous reviewer for this comment.

shared discontent, which occurs when citizens post comments to LMAs' posts. On the other hand, in the case of cluster 3, horizontal links may be the outcome of the institutionalization of communication procedures that results from the top-down dissemination of EU communication guidelines and the like.

The spontaneous versus institutionalized dimension of horizontal Europeanization of the public sphere points at a second issue. The emergence of the internationally articulated cluster 1, which conveys a negative attitude towards the EU funding scheme, suggests that, counter-intuitively, Euroscepticism seems to facilitate the building of a European public sphere. This finding brings about a connection between research on the emergence of a European public sphere and neo-institutional literature that addresses fields as arenas of power dependencies and strategic interactions where actors' politics shape institutional settings (Fiss & Zajac, 2004; Henisz & Zelner, 2005; Ingram & Clay, 2000; Schneiberg & Bartley, 2001).

This perspective highlights that a field's fragmentation generates opportunities for political maneuvering and a field's actors may pursue these opportunities by widening fractures in logics (Friedland and Alford, 1991; Thornton et al., 2012: 2) and divergence in interests (Hoffman, 1999; Morrill et al., 2003). In light of this, the emergence of a European issue field (Hoffman, 1999; Meyer & Höllerer, 2010) may enact struggles in which actors pursue 'politics of signification' over the framing of reality (Benford & Snow, 2000) and the meaning to be assigned to the contested issues (Meyer & Höllerer, 2010; Seo & Creed, 2002). From this perspective, the creation of a European public sphere may contribute to the building of a European identity, but also to the coalescence of dispersed discontent. Conversely, a fragmented public sphere may hinder the building of a shared shared identity, but at the same time a fragmented public sphere could avoid the amalgamation of malcontent scattered in the European regions. This tension between fragmentation and aggregation of discourse through the theoretical lenses of 'politics of signification' provides promising future avenues for the analysis of EU communication policies.

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