

Ideological and geographical patterns in European politics: an archetypoid and spatial analysis of parties and countries



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Aim of this study

Understanding ideological structure and spatial patterns in European politics

Two-step development

Step 1 - Party level

Describing the characteristics of the European political parties

Step 2 - Country level

Investigating the ideological drivers of countries' political orientation and the possible existence of geographical patterns

Data

- CHES 2024
- 256 parties, 29 countries
- Expert-based evaluations
(averages of more than 600
academic experts' rates)
- 19 policy dimensions



19 policy dimensions

Social and cultural values

- Immigration policy
- Multiculturalism
- Civil liberties
- Women's rights
- LGBTQ+ rights
- Same-sex marriage
- Religious principles in politics
- Ethnic minorities
- Nationalism
- Urban vs. rural interests

Economic and environmental policies

- Redistribution
- Climate change
- Environment
- Spending and tax
- Deregulation
- Protectionism

Institutional and governance

- Political decentralisation
- Executive power
- Judicial independence

Step 1 – Party-level representation (ADA)

Using **Archetypoid Analysis** (ADA, Vinué et al., 2015), we identify k extreme parties (**archetypoids**: extreme but observed points in the multivariate space), based on the 19 policy dimensions

Each party is a convex combination of archetypoids

Example

$k=3$ archetypoids: 🍣 Sushi, 🌮 Taco (Mexican), 🥗 Salad bowl



“Sushi burrito” is

50%	sushi
30%	taco
20%	salad

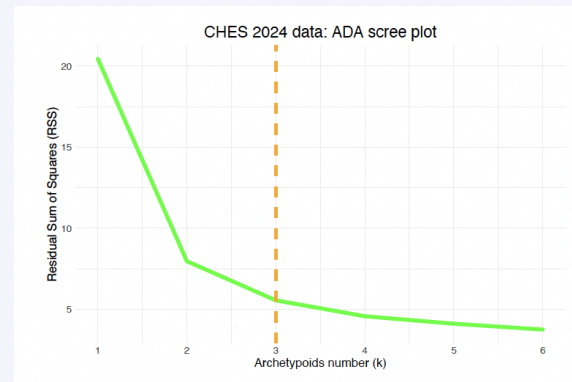
**alpha
coefficients**

Step 1 – Party-level representation (ADA)

ADA estimates the alpha coefficients by minimizing Residual Sum of Squares (RSS)

Using the elbow criterion (RSS vs. k), we chose $k=3$

Then, every party is represented as a convex combination of these extreme parties

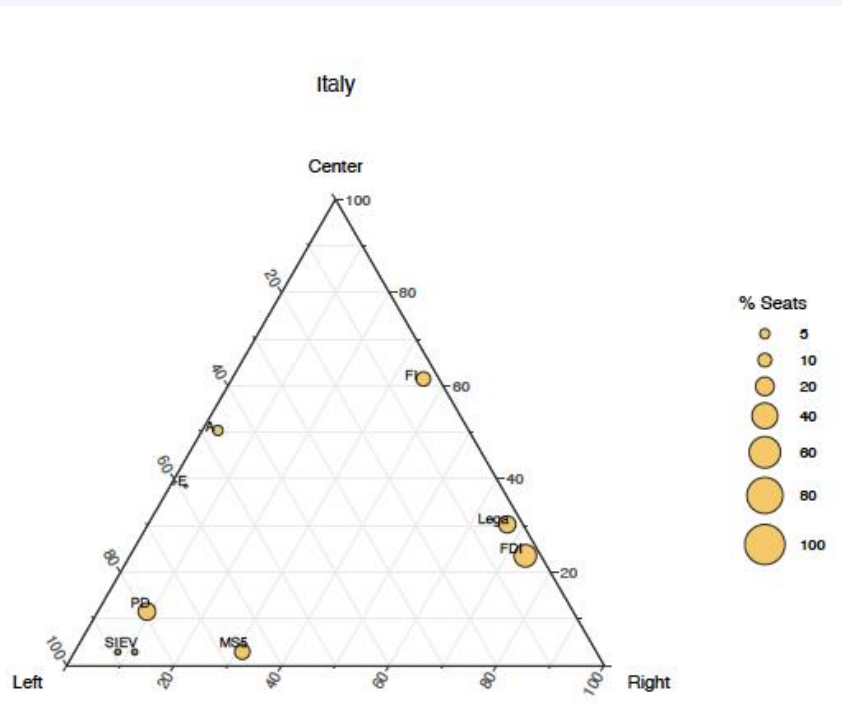


Archetypoid	Party	Country	Orientation
1	Partia Razem	Poland	Radical left
2	Hnutie Republika	Slovakia	Radical right
3	FDP/PLR ¹	Switzerland	Liberal

