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Application of Natural Language Processing to the electoral manifestos of parties characterised by populist rhetoric in Central and Eastern Europe

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Abstract

The aim of this paper is to find patterns regarding the rhetoric employed by actors characterised by populist rhetoric in Central and Eastern Europe (CEE). To do so we examine all available electoral manifestos of all parties in CEE during the 2000–2022 period and we use Natural Language Processing with the goal of extracting meaning from a large number of texts. The analyses focus on most frequent topics using Topic Modelling, whether the manifestos express positive or negative emotions using Sentiment Analysis, and on the analysis of word frequencies. The analysis reveals a complex landscape characterized by both common themes and country-specific variations for what concerns populist rhetoric remove in the region. Populist parties consistently employ more negative sentiments in their manifestos compared to non-populist parties, regardless of being right-wing or left-wing. While they share overarching themes such as anti-EU sentiment, critiques of economic liberalism, religious and ethno-centric language, and anti-corruption narratives, populist parties skilfully tailor their rhetoric to specific national contexts and historical narratives. This adaptability allows them to resonate more effectively with local electorates. The use of negative rhetoric is a tactical choice across the populist spectrum rather than an indicator of ideological radicalism. Notably, populist parties often frame the EU as an obstacle to national sovereignty and economic prosperity while simultaneously acknowledging its benefits. The effectiveness of populist rhetoric appears to be influenced by each country's economic and institutional context, with countries investing in productivity- and innovation-led growth providing less fertile ground for divisive populist messages.

Keywords: natural language processing; political parties; electoral manifestos; populism; sentiment analysis; Central and Eastern Europe

1 Introduction

Political science has witnessed a growing relevance of Natural Language Processing (NLP) in recent years. This computational approach enables researchers to process and analyze vast corpora of documents with unprecedented precision and quantitative rigor. In this

paper, we harness the power of NLP to examine the content of manifestos from parties characterized by populist rhetoric in Central and Eastern Europe (CEE). Our study employs a range of NLP techniques, including Weighted Log Odds Ratio, Sentiment Analysis, and Topic Modelling, to provide a comprehensive yet precise analysis of these manifestos. By doing so, we aim to offer valuable insights into the nature and content of populist rhetoric in the CEE region. This paper systematically investigates these manifestos through three research questions:

- (i) Do parties characterized by populist rhetoric demonstrate a convergence of topics across CEE?
- (ii) Is there a convergence of sentiments among parties characterized by populist rhetoric across CEE?
- (iii) To what extent and in what ways are the topics associated with populist rhetoric in the literature reflected in these manifestos?

Table 1 outlines these research questions and the corresponding methodologies employed to address each one, together with a summary of the results. Before delving into the analysis and discussion, we provide a conceptual framework for the problem at hand. We then describe our data and methodology, followed by an exploratory data analysis. The paper concludes with a summary of our findings and their implications for understanding populist rhetoric in Central and Eastern Europe. By leveraging these NLP techniques, this study contributes to the growing body of literature on populism and political communication in CEE.

The findings reveal that, despite considerable variation tied to specific national contexts, populist parties consistently employ negative sentiments more frequently than non-populist parties. Themes such as anti-EU sentiment, critiques of economic liberalism, religious and ethno-centric language, and anti-corruption narratives are prevalent among these parties. The adaptability of populist rhetoric, tailored to resonate with local electorates, emerges as a notable strategy. This rhetorical flexibility allows populist parties to capitalize on historical narratives and societal cleavages, enhancing their electoral appeal across different countries.

The analysis highlights that populist rhetoric is marked by negative sentiment, regardless of whether the parties are centrist or radical. Specific thematic trends also emerge, such as the frequent portrayal of the EU as an impediment to national sovereignty and economic prosperity. Interestingly, there was no significant difference in the intensity of negative rhetoric between centrist and radical populists, suggesting that the use of negative sentiment is a tactical choice rather than an indicator of ideological extremism. Additionally, the common themes reflected in populist manifestos indicate a convergence towards certain key issues, though the manifestation of these themes varies according to each country's unique historical, economic, and social context.

Table 1 Research questions and methodology

| Research Question | Methodology | Result |
|---|--|--|
| Whether parties characterised by populist rhetoric have a convergence of topics | Weighted Log Odds Ratio, Topic Modelling | Preference for certain CEE populist cleavages for certain populist parties, mainly the radical ones. |
| Whether parties characterised by populist rhetoric have a convergence of sentiments | Sentiment Analysis | More negative sentiments toward the EU for countries characterised by populist rhetoric. More negative sentiments for populist parties but no relevant difference between centrist and radical ones. |
| Whether and in which way the topics traditionally used by populist rhetoric actors in CEE are reflected in the manifestos | n-grams, Topic Modelling | Common use of anti-EU rhetoric, but different cleavages exploited according to the party. |

2 The use of populist rhetoric in CEE

Exploring the use of populist rhetoric in Central and Eastern Europe (CEE) is crucial for understanding its impact on political institutions and governance. Populism, widely studied in recent years, is predominantly defined as a ‘thin-centred ideology that considers society to be ultimately separated into two homogeneous and antagonistic groups, “the pure people” versus “the corrupt elite”, and which argues that politics should be an expression of the *volonté générale* (general will) of the people’ (Mudde, 2004, p. 543). This ideology is characterized by people-centrism, anti-elitism, and Manichaeism, along with a preference for anti-institutionalism and emotionalized crisis narratives. The impact of populist rhetoric on political institutions has been subject to considerable debate, with some arguing for its potential positive effects (Mouffe, 2019). However, there is a broad consensus that its effect in Europe, particularly in CEE, is predominantly negative (Bartels, 2023; Funke et al., 2020).

In CEE, populist rhetoric is viewed as a means to foster illiberal governance through centralization, politicization of the state, and various forms of anti-pluralism (Boda, 2024). This is achieved by exerting pressure on critical media, violating minority rights, undermining key institutions, and constraining opposition (Mounk, 2018). In the libertarian-authoritarian dimension of the political space (Kitschelt, 1994), populist rhetoric is utilized in CEE to shift from the ‘Green/alternative/libertarian’ (GAL) side to the ‘traditional/authoritarian/nationalist’ (TAN) side (Hooghe et al., 2002). The drivers of populist rhetoric in CEE are multifaceted, including economic factors such as dissatisfaction with the economy and economic insecurity (Guiso et al., 2017), as well as low trust in political institutions (Györfy, 2009). Kriesi (2014) argues as well that the limited institutionalization of party systems and perceived corruption among public officials contribute to this phenomenon.

In CEE, populist support can be divided into ‘centrist populism’ and ‘radical populism’ (Petrović et al., 2022). We use this division as well to see potential archetypes of populist rhetoric. While centrist populism primarily exploits dissatisfaction with corrupt leaders, radical populism represents a backlash against post-communist transition politics and the elites responsible for implementing those reforms. For the latter group, populist rhetoric is used to challenge democratic norms and institutions, rejecting pluralism and appealing to an ethnically and culturally homogeneous ‘people’ (Spasojević, 2020). Given the success of populist rhetoric in the region, with more than half of the 11 post-communist EU member states ruled by populist prime ministers by the end of 2020 (Petrović et al., 2022), it is crucial to analyse the rhetoric of parties characterized by populist tendencies across CEE in comparison to non-populist parties and among different groups of populist parties.

3 NLP in the literature on populism and the democratic process

The influence of populist discourse and rhetoric on opinion formation and subsequent electoral outcomes in Central and Eastern Europe (CEE) has been a subject of extensive research (Hawkins et al., 2019). To comprehend the content of this rhetoric, researchers increasingly employ large-scale textual analysis. Natural Language Processing (NLP), a multifaceted field encompassing various methodologies for machine-based human language analysis, enables researchers to quantitatively examine substantial volumes of data.

