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Europe on edge: mapping right-wing influence and public sentiment across the EU

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***Abstract*:** The concatenation of several crises and challenges in Europe (financial crisis, pandemic, war, housing and higher prices, digital challenges like artificial intelligence, ageing population and migrations) is reshaping the European political landscape and discourse. The entire morphology of party systems in each country radically changed with respect to the last days of the past century. New political forces appear at both sides of the political spectrum. On the other hand, digital technologies provide the most prominent political scenarios for interaction and opinion where public concerns meet new political proposals. This article explores the intersection between public concerns, the political messaging of new leaders and parties, and political polarization within the EU. The main goal of the research is to conduct an exploratory analysis of online search trends across the 27 European countries, many of which have experienced increasing political polarization in recent years. In this first attempt, the focus is on the growing influence of right-wing parties that are gaining political momentum across Europe. Regarding public concerns, several key topics are explored, driven by factors such as economic uncertainty, immigration concerns, and dissatisfaction with traditional political elites. In order to deeply analyse these trends, the work goes beyond traditional time series techniques. Using ARFIMA (Autoregressive Fractionally Integrated Moving Average) models, this research captures long-memory patterns in online search trends, providing a perspective on the temporal persistence and predictability of political topics on the Internet.

Keywords: political message, public concern, online political behaviour, Google trends

JEL: D72, D83, Z18

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Introduction

Political polarization in Europe has been increasing in intensity, and its consequences are far-reaching. It undermines social cohesion, increases distrust in institutions, and fuels hostility between different political groups. This poses challenges for European democracies and making consensus-building and effective governance more difficult (Paush, 2021). Polarization is not a unidimensional process; rather, it encompasses ideological division -differences in political programs and beliefs- as well as affective dimensions, such as negative feelings and animosity toward opposing groups. These dynamics manifest both at the societal level (mass polarization) and among political elites (elite polarization), as highlighted by Van der Veen (2023).

The increasing influence of right-wing parties in Europe is concomitant with the growth of political polarization, understood as the distance between ideological and affective positions within society and among political elites. This study is situated at the intersection of polarized political messages and real public concerns. It analyses long memory patterns to determine whether there is a correspondence between right-wing parties' messages and public concerns.

Traditional methods for gauging political attitudes, such as surveys and electoral data, remain valuable but often fail to capture real-time shifts in public concern. In this context, the analysis of online search trends, particularly through tools like Google Trends, offers a more immediate and comprehensive perspective on contemporary political dynamics.

The Internet has fundamentally transformed how individuals access political information and engage in political discourse. Initially conceived as a neutral platform for open communication and the free exchange of ideas, the internet now occupies a dual role in the political sphere. On the one hand, it facilitates new forms of participation, mobilization, and dialogue, often bypassing traditional media gatekeepers and democratizing access to information. However, it can also replicate and amplify existing societal divisions through mechanisms such as echo chambers, filter bubbles, and algorithmic curation, which reinforce pre-existing beliefs and polarize opinions further (Papacharissi, 2012).

The credibility of the Internet as a source of political insight remains an open question. While the vast array of user-generated content and real-time data presents unique opportunities for tracking public sentiment and political trends, the dominance of a few major technology companies—such as Google, Microsoft, and Meta—raises concerns about the neutrality and diversity of information access. Algorithms that prioritize certain content can shape the visibility and framing of political issues, potentially influencing public discourse and limiting exposure to diverse viewpoints (Gillespie, 2018). Misinformation and manipulation further complicate the credibility of online political information (Ruffo *et al.*, 2023).

Despite these challenges, the act of searching for information online offers a valuable counterpoint to concerns about corporate and algorithmic influence. Search queries

are often prompted by individuals' immediate needs, doubts, or interests, reflecting genuine expressions of public concern before the results are filtered or shaped by algorithms. Analyzing aggregate search data can thus provide insights into organic patterns of public interest and concern that may not be captured by traditional surveys or media analysis.

Incorporating the Internet's complex role into the study of political polarization is therefore essential. While the influence of dominant tech companies and algorithmic curation complicates the landscape, search queries represent a relatively unmediated reflection of public concern. By integrating fractal analysis of Google Trends data, this research aims to bridge the gap between polarized political messaging and the organic expression of societal interests, contributing to a more nuanced understanding of contemporary political dynamics in Europe.

1. Literature review

Political polarization is the process by which political attitudes, opinions and behaviors become increasingly divided and antagonistic. This division can be observed both at the level of party elites and among the general public, and it manifests in several key forms including ideological, affective, and social polarization (Casal Bértoa and Rama, 2021).

Ideological polarization occurs when the policy preferences and ideological positions of political parties and their supporters move further apart. In Europe, the rise of populist parties—both on the right and left—has contributed to this trend. Right-wing populist parties, such as the National Rally in France, Italy's Lega, and Hungary's Fidesz, emphasize nationalism, anti-immigration rhetoric, and scepticism toward the European Union. Left-wing populist parties, like Spain's Podemos and Greece's Syriza, focus on economic inequality and opposition to neoliberal policies (Rooduijn *et al.*, 2023). As these parties gain influence, they challenge traditional centrist parties, pushing the political spectrum wider and deepening divisions on issues such as migration, welfare, and national sovereignty (Enyedi, 2020).

Affective polarization describes the growing emotional distance and hostility between supporters of different political parties. It is not just about policy disagreement, but about the extent to which supporters of one party dislike and distrust those of another (Wagner, 2024). In European multi-party systems, affective polarization is shaped by perceptions of threat: the more a party's agenda is seen as distant or threatening to one's own values, the greater the animosity toward its supporters. This hostility is increasingly evident on cultural and identity issues, as well as economic policy (Harteveld *et al.*, 2021a).

Polarization in Europe also reflects broader social divisions, such as those between urban and rural areas, between native-born citizens and immigrants, and between different social classes. Populist leaders exploit these divides, framing politics in binary terms of "us versus them" and portraying themselves as the true representatives of the people against corrupt or out-of-touch elites (Nyholt, 2023).