NLP plays a pivotal role in analysing the content of text documents and populist rhetoric. By employing techniques such as topic modelling and sentiment analysis, researchers can identify patterns and sentiments expressed in populist discourse, particularly on social media platforms where populist parties frequently disseminate their messages.

The application of NLP in political research underscores its potential for enhancing our understanding of societal divisions and the dynamics of political discourse. It suggests the need for integrating explanatory and predictive modelling paradigms, as well as fostering a more interdisciplinary approach to studying the political process. This approach acknowledges the complexity of political dynamics, which are influenced by myriad factors beyond the content of political speeches or social media posts.

The utilization of NLP in political research, especially with manifestos, is a relatively recent development. One of the seminal applications of NLP to electoral manifestos was conducted by Slapin and Proksch (2008). Traditionally, NLP analysis of manifesto documents focused primarily on OECD and English-speaking countries (Merz et al., 2016). However, this trend is shifting due to increased data availability, enhanced computational capabilities, and the growing popularity of large language models. Given the recency of this shift, research on manifestos in CEE has been predominantly qualitative (Landman, 2016). This field has tended to focus on the dichotomy between ‘the East’ and ‘the West’ (Haughton, 2013) or country-level case studies (Ulinskaitė & Pukelis, 2021). However, contemporary NLP-based studies in CEE encompass a wide range of topics, including the role of spending (Coman, 2019), the effect of fringe parties on mainstream parties (Heinisch et al., 2021), and the main themes of social democratic parties (Bielik, 2020).

Research employing NLP on manifestos regarding populism is also gaining traction. A notable example is the work of Di Cocco and Monechi (2022), who utilize a combination of NLP and supervised machine learning to measure the degree of populism in manifestos. Other studies have examined populist rhetoric via social media (Gründl, 2020; Hirzalla, 2019), political debates (Klamm et al., 2023), and journal content (Naxera et al., 2023). Additionally, numerous studies employ NLP to measure polarization (Németh, 2023). This growing body of NLP-based research in political science, particularly in the context of CEE, demonstrates the increasing recognition of the method’s potential to provide nuanced insights into political discourse and its societal impacts.

4 Methodology

This paper employs a subset of NLP methodologies known as Natural Language Understanding (NLU). While NLP is the overarching field that encompasses a variety of tasks related to the processing and generation of human language by computers, NLU specializes in understanding the meaning and intent behind language. NLU techniques can help us provide a more systematic insight into the rhetoric of populist parties in CEE. Their systematic nature can also help us gain a comprehensive overview of the problem without the drawbacks often associated with qualitative analysis of manifestos (Lacy et al., 2015). For the purpose of this analysis, we utilize at least one methodology from each of the five NLU families of methodologies (Lo et al., 2023), as summarized in Table 2. We also perform the analysis using R 4.4.0 and the Tidyverse 2.0.0 and Quanteda 4.0.2 packages.

Table 2 Used methodologies in relation to NLU

| NLU Methodologies Family | Method Used in This Paper |
|-----------------------------|----------------------------------|
| Rule-based systems | Sentiment Analysis |
| Statistical methods | n-grams, Weighted Log Odds Ratio |
| Machine learning approaches | Topic Modelling |
| Machine learning approaches | Machine Translation |

Two of the methodologies employed in this study are derived from the Natural Language Understanding (NLU) subgroup known as ‘rule-based systems’. These methodologies rely on handcrafted linguistic rules and patterns to extract information from text. Specifically, we use dictionaries – lists of words with assigned values – as a methodology from this group. Despite criticisms of dictionaries for their context insensitivity, they remain a valuable approach for obtaining overall measurements of certain constructs. For each document used we remove stop words by removing the 1149 stop words already categorised in English in the R Tidytext package and we also remove the dictionary words followed or anticipated by a negation using a regex expression.

We utilize dictionaries such as the Populism Dictionary (Benoit & Nulty, 2014) and the Liberalism Dictionary (Laver & Garry, 2000) to gauge the prevalence of populist rhetoric across different groups. The Populism Dictionary uses the dictionary argument with the `dfm` function of the `Quanteda` package, where a list of terms associated with populist language are categorized based on Rooduijn and Pauwels (2011). This way we find a list of populist terms in each document, and we use it to construct a score where we measure the proportion of populist and non-populist language per group of documents. Similarly, the Liberalism Dictionary extracts words connected to liberalism and creates a score (Laver & Garry, 2000).

Additionally, we employ a dictionary-based approach to sentiment analysis, which uses a predefined lexicon to assess sentiment (Young & Soroka, 2012). For this purpose, we chose the AFINN dictionary due to its suitability for general-purpose sentiment analysis, irrespective of the text source (Nielsen, 2011). We also construct a score for each document similarly to the Populism and Liberalism dictionary. Word scores range from -5 (negative) to +5 (positive). The English language dictionary includes 2477 coded terms that we use on the translated version of each document.

The second NLU subgroup we reference, statistical methods, involves learning patterns and probabilities associated with different linguistic phenomena. Statistical methods such as weighted n-grams and weighted log odds ratios were used for tasks like language modelling. N-grams are especially effective in specific, well-defined domains where rules can be comprehensively enumerated. In our work, we use n-grams to examine common combinations around topics like the European Union. We also employ weighted log odds ratios to compare term importance across different categories, identifying terms significantly more or less associated with specific categories. This includes analysing word frequencies across various groups and parties to align with our research questions.

Third, we leverage machine learning approaches within NLU, which rely on trained models to execute various tasks such as sentiment analysis, named entity recognition, and text classification. Topic Modelling (TM), a technique for identifying predominant themes within a text, is part of this group. This approach clusters text segments into distinct groups or categories based on shared vocabulary, using an unsupervised machine learning model. The most well-known algorithm for Topic Modelling is the Latent Dirichlet Allocation (LDA), that we apply using the R `Quanteda` package. TM operates on two fundamental principles: it considers each document as a mix of various topics and associates every word with at least one topic. In our analysis, we employ Structural Topic Modelling (STM) with LDA, an unsupervised machine learning technique that uncovers latent themes by exploring frequent co-occurrences of words. Our objective is to infer hidden subjects in texts by examining observable connections among words. Unlike supervised machine learning methods, these topics are not predetermined.

We determine the optimal number of topics by integrating both quantitative metrics and qualitative evaluations. Quantitative metrics such as log-likelihood, perplexity, and topic coherence offered objective measures of model performance, while qualitative assessments focus on the interpretability of the resulting topics. We experiment with a range of values, evaluate their performance against these metrics, and select the number of topics that achieves an optimal balance between model fit and interpretability, which is five

in this case. We also use the default Alpha and Beta values in the model as they perform well, and they decrease their performance when fine-tuned. We also use qualitative review of our results to validate them. We use TM not only for its reliability but also because our aim is not to classify documents into predefined categories. Instead, we utilize TM to uncover and comprehend previously unrecognized themes within the texts. Specifically, we use LDA due to its interpretability and its well-established status in the literature.