This rhetoric not only deepens social divisions but also undermines democratic norms and institutions, as seen in countries like Hungary and Poland where populist governments have sought to weaken independent institutions and limit media freedoms (Petrović, 2021).

The surge of right-wing populist and far-right parties in Europe is a multidimensional phenomenon shaped by historical legacies, socio-economic transformations, and evolving political cultures. In post-communist Central and Eastern Europe, far-right movements have leveraged identity politics, anti-establishment rhetoric, and anxieties about globalization and migration to mobilize support (Gherghina *et al.*, 2021). Parties such as Hungary's Fidesz have used their parliamentary dominance to enact constitutional changes and centralize power, framing themselves as protectors of Christian values against perceived threats from migration and the European Union (Enyedi, 2020). These parties often portray themselves as defenders of the "pure people" against a "corrupt elite," a narrative that appeals to voters who feel marginalized or disenchanted with mainstream politic (Rooduijn *et al.*, 2023).

In Western Europe, right-wing populist parties like France's National Rally (formerly National Front) have similarly capitalized on cultural and economic grievances, positioning themselves as alternatives to the political establishment. The common thread across regions is an aggressive approach to politics, emphasizing national sovereignty, opposition to immigration, and scepticism toward supranational institutions such as the EU (Fabbrini & Zgaga, 2023).

Polarization in Europe is driven by both demand-side and supply-side factors. On the demand side, socio-economic inequality, economic insecurity, and the perception of being "left behind" by globalization have fuelled voter discontent (Nyholt, 2023). Cultural anxieties, particularly around migration and national identity, have also become central issues, especially after the 2015 refugee crisis (Downes, *et al.*, 2021). Right-wing parties have strategically politicized these issues, framing migration and welfare chauvinism as existential threats to national welfare systems and cultural cohesion (Savage, 2022; Cinpoeş & Norocel, 2020).

On the supply side, political distrust and dissatisfaction with mainstream parties have created openings for anti-establishment actors (Gherghina, Ekman, & Podolian, 2021). Populist parties exploit these sentiments by positioning themselves as the authentic voice of the people, in contrast to a self-serving elite (Rooduijn *et al.*, 2023). The affective dimension, particularly anger and frustration, has been shown to be a significant predictor of far-right voting, especially in contexts where immigration is salient (Cengiz & Vasilopoulou, 2022).

Crises such as the COVID-19 pandemic and the refugee crisis have amplified polarization and shifted public attention toward issues of security, migration, and welfare (Bol *et al.*, 2020; Downes, Loveless, & Lam, 2021). The pandemic, for example, initially led to a "rally 'round the flag" effect, but over time, dissatisfaction with government responses and perceived mismanagement contributed to rising distrust and polarization (Bol *et al.*, 2020; Rovný *et al.*, 2022). The ideological bases of partisan responses to crises often reflect pre-existing cleavages, with right-wing

parties emphasizing sovereignty and scepticism toward multilateral solutions (Fabbrini & Zgaga, 2023).

Media and digital communications play a critical role in shaping public sentiment and party strategies. Right-wing parties have adeptly utilized social media and targeted messaging to amplify their narratives and mobilize supporters (Heft *et al.*, 2022). The rise of digital information exchange channels has made public opinion more volatile and susceptible to polarization, as parties and movements compete for attention and influence (Darius, 2022; Vasist *et al.*, 2023). The relationship between polarisation and the use of the internet and social networks has been linked to democratic erosion, media censorship, media exposure and fake news and hate speech (Hawdon *et al.*, 2020; Piazza, 2022; Vasist *et al.*, 2023).

Bakshy *et al.* (2012) demonstrate that individuals exposed to information shared by their contacts in social networks are more likely to disseminate said information and to do so more expeditiously. The significance of weak ties (less close contacts) in the propagation of novel information is particularly pronounced, whereas strong ties serve to reinforce cohesion within homogeneous groups. This phenomenon carries significant implications for the study of social media and political communication, particularly with regard to the rapid dissemination of political messages through social networks. The study posits that such dissemination has the potential to amplify both citizen concerns and the phenomenon of polarization, especially in cases where the messages are emotive or polarizing in nature.

The credibility of political messages disseminated via the internet is a pivotal factor in this regard. Kaid and Postelnicu (2012) posit that the perceived credibility of online political information is contingent on three factors: the source, the channel, and the consistency with the user's prior attitudes. Individuals tend to seek and accept information that aligns with their existing opinions, a process that can give rise to the formation of "echo chambers" and the exacerbation of societal polarization (Flanagin & Metzger, 2017). Moreover, the proliferation of fake news and hate speech on social networks has been demonstrated to exacerbate polarization and hinder democratic dialogue (Bakshy *et al.*, 2012).

Papacharissi (2002) conducted an analysis of the potential of the Internet to function as a new public sphere, with the capacity to promote democratic debate and citizen participation. However, he contends that the Internet has not yet achieved its potential in establishing a genuinely inclusive public sphere. Instead, he argues that it tends to perpetuate dynamics of exclusion and control that are driven by economic interests. This suggests that, while the Internet can facilitate political expression and mobilization, it can also contribute to social fragmentation and polarization.

The rise of polarization in Europe has significant consequences for democratic governance. It reduces the space for compromise and dialogue, increases political instability, and can lead to the erosion of democratic norms and institutions (Pausch, 2021). The emergence of right-wing populist and far-right parties in Europe has been identified as both a contributing factor and a result of societal polarization, driven by socio-economic, cultural, and political grievances. Crises act as catalysts, amplifying these cleavages and shifting public attention toward issues of security, migration,

and welfare. The role of digital media and targeted communications is central to understanding how parties mobilize support and shape public sentiment (Heft *et al.*, 2022; Vasist *et al.,* 2023).

The research on fractal analysis of Google Trends time series is inserted into this context to provide a comprehensive and in-depth analysis of the data. Fractal analysis enables complex and recurring patterns to be identified in the evolution of public concerns and the popularity of political issues. This innovative approach can improve the understanding of how emerging concerns, the diffusion of information, and polarisation interact with the digital environment. The combination of these approaches makes it possible to explore the relationship between citizens' concerns, new leaders' political messages and political polarization in the European Union.