5 Data

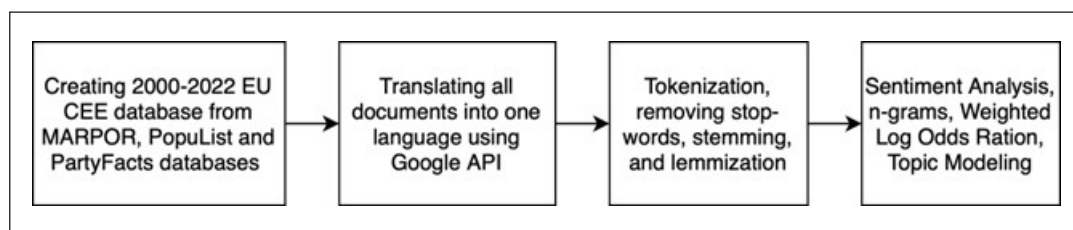
We apply the above-mentioned techniques on manifestos of parties characterised by populist rhetoric over the 2000–2022 period. The data and the categorization come from the MARPOR dataset (Volkens et al., 2019), specifically from the 2023-1 version of the corpus. We retrieve the data for CEE countries, here defined because of data availability as nine out of the eleven European Union member states with a former communist past. We chose the 2000–2022 period for two reasons. First, we want to look at the CEE democratisation period and consider the illiberal tendencies of populism in the area. Second, data before the year 2000 in the region is usually scarce and unreliable. We select all manifestos in Central and Eastern Europe for the 2000–2022 period from the Manifesto Project Database. We choose to focus on manifestos, despite their shortcomings (Volkens et al., 2009), because they are considered in the literature to provide valuable insight regarding the priorities, objectives, and intentions of political parties.

We then add metadata to each party in the database using PartyFacts (Döring & Regal, 2019) and the PopuList (Rooduijn et al., 2020). We use the PopuList to classify parties and, conversely, manifestos as characterised by populist rhetoric. The dataset categorises parties according to the academically dominant definition of populism (Mudde, 2004). Furthermore, for the purpose of this study, the identification of populist rhetoric matters only for the identification of the parties from which we should analyse the manifestos. We end up with 304 manifestos for 144 parties for the 2000–2022 period as divided in Table 3. We also identify some of these parties as centrist (GERB, ANO and OLaNO) and radical populist (Fidesz, PiS and SDS) according to the academic definitions (Petrović et al., 2023).

Once we have obtained the data, we prepare it for analysis as summarized in Figure 1. Particular emphasis is placed on the translation of our corpus, which is composed of texts in ten different languages, with tokenization functions available for only some of them. To translate the corpus, we use the Google Cloud Translation API. Following the translation, we perform tokenization, stemming, lemmatization, and other preprocessing steps necessary for analysing our corpus. First, tokenization is the process of splitting text into smaller units, which in our case are words. Second, stemming involves transforming words into their base forms or roots. Finally, lemmatization is the process of grouping together words with the same root. For example, lemmatization enables words like ‘imaging’ and ‘imagination’ to be categorized together. This is particularly useful for techniques such as Topic Modelling and Sentiment Analysis. Once the data are prepared using machine translation, we proceed with exploratory data analysis (EDA), followed by the application of n-grams, Sentiment Analysis, and Topic Modelling to answer the research questions.

Table 3 Number of available manifestos per country and use of populist rhetoric with time range

| Country | Manifesto Type | Number of Parties | Number of Available Manifestos | Avg. Characters Sentence Length | Avg. Characters Document Length | Time Span |
|---------|----------------|-------------------|--------------------------------|---------------------------------|---------------------------------|-------------------|
| BGR | Non-Populist | 7 | 10 | 101.15 | 26289.87 | 2009/07 – 2017/03 |
| BGR | Populist | 5 | 10 | 107.60 | 239202.11 | 2009/07 – 2017/03 |
| EST | Non-Populist | 7 | 21 | 109.44 | 102343.35 | 2007/03 – 2019/03 |
| EST | Populist | 1 | 2 | 111.79 | 25462.40 | 2007/03 – 2011/03 |
| HRV | Non-Populist | 24 | 45 | 133.52 | 159387.14 | 2000/01 – 2020/07 |
| HRV | Populist | 4 | 9 | 150.86 | 165715.24 | 2000/01 – 2020/07 |
| HUN | Non-Populist | 9 | 19 | 90.55 | 307470.96 | 2002/04 – 2018/04 |
| HUN | Populist | 2 | 11 | 91.19 | 289176.93 | 2006/04 – 2018/04 |
| LTU | Non-Populist | 17 | 33 | 125.67 | 308816.44 | 2000/10 – 2020/10 |
| LTU | Populist | 4 | 9 | 114.53 | 89053.34 | 2004/10 – 2020/10 |
| LVA | Non-Populist | 15 | 28 | 65.39 | 9500.00 | 2006/10 – 2018/10 |
| LVA | Populist | 2 | 2 | 62.80 | 4421.22 | 2006/10 – 2011/09 |
| POL | Non-Populist | 15 | 25 | 108.99 | 151799.44 | 2001/09 – 2019/10 |
| POL | Populist | 3 | 6 | 136.56 | 503643.64 | 2001/09 – 2019/10 |
| SVK | Non-Populist | 6 | 16 | 133.86 | 144070.87 | 2002/09 – 2016/03 |
| SVK | Populist | 8 | 17 | 142.21 | 210947.15 | 2002/09 – 2016/03 |
| SVN | Non-Populist | 13 | 32 | 121.40 | 246798.47 | 2004/10 – 2018/06 |
| SVN | Populist | 2 | 9 | 128.75 | 228082.51 | 2004/10 – 2018/06 |

**Figure 1** Analysis steps

6 Exploratory data analysis

In this study, we aim to examine potential differences in the rhetoric and language used across distinct groups of political parties. Our primary focus is on comparing populist Central and Eastern European (CEE) parties with their non-populist counterparts. Additionally, we differentiate between ‘centrist populists’, such as GERB in Bulgaria, OĽaNO in Slovakia, and ANO in the Czech Republic, and ‘radical populists’, including Fidesz in Hungary, PiS in Poland, and SDS in Slovenia. This comparative analysis is essential for understanding the varying strategies and communication styles employed by these political entities.

Our exploratory data analysis begins with a detailed examination of political manifestos. Initial findings indicate that these documents adhere to Zipf’s law (Figure 6), showing no significant deviation in the frequency of common versus uncommon words. This suggests a consistent linguistic pattern across the texts. Furthermore, it is observed that the manifestos predominantly use simpler language, aligning with their intended purpose of communicating effectively with a broad audience. This simplicity in word choice underscores the strategic emphasis on accessibility and clarity in political messaging.

Subsequent analysis focused on identifying patterns in the most frequently used words across the political manifestos. An examination of word usage across different countries did not reveal any distinct patterns, as demonstrated in Figure 7. Commonly used words were typically related to politics and political manifestos, reflecting the similar structure and nature of these documents. In many countries, variations of the word ‘development’ emerged as the most frequently used term. However, when comparing the probability of word usage between populist and non-populist parties, no discernible pattern was found (Figure 8), with the notable exception of the term ‘colonial’ in the context of Bulgaria. This suggests that while there are similarities in language usage across political manifestos, specific contextual factors may influence word choice in certain instances.

When examining the log odds of word usage between populist and non-populist parties across the entire region, and particularly among electorally successful parties, distinct patterns emerge (Figure 2). Specifically, we focus on three parties characterized by populist rhetoric that are currently in power and classified as ‘extremist populists’: Fidesz in Hungary since 2010, PiS in Poland since 2015, and GERB in Bulgaria since 2009. These examples of radical populists appear in the second, third, and fourth panels of Figure 2, respectively. Their political success and populist strategies provide critical insights into the language patterns that differentiate them from non-populist parties.