Fractal analysis of these time series allows for the identification of underlying self-similar structures and volatility in public attention. This quantitative approach reveals how public concerns are distributed over time, highlighting moments of heightened polarization and issue salience. Such methods are particularly valuable for understanding the dynamics of public sentiment in rapidly changing political environments.

Google Trends data offer a complementary lens, capturing the flow of public interest in specific issues, especially during times of crisis. By analysing search query time series, researchers can identify patterns of public anxiety that may not be immediately apparent through conventional methods.

By combining traditional theoretical perspectives with innovative data analysis techniques, such as fractal analysis of Google Trends data, this paper seeks to provide a nuanced understanding of the evolving landscape of political polarization and public concerns in Europe. This approach not only deepens our understanding of the factors driving the rise of right-wing parties but also offers new tools for tracking and analysing shifts in public sentiment along time.

2. Research methodology

Following the methodological approach of Gutierrez *et al.* (2024), in this paper, the ARFIMA modeling is used to explore the behavior of Google Trends. As explained in that article, a range of mathematical approaches and models are available for generating precise explanations and forecasts in time series analysis. Some scholars maintain that prediction relies on the principle that the future unfolds as a single, linear sequence influenced by prior events. Numerous studies employ these models, with some researchers even leveraging web search data as a resource for effective forecasting. The main models referenced in this work include time series techniques such as ARIMA (Autoregressive Integrated Moving Average), SARIMA (Seasonal ARIMA), ARFIMA (Autoregressive Fractionally Integrated Moving Average), multivariate regressions, and ARMAX (Autoregressive Moving Average with Exogenous Inputs). However, it is important to recognize that there is no universally

accepted method for selecting the best explanatory or forecasting technique for any given time series analysis.

In this exploratory study, a publicly accessible Google Trends dataset is analyzed using the seasonal sARFIMA (p, d, q; P, D, Q) estimation model, as introduced by Granger and Joyeux (1980), which also draws on concepts from chaos theory.

The focus of the analysis is on the concept of predictability. If the time series data from social phenomena adhere to the random walk hypothesis, making predictions or explanations would be redundant, as the current values already incorporate all existing information and will shift as new data emerges. On the contrary, if some degree of predictability exists, further questions arise. The reliability of these predictions and explanations is a salient concern. Furthermore, the existence of robust methodologies for identifying substantial alterations in data is imperative. It is also important to establish whether certain occurrences have enduring implications for the phenomena under investigation. These considerations lead to the exploration of nonlinearity and chaos theory, which propose that some level of modelling and prediction is feasible. Self-similarity is another key idea, enabling the identification of connections across different regions and timeframes.

Chaos theory, first described by Lorenz in 1963, posits that systems that seem random may possess underlying patterns and structures that can be studied. A central concept is that while chaotic systems may be difficult to predict over the long term, short-term forecasts may still be possible. Self-similarity, another important aspect in chaos theory, means that similar patterns can be observed at various scales and periods within a chaotic system. These concepts have broad applications, including meteorology and other disciplines. The following aspects are of particular significance:

- Lorenz's model demonstrates that complex behaviors can have hidden deterministic structures, revealed through simple equations under specific initial conditions and parameters. Such systems are highly sensitive to initial conditions and exhibit long-term memory (persistent trends).
- Mandelbrot (1983) introduced the idea of fractal dimensions, where dimensions can take fractional values rather than just integers, as in traditional geometry. Many economic and financial time series resemble these fractal patterns, and it is worth investigating if similar patterns exist in social and political trends.
- Self-similarity, where smaller components resemble the whole, can help link short-term dynamics to long-term trends.

The present study analyses time-series data on the relative frequency (in percentages) of Google searches in EU Member States on four topics: corruption, immigration, security, and transgender. A further analysis was conducted on Google search data for right-wing, centre-right and centre-left political parties (used as a control group) in each country. The study employs ARFIMA models (Granger & Joyeux, 1980) rather than Hurst exponents (Hurst, 1951) to examine the fractal characteristics of the processes involved. The resulting dataset including search terms and time details constitutes a public dataset available at a permanent repository.

Various analytical methods are available for examining time series related to social phenomena. In recent years, inspired by chaos theory, fractal geometry, and technological advances, as well as the growing availability of data, empirical studies of this kind have expanded considerably. Mandelbrot's concept of dimensions is relevant for analyzing time series with long-term dependencies or memory. Chaos theory is thus linked to established time series methodologies, such as the Box-Jenkins (1971) ARIMA approach. Abraham-Frois (1998) provides an educational perspective on this connection, though it remains debated (Graves *et al.*, 2017) and this is the view we follow here.

Let's represent y_t as a relevant time series (e.g., a Google Trends synthetic number). The first step in ARMA modeling is to check for stationarity; whether the series' mean and autocovariances are time-invariant. This typically requires differencing the series, with the number of differences needed denoted by the *d* parameter (Box & Jenkins, 1976). If *d* is non-integer, then the result is a fractionally integrated, autoregressive and moving average estimation model (ARFIMA), as proposed by Granger and Joyeux (1980) and following this expression:

$$\phi_p(B)(1-B)^d y_t = \theta_q(B)\,\varepsilon_t \tag{1}$$

or

$$(1-\sum_{i=1}^{p} \rho_i B^i) y_t (1-B)^d = (1+\sum_{j=1}^{q} \theta_j B^j)\varepsilon_t \tag{2}$$

where $(1-B)^d$ allows for the fractional differencing of y_t in pursuit of stationarity, being ρ_i and θ_j, respectively, the p and q correspond to AR(p) and MA(q) estimations, B is the 'lag' operator and ε_t is the usual random residual.

$$By_t = y_{t-1}; B^p y_t = y_{t-p} \tag{3}$$

$$B\varepsilon_t = \varepsilon_{t-1}; B^q \varepsilon_t = \varepsilon_{t-q} \tag{4}$$

Capital *D,* P and *Q* are also added to account for seasonal effects, like in the classic ARIMA approach, being B^S such that $B^s y_t = y_{t-s}$, with s=13, 26, etc. in this paper with weekly data.

$$\phi_p(B)\Phi_P(B^s)(1-B)^d(1-B^s)^D y_t = \theta_p(B)\Theta_Q(B^s)\varepsilon_t \tag{5}$$

Peters (1994) notes that a non-integer *d* relates to Mandelbrot's fractal dimension D as follows:

$$D = \frac{3}{2} - d \tag{6}$$

Fractal dimensions describe objects whose dimensions are not whole numbers, as in Euclidean geometry. The *d* parameter is also linked to the *Hurst exponent* (Hurst, 1951), a measure of long memory in time series. The value of *d* in ARFIMA models indicates the memory and predictability of a series: values between 0 and 0.5 suggest long memory (persistent influence of past values), making prediction harder; values between 0.5 and 1 indicate short memory (past values' influence fades quickly), making prediction easier. The closer *d* is to 1, the more predictable the series. Some researchers suggest a connection between memory and chaos, implying that long memory may be associated with chaotic patterns.

Estimating *d* in social-related time series is significant, as a value different from zero indicates long memory and some predictability. Accurate modelling also enables better detection of structural changes, which is particularly relevant for political and social events, such as elections or regulatory shifts.

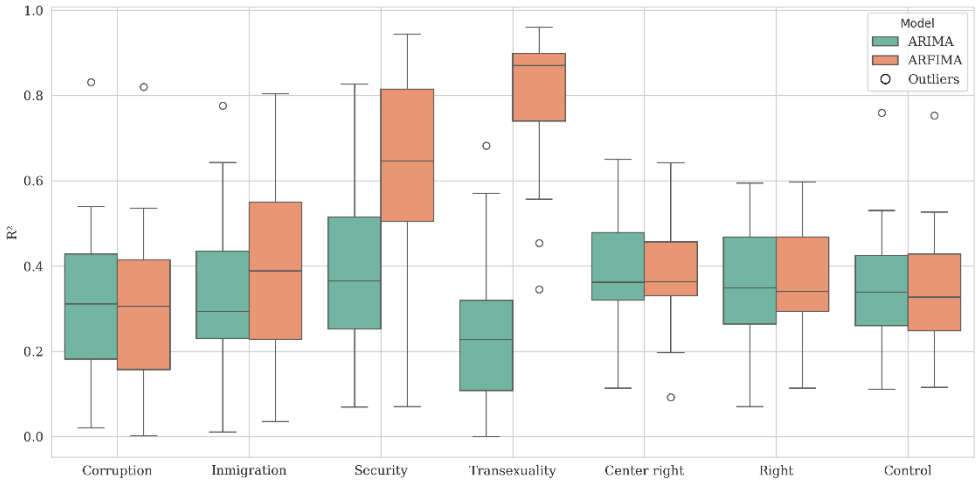
Model selection relies on standard significance tests (1% and 5% levels), overall model significance (F statistic), and the minimization of information criteria among models. The *d* parameter is estimated using EViews9 (based on Sowell, 1992; Doormik & Ooms, 2003), for ARFIMA estimation, the fractional difference parameter is initialized using the Geweke and Porter-Hundak (1983) log periodogram regression (Automatic), with a fixed value of 0.1. The optimization of the algorithm is also based on the Berndt–Hall–Hall–Hausman (BHHH) algorithm. At present, EViews does not support fractional D for the seasonal component, so D remains integer in both SARIMA and ARFIMA models. This limitation will be addressed in future research; however, study demonstrates the potential of new tools for analysing political time series.

3. Research results and discussions

The exploration of the fractal dimension of each search term motivates the extraction of several graphical results. The graphical analysis aims to identify similarities and differences between politically charged terms and the political parties under examination. Figure 1 illustrates how ARFIMA models outperform their ARIMA counterparts in modelling the various time series analysed, thereby reinforcing the evidence of the distinctly fractal nature of the series under study.

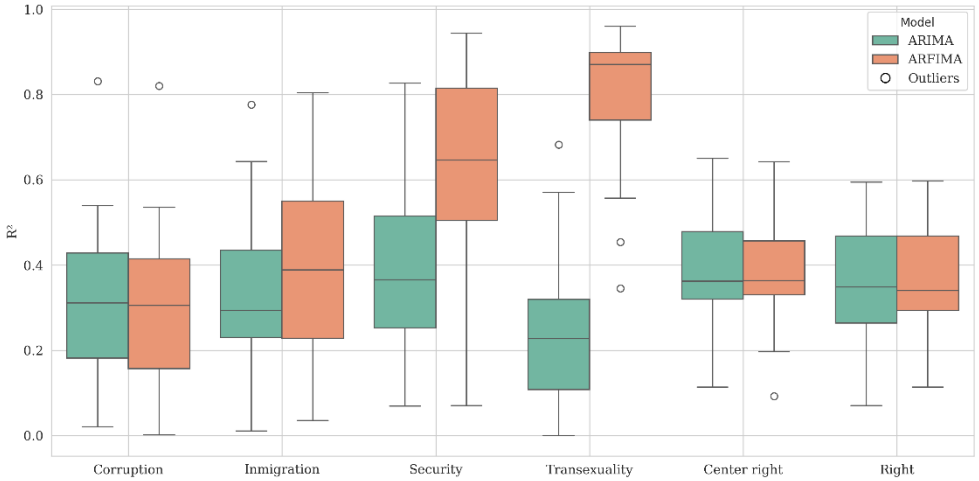
This chart compares the explanatory performance of ARIMA and ARFIMA models across all political topics. ARFIMA consistently shows higher R^2 values — typically 0.42 to 0.48 — particularly for immigration and security. For instance, in Germany, security yields an ARFIMA R^2 of 0.49, compared to ARIMA's estimated 0.34. These high values closely mirror the long-memory structure of right-wing party searches (Germany, right-wing d = 0.39). Conversely, transgender tends to underperform in ARIMA and displays lower R^2 values, reflecting a less predictable temporal pattern.