In Hungary, the Fidesz party not only exploits existing societal cleavages associated with populist rhetoric in Europe but also employs more negative terminology, such as ‘attack’. Additionally, Fidesz often rejects liberal values through religious references, using words like ‘holy’ and ‘Sunday’. This phenomenon mirrors well-documented mechanisms in the populist literature, where populist parties frequently invoke religious and moralistic language to bolster their ideological stances. These linguistic choices underline how Fidesz capitalizes on religious sentiments to promote its political agenda.

Similarly, the PiS government in Poland demonstrates a clear embrace of anti-communist sentiment and critiques of the post-communist transition, as evidenced by its log odds analysis. In Bulgaria, the rhetoric of radical parties such as Ataka reveals a reliance

on negative terms like ‘attack’ and a notable prevalence of the term ‘colonial’. This usage aligns with the concept of colonial liberalism, where colonial endeavours are justified through liberal principles such as economic development and moral progress. Despite being framed as a benevolent mission, it fundamentally involves the domination and exploitation of less powerful nations. This exploitation of populist rhetoric has been extensively documented in the literature and highlights how populist parties manipulate historical narratives and societal values to fortify their political objectives.

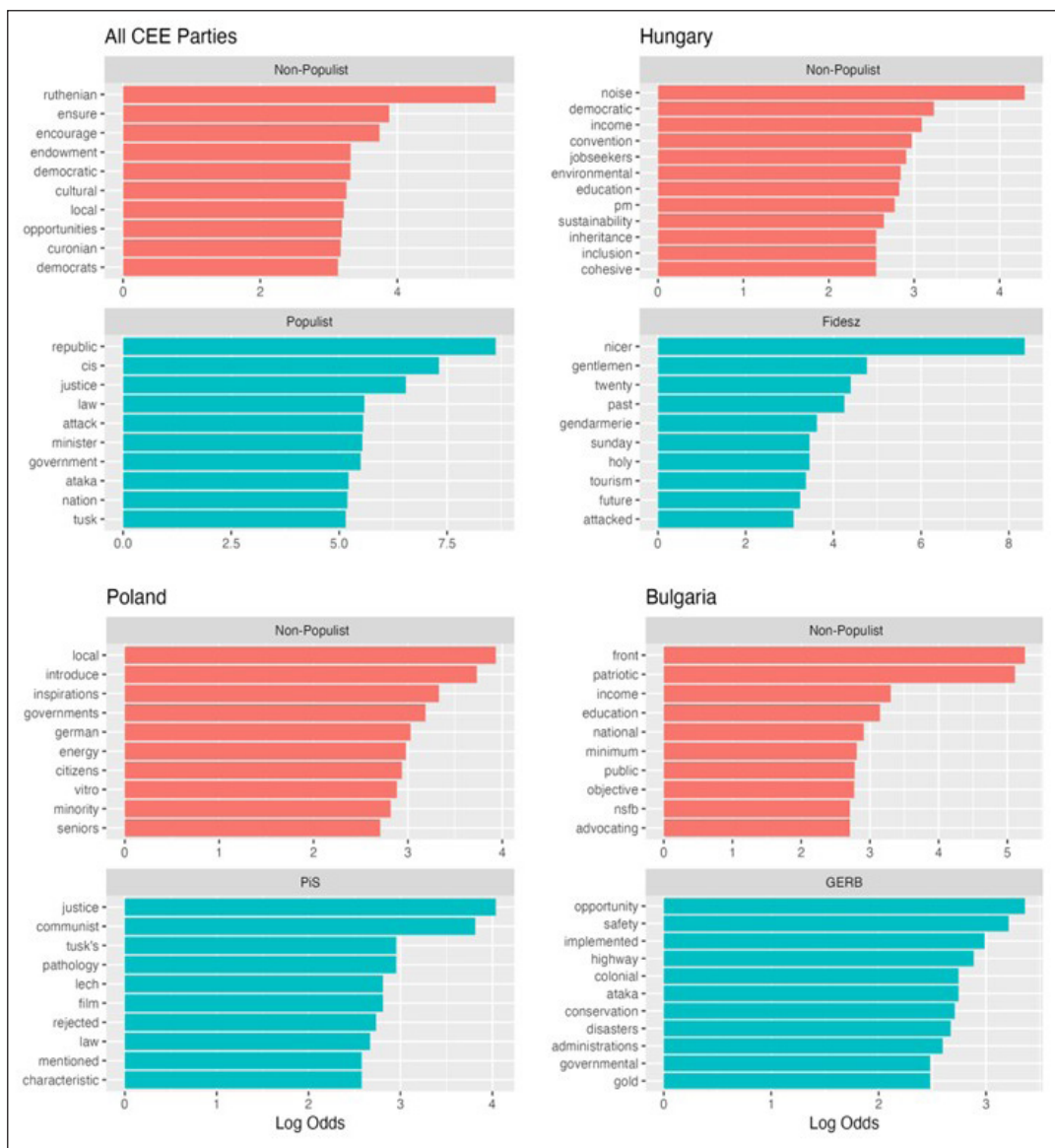


Figure 2 Log odds of using certain words for all cee countries and for selected parties

We further expanded our exploratory data analysis by using specialized dictionaries for populism and liberalism, as mentioned in the methodology section (Table 4). This analysis revealed varying levels of populism and liberalism across the selected groups of parties. However, we did not conduct the same analysis by distinguishing between centrist and radical populist parties, primarily because not all countries in our dataset have representative parties in each of these subgroups. Additionally, we did not find significant differences between the centrist and radical populist parties that were present in the dataset. This suggests that the distinctions in rhetoric between different types of populist parties may not be as pronounced as previously thought or that other contextual factors may play a more significant role.

Table 4 Dictionaries results per country group

| Country | Manifesto Type | Populism Dictionary | Liberalism |
|---------|----------------|---------------------|------------|
| BGR | Non-Populist | 0.10 | 0.90 |
| BGR | Populist | 0.09 | 0.91 |
| EST | Non-Populist | 0.05 | 0.95 |
| EST | Populist | 0.11 | 0.89 |
| HRV | Non-Populist | 0.10 | 0.90 |
| HRV | Populist | 0.14 | 0.86 |
| HUN | Non-Populist | 0.08 | 0.92 |
| HUN | Populist | 0.10 | 0.90 |
| LTU | Non-Populist | 0.08 | 0.92 |
| LTU | Populist | 0.13 | 0.87 |
| LVA | Non-Populist | 0.10 | 0.90 |
| LVA | Populist | NA | NA |
| POL | Non-Populist | 0.08 | 0.92 |
| POL | Populist | 0.10 | 0.90 |
| SVK | Non-Populist | 0.07 | 0.93 |
| SVK | Populist | 0.10 | 0.90 |
| SVN | Non-Populist | 0.06 | 0.94 |
| SVN | Populist | 0.07 | 0.93 |

Source: The Manifesto Project.

6 Results

In this discussion section, we will analyse the results of our comparative study on non-populist, populist radical, and populist centrist parties across various countries, focusing on sentiment analysis, n-grams, and topic modelling. Our sentiment analysis reveals intriguing patterns across the different party groups. A closer examination of individual manifestos shows that five of them are populist. However, this broad view does not immediately highlight significant differences between party types. Notably, the ATAKA party stands out for its particularly negative sentiment (Table 5).

When we disaggregate the data by country and party group, more distinct patterns emerge (Table 6 and Table 7). On average, populist parties employ more negative sentiments compared to their non-populist counterparts. This trend is consistent across both centrist and radical populist parties, suggesting that negativity is a common feature of populist rhetoric regardless of ideological positioning on the left-right spectrum.