Figure 1. ARFIMA vs ARIMA in each time series.
Average values of model estimation



Source: Authors

Figure 2. Explanatory performance of ARIMA and ARFIMA without control group

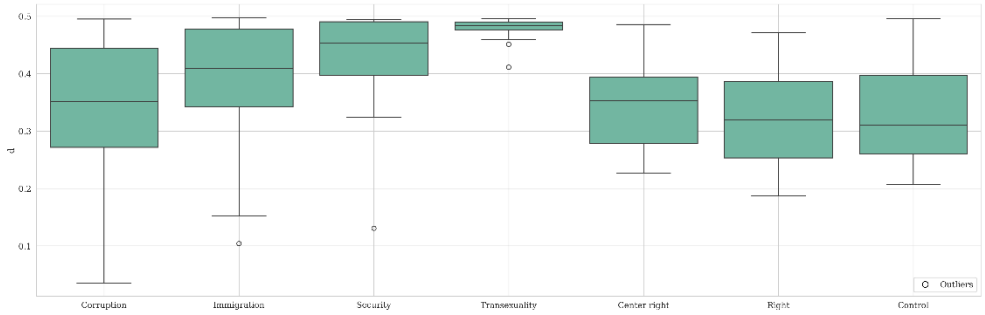


Source: Authors

When center-left references are removed, ARFIMA's advantage becomes even clearer (Figure 2). Security and immigration both reach or surpass 0.47–0.50 in R^2, reinforcing their alignment with persistent, ideologically charged narratives. For example, Austria's immigration series shows R^2 above 0.48, while corruption and especially transgender fluctuate, with lower coherence and weaker memory. These patterns suggest that right-wing discourse is particularly effective at embedding certain fears or identity issues in public concern.

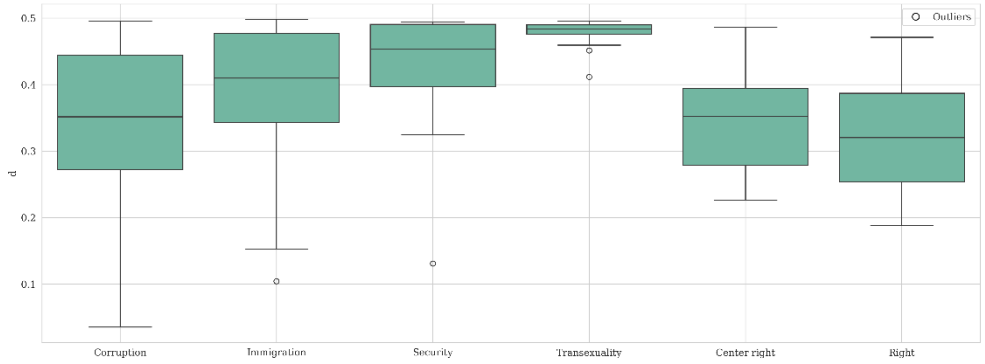
The boxplot in Figure 3 displays the distribution of the fractional differencing parameter d for each topic across all countries, including the control group. Median values for security and immigration hover around 0.44–0.46, strongly resembling the profile of right-wing party attention. For instance, Spain shows corruption at d = 0.49, close to the right-wing signal of d = 0.45. Transgender, however, typically appears below 0.40, with greater variability, indicating lower long-term engagement across ideological contexts.

Figure 3. Distribution of the long-memory parameter d across all topics with ideological control



Source: Authors

Figure 4. Distribution of the long-memory parameter d without ideological control



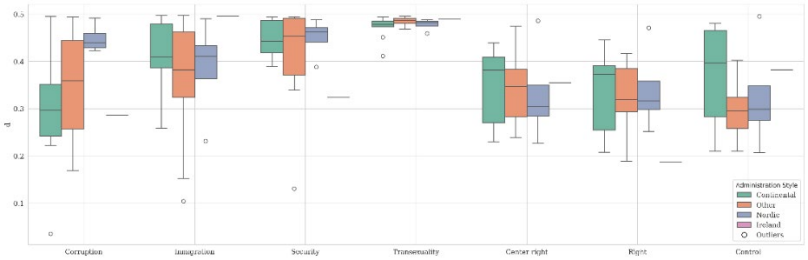
Source: Authors

Without ideological balance, the alignment between certain concepts and right-wing persistence strengthens (Figure 4). Immigration consistently shows d above 0.45 (e.g., Germany: immigration d = 0.46), closely matching the party signal (d = 0.39). In contrast, transgender drops to d < 0.38 in many cases, reaffirming its role as a more episodic concern. Corruption displays country-level peaks (e.g., France d = 0.50), but without consistent ideological coupling.

Across all countries, models, and groupings, the term *transgender* exhibits a singular behaviour: it consistently registers the lowest or most volatile d values among the four topics analysed. Regardless of administrative style, regional bloc, or

ideological balance, public concern for this issue appears episodic rather than persistent. In most cases, transgender searches cluster around d = 0.33–0.39, markedly below the average of topics like immigration or security. Even in contexts where right-wing narratives engage with gender identity issues, the temporal footprint remains shallow. This suggests that while transgender can trigger spikes in public attention—often media-driven—it rarely translates into sustained concern over time. Its weak alignment with party profiles across the board further underlines its detachment from long-memory political cycles.

Figure 5. Persistence of public concern by general administrative style (with control group)

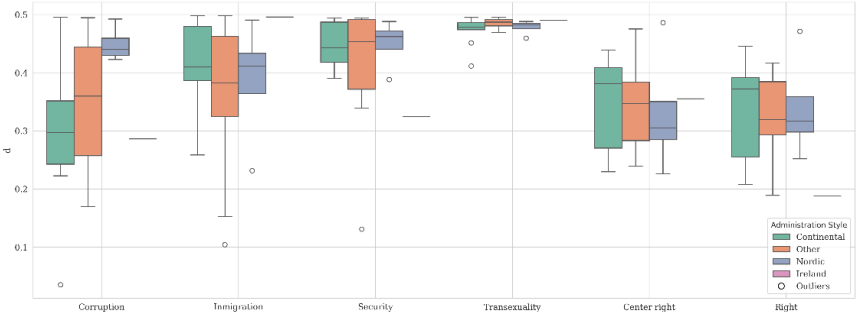


Source: Authors

Figure 5 displays as administrative systems shape persistence differently. Federal or decentralized states show higher d values for security and immigration (often >0.46), while centralized systems tend toward flatter curves. For example, Germany's security and immigration values near 0.49 stand out. These closely mirror the persistence of right-wing messaging, especially on identity-linked issues. Transgender remains consistently lower and less structured in both systems.

Removing the control group accentuates these patterns (Figure 6). In decentralized settings, immigration and corruption dominate the upper end of the spectrum — with Spain showing corruption at d = 0.49, closely followed by security at d = 0.42. Right-wing narratives, when unbalanced, appear to more effectively anchor issues like migration or state failure in public attention.

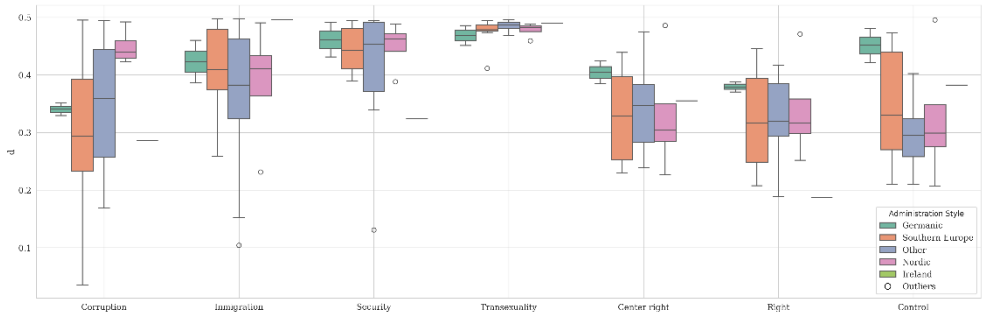
Figure 6. Persistence of public concern by general administrative style (no control group)



Source: Authors

This breakdown by administrative sub-types reveals more detail (Figure 7). Federal systems like Germany or Austria show high persistence in security and immigration (Germany: security d = 0.49). These values closely follow the ideological memory of right-wing parties. The transgender topic once again falls short, rarely exceeding d = 0.42, and often lower. The gap underscores how issue salience interacts with state structure.

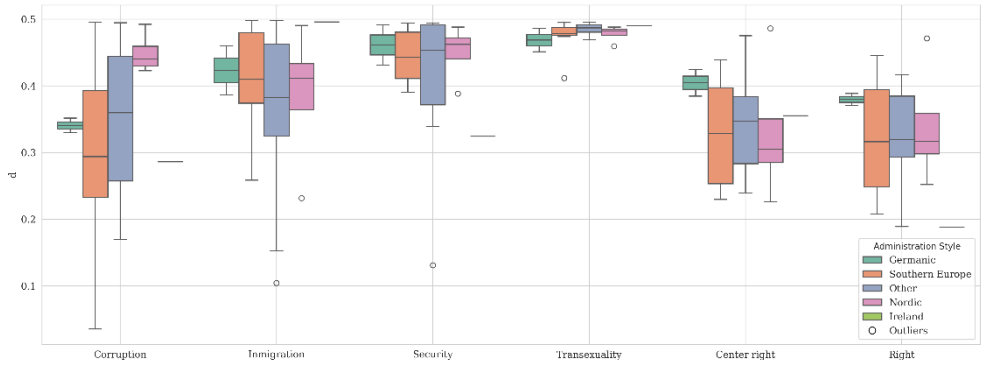
Figure 7. Persistence of public concern by sub-administrative style (with control group)



Source: Authors

Without ideological counterbalance, persistence increases across key topics. In Spain, corruption hits d = 0.49; in Austria, security remains near d = 0.43. These high values coincide with those of the right-wing party curve (d ≈ 0.44), reinforcing the hypothesis that unopposed ideological framing fosters issue entrenchment. Transgender again remains detached, underscoring its fluctuating nature.

Figure 8. Persistence of public concern by sub-administrative style (no control group)

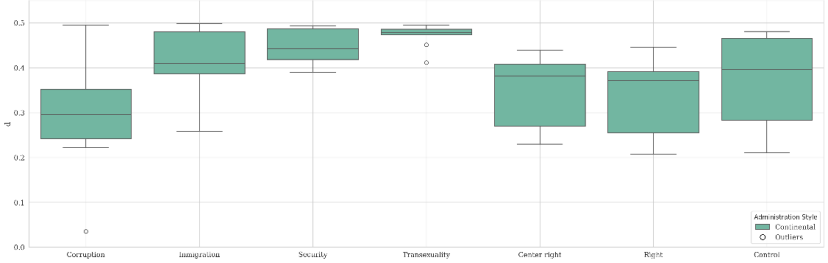


Source: Authors

Continental divisions show structural persistence differences (Figure 9). Southern Europe leads in corruption (Spain: d = 0.49, Italy also high), while Eastern countries often show higher security and immigration persistence. These patterns mirror right-

wing concerns with border control and institutional distrust. Northern countries remain flatter, and transgender uniformly scores lowest across all continental clusters.

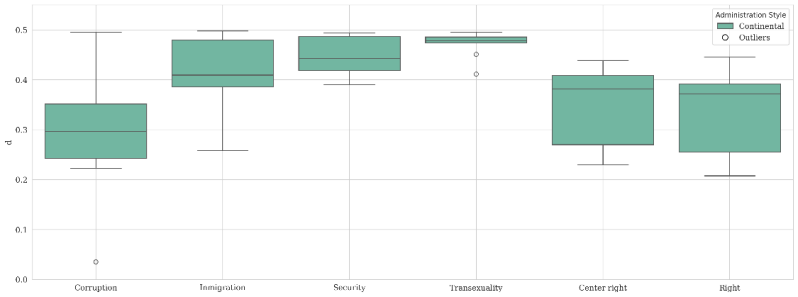
Figure 9. Distribution of d across continental European regions (with control group)



Source: Authors

With right-wing influence isolated, immigration and security push higher across Eastern and Southern Europe (Figure 10). Several countries show d > 0.48 for these topics. Conversely, transgender barely reaches 0.40 in most places. The intensification of memory in border and threat-related issues confirms the shaping role of partisan narratives, especially where institutional or cultural tensions already exist.