Interestingly, we observed more negative sentiments associated with specific cleavages, particularly concerning Europe (Figure 4). However, this pattern did not extend to other potentially divisive terms such as 'west', 'liberalism', or 'communism'. Moreover, we did not find substantial differences in sentiment between representative centrist and radical populist parties, indicating that the intensity of populist rhetoric may not necessarily correlate with ideological extremism.

Our n-gram analysis, as illustrated in Figure 5, reveals distinctive linguistic patterns between parties that employ populist rhetoric and those that do not. Words like 'Brussels', 'absorption', 'lies', and 'cancel' are more prevalent in populist party manifestos. These findings align with three key aspects of populist rhetoric: (1) the creation of division, (2) the portrayal of European institutions as oppressors (particularly in Central and Eastern Europe), and (3) the self-presentation of populist actors as defenders of traditional values against perceived liberal or 'woke' culture.

It is worth noting that despite these differences, there is a 97 per cent Pearson correlation between the manifestos of parties using populist rhetoric and those that do not. This suggests that while populist parties may employ distinctive language, they still operate within a broadly similar political discourse. Interestingly, we did not observe significant differences in n-gram usage between representative centrist and radical populist parties, indicating that the intensity of populist rhetoric may not be a reliable indicator of ideological positioning.

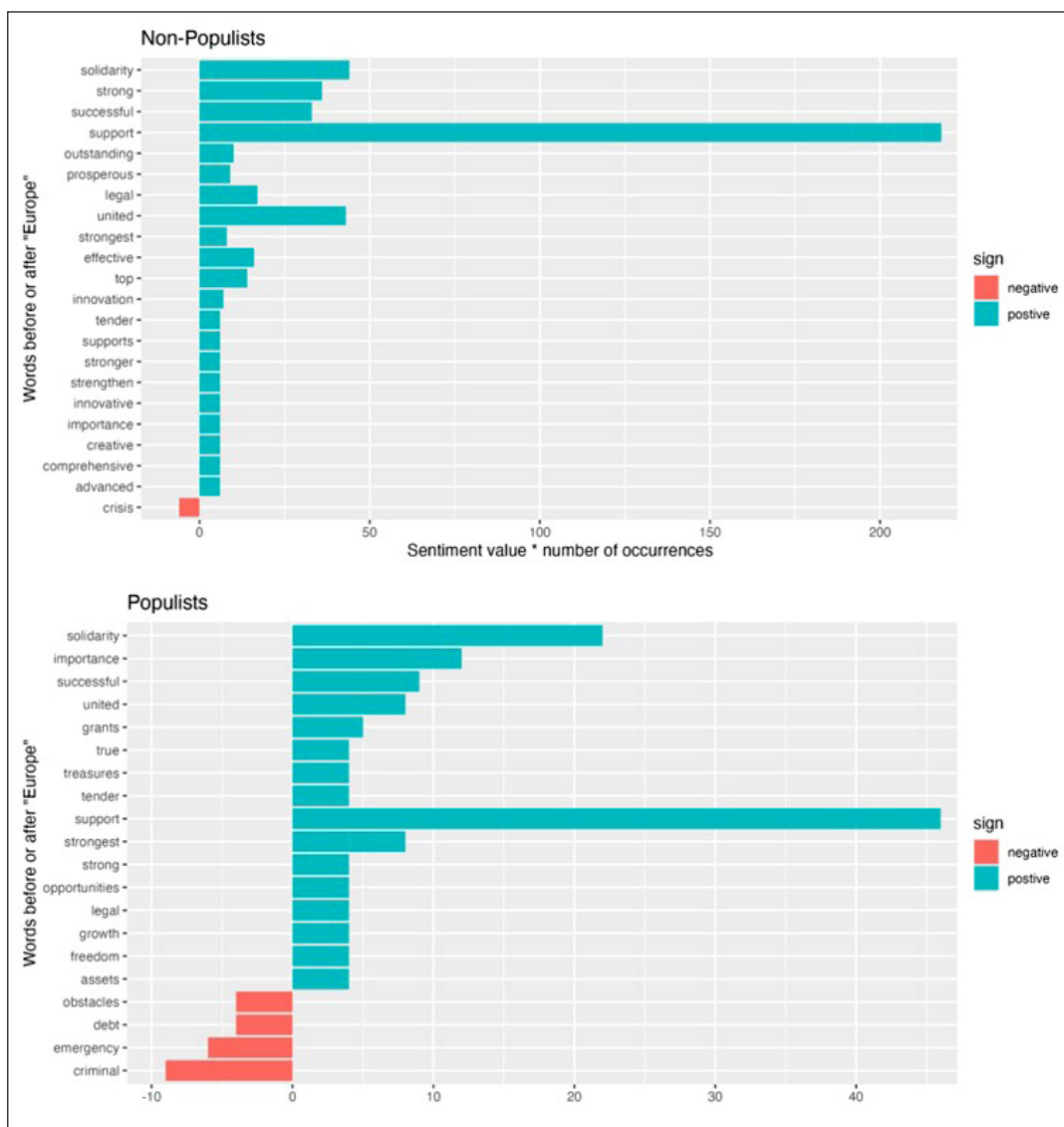


Figure 4. Words divided by sentiment connected to 'EU', parties using populist rhetoric vs. parties not using it

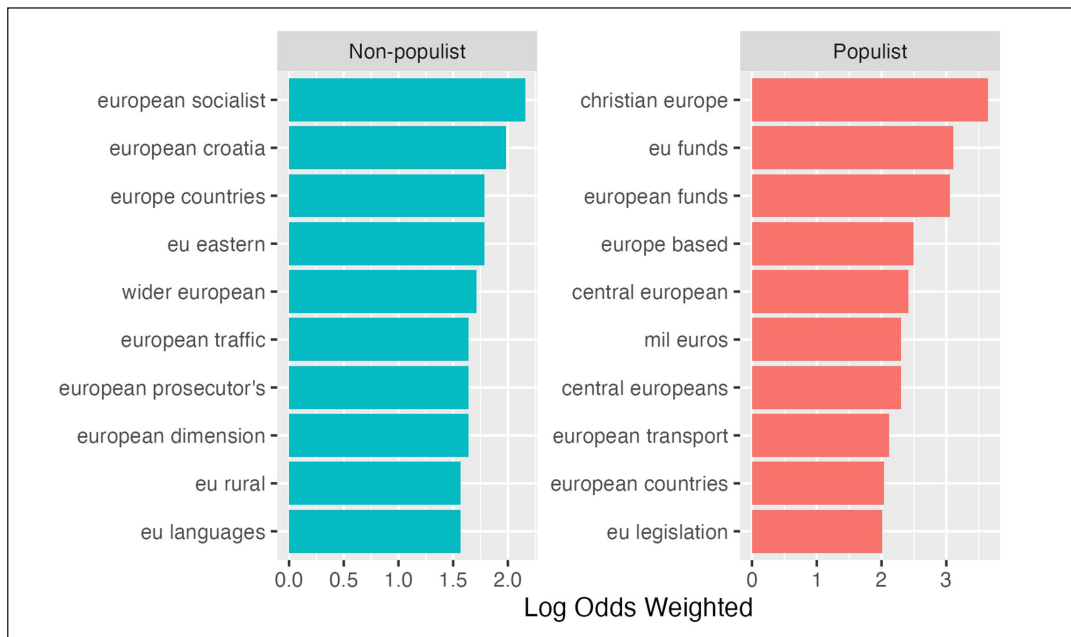


Figure 5. Most common words used together with 'EU' by weighted log odds, parties using populist rhetoric vs. parties not using it

Our Topic Modelling analysis, using Latent Dirichlet Allocation (LDA), reveals further nuances in the discourse of different party groups (Table 8). Non-populist parties across countries generally focus on conventional political topics such as economic, social, and infrastructure development. However, there are notable exceptions, such as the Polish non-populist parties' focus on Germany and Hungarian non-populists' frequent mentions of Fidesz, reflecting the polarized political landscape in these countries.