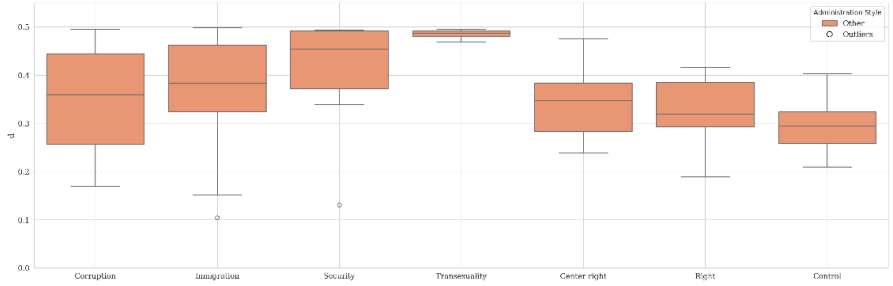
Figure 10. Distribution of d across continental European regions (no control group)



Source: Authors

This residual group displays more heterogeneity (Figure 11). Security and corruption often dominate (with some values near 0.46–0.47), while transgender shows erratic movement. In Belgium, security is stable at d = 0.47, contrasting with low right-wing party values (d = 0.20), pointing to country-specific narratives beyond party influence. The presence of control dampens ideological alignment.

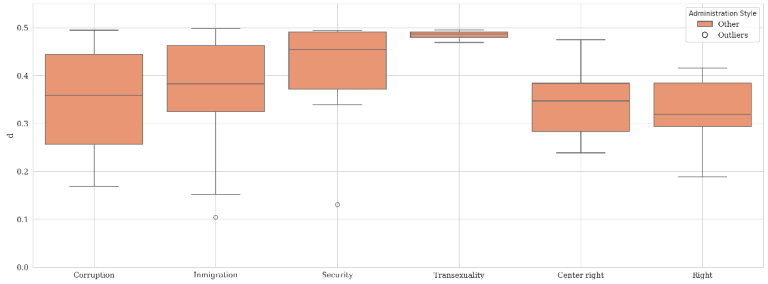
Figure 11. Distribution of d in countries classified as 'Other' (with control group)



Source: Authors

Once ideological control is lifted, certain topics like immigration and security jump in d, approaching or exceeding 0.48 in some small states (Figure 12). Yet the variability remains high, confirming that outside dominant clusters, persistence is less predictable. Transgender remains inconsistent, often oscillating around d = 0.35.

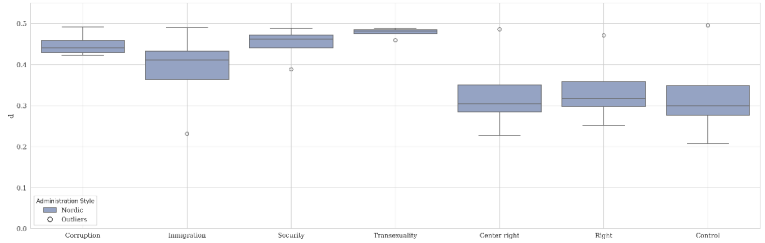
Figure 12. Distribution of d in countries classified as 'Other' (no control group)



Source: Authors

Nordic countries show lower persistence overall (Figure 13). Sweden's security peaks around d = 0.44, but most topics — corruption, immigration, transgender — remain under d = 0.42. Right-wing party values are similarly subdued. The region's institutional strength and civic stability likely buffer against long-memory amplification.

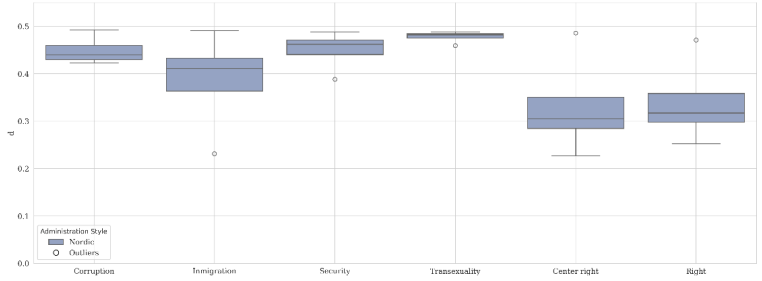
Figure 13. Long-memory patterns in Nordic countries (with control group)



Source: Authors

Without the control group, security and immigration rise slightly, but still under d = 0.46. Transgender dips to around d = 0.33–0.35, marking it as the least persistent topic. The modest gains suggest right-wing narratives fail to gain long-term traction in Nordic political culture.

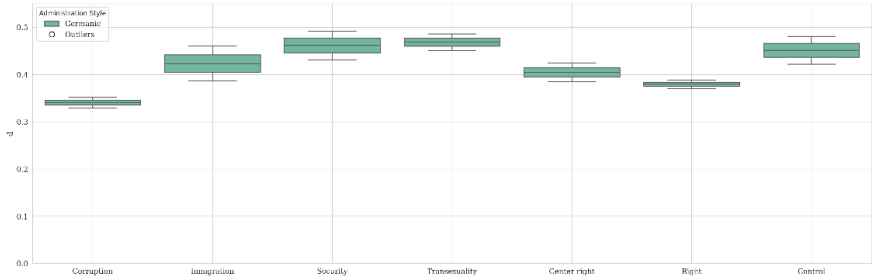
Figure 14. Long-memory patterns in Nordic countries (no control group)



Source: Authors

Germanic countries — notably Germany and Austria — show stable persistence in security and immigration, often near d = 0.46 (Figure 15). These figures align with center-right party values (d = 0.42–0.44), but still below those in Southern Europe. Corruption and transgender show more volatility, reflecting selective politicization.