Populist parties, on the other hand, exhibit more diverse and often controversial topics. In Bulgaria, we observe themes of liberal colonialism and anti-Roma sentiment alongside economic development. Hungarian populist discourse centres on Christian values as a form of rebellion against liberalism, anti-immigration rhetoric, and anti-Soros campaigns. Polish populist parties focus significantly on former Prime Minister Donald Tusk, while Slovak populist discourse combines Christian and anti-immigrant themes despite the success of the more centrist OĽaNO party.

Interestingly, Slovenia presents a counterintuitive case. Despite the success of the radical populist SDS party, the overall populist discourse in the country appears more moderate. Croatia, Estonia, and Lithuania show the least focus on typical populist cleavages, which aligns with the absence of prominent centrist or radical populist parties in these countries.

When comparing country-level topics with those of influential populist parties (Table 9), we find varying degrees of overlap. In Hungary, Fidesz's narrative closely mirrors the overall populist discourse, suggesting its dominance in shaping the country's political rhetoric. Similarly, PiS in Poland shows significant overlap with the broader

populist narrative. The SDS in Slovenia maintains a surprisingly moderate tone despite its radical populist classification. GERB in Bulgaria and OĽaNO in Slovakia focus on anti-corruption themes, while ANO in Czechia emphasizes immigration issues while maintaining a relatively traditional political tone.

In conclusion, our analysis reveals complex patterns in the rhetoric of populist and non-populist parties across Central and Eastern Europe. While populist parties generally employ more negative sentiment and distinctive language, the intensity of populist rhetoric does not always correspond to ideological extremism. Furthermore, the specific themes and topics addressed by populist parties vary considerably across countries, reflecting diverse national contexts and political strategies.

7 Discussion

This study aimed to examine the rhetoric employed by parties characterized by populist tendencies in Central and Eastern Europe (CEE), comparing them with non-populist counterparts and distinguishing between 'centrist populists' and 'radical populists'. Our analysis, utilizing Natural Language Processing techniques such as sentiment analysis, n-grams, and topic modelling, reveals complex patterns in the political discourse across the region. The findings provide insights into the convergence of topics and sentiments among populist parties, the reflection of populist themes in party manifestos, and the varying strategies employed by different types of populist parties.

Our first research question sought to determine whether parties characterized by populist rhetoric demonstrate a convergence of topics across CEE. The analysis reveals both commonalities and divergences in the discourse of populist parties. While there are overarching themes that appear consistently, such as anti-EU sentiment and critiques of economic liberalism, the specific manifestations of these themes vary significantly across countries. For instance, in Bulgaria, the concept of 'colonialism' emerges as a distinctive feature of populist rhetoric, particularly employed by parties like ATAKA. This narrative frames the influence of global and EU forces as a form of 'neo-colonialism', exploiting cultural dominance and inter-regional economic dependence. In contrast, Hungarian populist discourse, exemplified by Fidesz, centres on Christian values as a form of rebellion against liberalism, coupled with anti-immigration rhetoric. Polish populist parties, particularly PiS, focus significantly on criticising former Prime Minister Donald Tusk and the perceived failures of the post-communist transition. These findings suggest that while there is some convergence in broad themes, populist parties in CEE are adept at tailoring their rhetoric to specific national contexts and historical narratives. This adaptability allows them to resonate more effectively with local electorates, potentially contributing to their electoral success.

Regarding the convergence of sentiments, our second research question, the analysis reveals a clear trend: populist parties consistently employ more negative sentiments compared to their non-populist counterparts. This tendency is observed across both centrist and radical populist parties, indicating that negativity is a common feature of populist rhetoric regardless of ideological positioning on the left-right spectrum. Notably, parties like ATAKA in Bulgaria stand out for their particularly negative sentiment. However, it is

important to note that while the overall trend shows more negative sentiment in populist discourse, the intensity of this negativity does not necessarily correlate with ideological extremism. We did not find substantial differences in sentiment between representative centrist and radical populist parties. This suggests that the use of negative rhetoric is a tactical choice employed across the populist spectrum rather than a marker of ideological radicalism.

Our third research question aimed to explore the extent to which topics traditionally associated with populist rhetoric in CEE are reflected in party manifestos. The analysis reveals that several key themes consistently emerge, aligning with existing literature on populist discourse. Anti-EU sentiment emerges as a frequent target in populist manifestos. Parties often frame the EU as an obstacle to national sovereignty and economic prosperity. The phrase 'European Union' is the most common combination of words in parties that use populist rhetoric. This narrative often portrays the EU as failing to deliver on the promised economic convergence, creating an ambivalent relationship where parties simultaneously claim adherence to European values while resenting perceived economic dependence. The critique of economic liberalism is another prominent theme in populist manifestos. Populist parties frequently portray economic liberalism as a failed ideology that has not delivered on promises of prosperity and convergence with Western Europe. This narrative is often personified through figures like Donald Tusk in Poland or George Soros in Hungary. The critique of economic liberalism is intertwined with anti-globalization sentiment, appealing to those who feel left behind by economic changes.

Religious and ethno-centric rhetoric is also prevalent, particularly in countries like Hungary and Slovakia. Many populist parties employ religious and ethno-centric language to create divisions and portray liberalism and European integration as threats to traditional values. This approach often involves invoking Christian values and national identity as bulwarks against perceived external threats. While not universally prominent across all CEE countries, anti-immigration rhetoric features strongly in some populist discourses, particularly in Hungary. This theme often intersects with discussions of national identity and cultural preservation. Anti-corruption and anti-establishment themes are especially prevalent among centrist populist parties, positioning themselves as forces for change against a corrupt elite. This narrative allows these parties to appeal to a broader electorate by presenting themselves as reformers rather than radicals. It is noteworthy that the manifestation of these themes varies across countries. For instance, Slovenia presents a counterintuitive case where, despite the success of the radical populist SDS party, the overall populist discourse appears more moderate. Similarly, countries like Croatia, Estonia, and Lithuania show less focus on typical populist cleavages, which aligns with the absence of prominent centrist or radical populist parties in these countries.

The variations in populist rhetoric across CEE countries reflect different historical, economic, and social contexts. Some scholars argue that the rise of populism in the region is a response to the perceived failures of post-communist transitions and the unfulfilled promises of economic liberalism and EU integration. From this perspective, populist rhetoric serves as a voice for those disillusioned with the outcomes of these processes. However, critics argue that populist parties exploit and exaggerate these grievances, creating artificial divisions and scapegoats rather than addressing underlying structural issues. The use of religious and ethno-centric rhetoric, for instance, may be seen as a strategic

choice to mobilize support rather than a genuine reflection of societal values. The success of populist rhetoric in some countries (e.g. Hungary, Poland) compared to others (e.g. Estonia) may be linked to different policy approaches and institutional strengths. Countries that have invested in productivity- and innovation-led growth seem to provide less fertile ground for divisive populist rhetoric. This suggests that the economic and institutional context plays a crucial role in determining the resonance of populist messages. The ambivalent relationship with the EU, as reflected in the manifestos, highlights a complex dynamic. While populist parties often criticize EU institutions and policies, they simultaneously acknowledge the benefits of EU membership, particularly in terms of economic support. This duality in rhetoric reflects the challenges these parties face in balancing nationalist sentiments with the practical realities of EU integration.

The use of negative sentiment in populist discourse, while a common feature, may have varying impacts across different national contexts. In some cases, it may resonate with existing public frustrations, while in others, it might be perceived as overly divisive. The lack of significant difference in sentiment between centrist and radical populist parties suggests that the effectiveness of negative rhetoric may depend more on the specific issues addressed and the national context rather than the degree of ideological extremism. The tailoring of populist themes to national contexts demonstrates the adaptability of populist rhetoric. This localization of populist messages allows parties to tap into specific historical narratives and cultural sensitivities, potentially increasing their appeal. However, it also highlights the challenge of developing a unified understanding or response to populism across the CEE region.

8 Conclusion

In conclusion, this study reveals that while there are common themes in populist rhetoric across CEE, the specific manifestations vary significantly based on national contexts. The use of negative sentiment and divisive language appears to be a consistent feature, but its effectiveness in gaining electoral support differs across countries. Understanding these nuances is crucial for developing effective strategies to address the challenges posed by populist rhetoric to democratic institutions in the region. The findings underscore the need for a multifaceted approach to addressing the rise of populism in CEE. This approach should combine efforts to strengthen democratic institutions, address economic disparities, enhance media literacy, and foster cross-border cooperation. By addressing the underlying factors that make populist rhetoric appealing, while also equipping citizens with the tools to critically evaluate political messages, it may be possible to mitigate the potentially destabilizing effects of populism on democratic systems in the region.

Future research in this area could benefit from longitudinal studies that track changes in populist rhetoric over time, as well as comparative analyses that explore the differences between successful and unsuccessful populist movements across different national contexts. Additionally, investigating the impact of social media and digital communication platforms on the spread and effectiveness of populist messages could provide valuable insights into the evolving nature of political discourse in the digital age.

Ultimately, the challenge of populism in CEE requires a nuanced understanding of the complex interplay between historical legacies, economic realities, cultural factors, and political institutions. By continuing to explore these dynamics through rigorous analysis of political discourse, researchers and policymakers can work towards developing more effective strategies for maintaining robust and inclusive democratic systems in the face of populist challenges.

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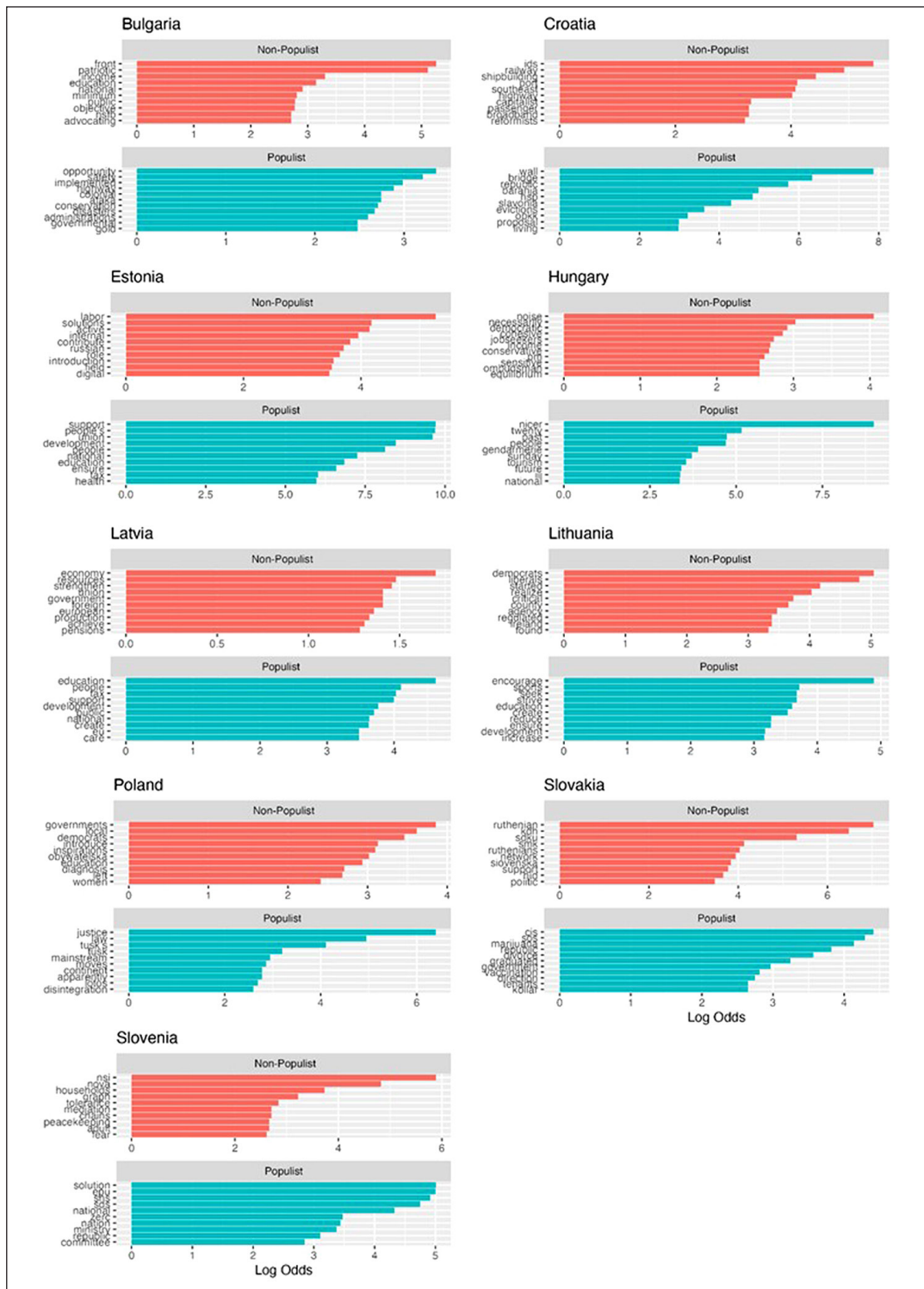


Figure 8 Log Odds of using certain groups, for all CEE countries, populist vs. non-populist parties

Appendix B – Results

Table 5 Top 10 most negative manifestos by sentiment

| Country | Party Name | Year | Rhetoric Type | Sentiment | Original Title |
|---------|------------|------|---------------|-----------|---|
| BGR | ATAKA | 2013 | Populist | -239 | Planat Siderov sreshtu kolonialnoto robstvo. Upravlenska programa na partiya Ataka 2013 |
| BGR | ATAKA | 2009 | Populist | -43 | Програма на партия АТАКА за парламентарни избори 2009 |
| HRV | RF | 2020 | Non-Populist | -39 | Neposredne, kratkoročne i prijelazne mjere |
| BGR | ATAKA | 2014 | Populist | -39 | Планът „Сидеров“. Нов път за България. Резюме на програмата на партия Атака |
| HRV | HSP | 2000 | Populist | -27 | Tribine “Pitajte i birajte” Odgovori na pitanja političkim strankama |
| SVN | ZL | 2014 | Non-Populist | -18 | Pot v demokratični ekološki socializem |
| HUN | LMP | 2010 | Non-Populist | -17 | A fenntartható jövő, a befogadó társadalom és a megújuló demokrácia stratégiája |
| POL | LPR | 2001 | Populist | -8 | Polsce – niepodległość. polakom – praca, chleb, mieszkania |
| LVA | SC | 2011 | Non-Populist | -5 | Politisko partiju apvienība “Saskaņas Centrs”. Priekšvēlēšanu programma |