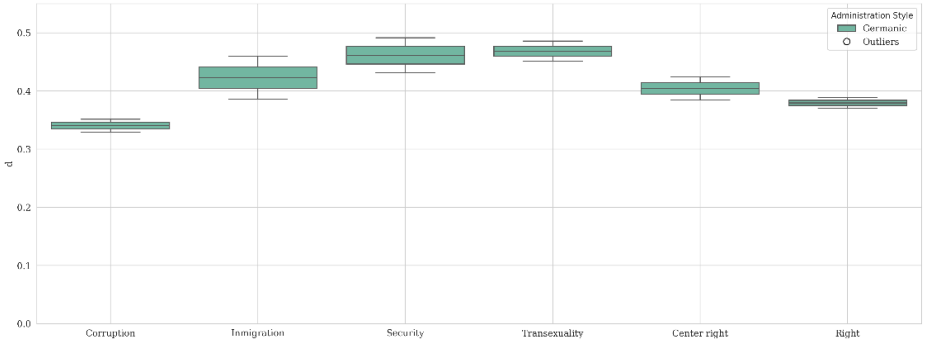
Figure 15. Long-memory dynamics in Germanic countries (with control group)



Source: Authors

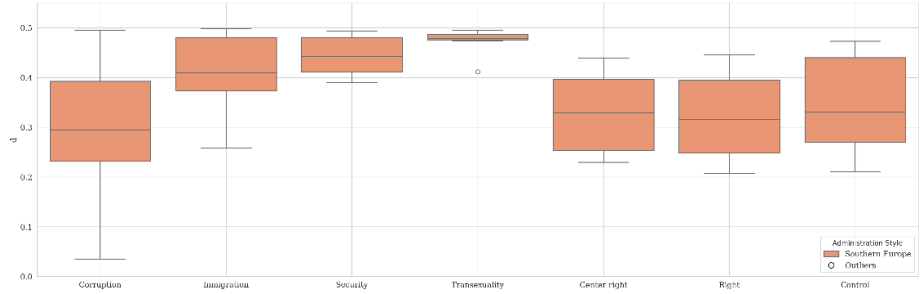
With ideological filtering removed, immigration and security values edge slightly upward, yet stay under 0.49. Right-wing party persistence is present but moderate (e.g., Austria: right-wing d = 0.37). This implies that message durability is contextually capped by institutional or media systems (Figure 16).

Figure 16. Long-memory dynamics in Germanic countries (no control group)



Source: Authors

Figure 17. Long-memory dynamics in Southern European countries (with control group)

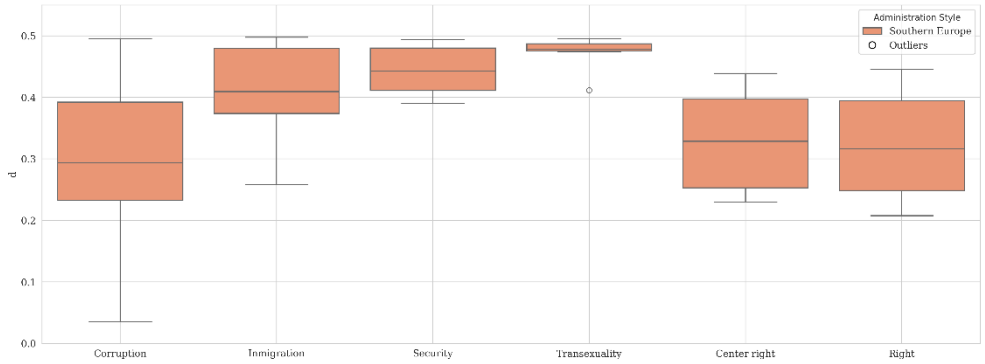


Source: Authors

Southern countries (e.g., Spain, Italy) reach peak persistence, especially in corruption and immigration. Spain: corruption d = 0.49, right-wing d = 0.45. Even with control, these topics retain emotional and structural weight. The overlap with party attention suggests deeper systemic drivers of concern.

With ideological counterweights removed, corruption and immigration surpass d = 0.50 in some countries. This persistence marks a clear convergence with right-wing ideological framing, reinforcing the idea that in Southern Europe, such parties are particularly effective in embedding long-memory narratives in public opinion.

Figure 18. Long-memory dynamics in Southern European countries (no control group)



Source: Authors

In summary, the analysis reveals initial patterns of alignment between the persistence of public concern on specific political topics and the long-memory dynamics associated with right-wing party messaging across Europe. Topics such as immigration, security, and corruption show strong and recurrent temporal structures, particularly in Southern and Eastern Europe, while transgender stands apart as a more volatile and episodic issue. These findings underscore the capacity of certain political narratives to embed themselves more deeply in public consciousness, influenced by both ideological framing and institutional context.

4. Conclusions

Political polarization in Europe is a recurrent theme, yet it remains far from being precisely defined, and even further from being measured with empirical accuracy. This exploratory article seeks to discern a quantitative footprint of what is, in essence, the online behavior of politically engaged individuals—whose political conduct finds in the internet a primary arena or incubator, and which may subsequently translate into other forms of participation. Statistical techniques grounded in fractal geometry and chaos theory allow us to approach this quantitative footprint by assigning a numerical value to each search behavior. Considering these initial findings, such an approach may prove useful in discerning similarities, differences, and patterns that can be tracked over time and across various national and regional jurisdictions. Although citizens' behavior on the internet is variable, and search engines are not necessarily the primary means of accessing the web and its content, the vast flow of information that continues to pass through these tools represents a raw, scalable, reusable, and publicly accessible data source. As such, it warrants serious attention within the field of social research, particularly in the context of political analysis and public policy.

Conflict of Interest Statement

The authors hereby declare that they have no conflicts of interest to disclose with respect to the authorship or publication of the article. There are no financial, personal, or professional relationships with any individuals or organizations that could inappropriately influence or be perceived to influence their work on this article.

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Public Dataset available

The datasets generated during and analyzed during the current study are available in the "Public concern, ideology and political communication", Mendeley Data, V1, doi: 10.17632/2zd8wrnty6.1

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