Table 6 Sentiment by group of countries, divided by country

| Country/Party | Populis Rhetoric | Mean Sentiment | Mean Negative Sentiment | Mean Positive Sentiment |
|---------------|------------------|----------------|-------------------------|-------------------------|
| Bulgaria | Non-populist | 39.625 | 54.375 | 94 |
| Bulgaria | Populist | 217.333333 | 316 | 533.333333 |
| Estonia | Non-populist | 369.285714 | 142.333333 | 511.619048 |
| Estonia | Populist | 105.5 | 34 | 139.5 |
| Croatia | Non-populist | 217.289474 | 189.868421 | 407.157895 |
| Croatia | Populist | 103.375 | 164.25 | 267.625 |
| Hungary | Non-populist | 262.210526 | 493.473684 | 755.684211 |

Table 6 (continued)

| Country/Party | Populis Rhetoric | Mean Sentiment | Mean Negative Sentiment | Mean Positive Sentiment |
|---------------|------------------|----------------|-------------------------|-------------------------|
| Hungary | Populist | 180.571429 | 739 | 919.571429 |
| Lithuania | Non-populist | 353.03125 | 396.0625 | 749.09375 |
| Lithuania | Populist | 215.777778 | 146 | 361.777778 |
| Latvia | Non-populist | 18.875 | 8 | 26.875 |
| Latvia | Populist | 22.5 | 5 | 27.5 |
| Poland | Non-populist | 160.090909 | 182.545455 | 342.636364 |
| Poland | Populist | 310.333333 | 870.333333 | 1180.66667 |
| Slovakia | Non-populist | 329.416667 | 208.5 | 537.916667 |
| Slovakia | Populist | 191.5625 | 342.625 | 534.1875 |
| Slovenia | Non-populist | 329.851852 | 285.851852 | 615.703704 |
| Slovenia | Populist | 269.125 | 290.75 | 559.875 |

Table 7 Average sentiment for representative centrist and radical populist parties

| Party Name | Mean Sentiment | Mean Negative Sentiment | Mean Positive Sentiment |
|------------|----------------|-------------------------|-------------------------|
| ANO | 159 | 78 | 237 |
| Fidesz | 153.5 | 435 | 588.5 |
| GERB | 525.5 | 396.75 | 922.25 |
| OL'aNO | 176 | 885 | 1061 |
| PiS | 466.5 | 1293.75 | 1760.25 |
| SDS | 372.8 | 394.8 | 767.6 |

Table 8 Most common topic for parties using populist vs. non-populist rhetoric in CEE

| Country | Rhetoric Type | Most Common Topic |
|-----------|---------------|--|
| Bulgaria | Populist | colonial, ivan, representing, dimitar, sold, kostov, angelov, masters, dr, gypsy, taxed, treasury, minister, austrian, roads, prime, robbed, represents, army |
| Bulgaria | Non-Populist | objective, modern, security, management, guarantee, equipment, effective, business, formation, efficiency, transport, financing, media, package, crimes, market, activities, regional, interior, democratic |
| Croatia | Populist | baranja, slavonia, sports, region, regional, processing, decentralization, osijek, democratic, buildings, regions, space, developmental, legalization, pension, advocating, spatial, function, president, regionalization |
| Croatia | Non-Populist | freedom, creative, teaching, industries, left, gender, civic, human, reform, civil, green, freedoms, administration, public, judges, liberal, abilities, poverty, actors, solidarity |
| Estonia | Populist | population, business, financial, creates, environment, family, reducing, world, center, common, organization, primary, war, considers, activity, bring, change, democracy, dignity, jobs |
| Estonia | Non-Populist | party, reform, objective, develops, considers, creates, supports, party's, sets, steps, language, continues, participation, nordic, organizational, information, increases, learning, promotes, web |
| Hungary | Populist | soros, immigrants, sunday, june, immigration, christian, campaign, europeans, votes, winter, candidates, danger, migrants, fence, george, soros's, györgy, twelve, topics, talking |
| Hungary | Non-Populist | dialogue, introduce, eliminate, confirm, online, orbàn, launch, targeted, job, Fidesz, hours, months, thousands, prosecutor's, seats, sports, tens, reinforce, nursery, Fidesz's |
| Latvia | Populist | Not Available |
| Latvia | Non-Populist | choose, choose, business, knowledge, social, level, technology, eu, effective, government, nation, unity, minimum, diversity, educational, expenses, healthy, integration, competition, strategy, business, knowledge, social, level, technology, eu, effective, government, nation, unity, minimum, diversity, educational, expenses, healthy, integration, competition, strategy |
| Lithuania | Populist | manufacturers, adequate, sports, products, provide, competitiveness, diseases, organizations, highly, vocational, exports, diagnosis, qualification, physical, initiatives, waste, water, specialists, optimize, develop |
| Lithuania | Non-Populist | agricultural, housing, land, internet, computer, laws, crime, youth, farmers, privatization, credit, million, structures, kss, banks, insurance, transit, rural, customs, minimum |

Table 8 (continued)

| Country | Rhetoric Type | Most Common Topic |
|----------|---------------|--|
| Poland | Populist | tusk, land, dealing, civic, resources, fi, team, functions, debate, tusk's, prosecutor's, minister, opposition, assessment, external, existence, psl, prime, function, mechanism |
| Poland | Non-Populist | minority, german, region, voivodeship, silesian, language, silesia, germans, parliament, minorities, representatives, germany, identity, region's, ethnic, strive, foundation, values, experiences, traditions |
| Slovakia | Populist | cis, nation, cultural, national, culture, slavic, language, minorities, healthy, nations, kr, sovereign, christian, respect, election, supports, ethnic, adopt, concept |
| Slovakia | Non-Populist | smk, party, hzds, minorities, environmental, living, parliamentary, field, people's, growth, accordance, cultures, production, economy, considers, regional, national, goals |
| Slovenia | Populist | party, committed, symbols, religious, agree, indigenoussness, favour, liberation, respect, endangered, heritage, nation's, arms, coat, require, congress, struggle, sns, lay |
| Slovenia | Non-Populist | strengthen, solidarity, smart, strategic, balance, research, participation, active, strengthening, elderly, logistics, priority, creative, challenges, models, innovation, housing, knowledge, opportunities |

Table 9 Most common topic for representative centrist and radical populist parties in CEE using populist vs. non-populists rhetoric

| Party | Most Common Topic |
|--------|--|
| Fidesz | christian, immigration, campaign, soros, immigrants, sunday, votes, candidates, danger, europeans, winter, june, challenge, debate, migrants, talking, topics, twelve, beauty, censorship |
| SDS | democratic, democrats, party, democracy, freedom, society, identity, equal, solidarity, civilization, diversity, dimension, values, preservation, welfare, supports, nature, consensus, favor, free |
| PiS | tusk, civic, sport, land, dealing, functions, liquidation, team, debate, fi, tusk's, banks, existence, bank, resources, power, assessment, opposition, psl, external |
| GERB | actions, implement, priority, integration, effective, corruption, optimization, results, society, improvement, accordance, capacity, status, improving, creating, crisis, european, sports, actions, implement, priority, integration, effective, optimization, results, society, improvement, accordance, capacity, status, improving, creating, crisis, european, sports |
| OL'aNO | public, education, system, social, support, children, people, increase, economic, environment, business, republic, corruption, law, development, cultural, protection, management, care, employment |
| ANO | turkey, border, terrorism, burden, migration, mechanism, visa, tourist, russia, region, vehicles, cooperation, committed, specific, asylum, eu, schengen, road, air, sports |