Step 1 – Party-level representation (ADA)

Ternary plots

From all the country-specific ternary plots, we observe that **political orientations tend to cluster geographically**



Step 2 – Country-level analysis

Intensity Indices (Fernández *et al.*, 2026)

measuring the extent to which the parliament of a given country aligns with left, center, or right politics

$$I_c^L = \sum_{i \in P_c} \alpha_{iL} s_i$$

$$I_c^C = \sum_{i \in P_c} \alpha_{iC} s_i$$

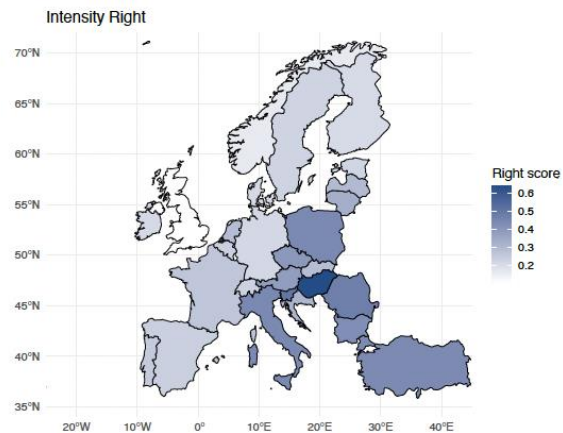
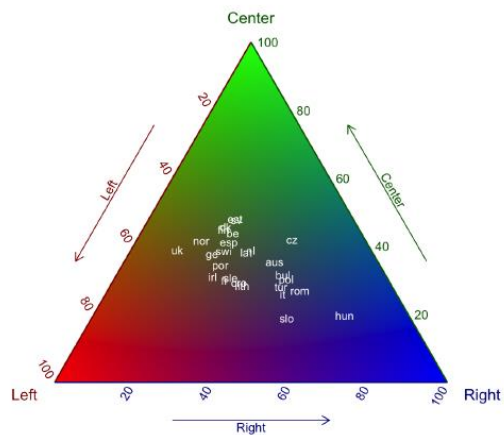
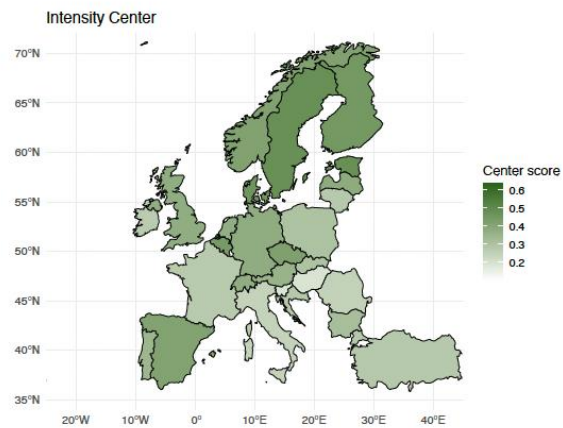
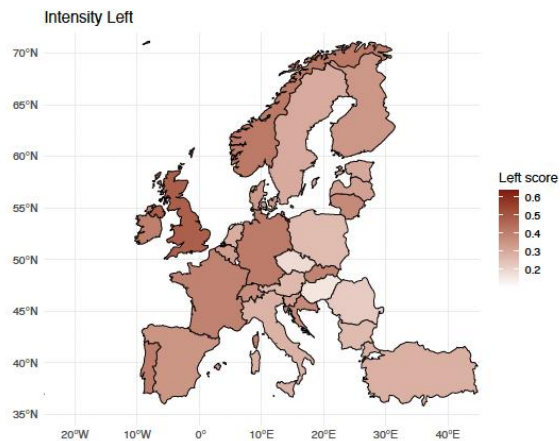
$$I_c^R = \sum_{i \in P_c} \alpha_{iR} s_i,$$

α_{iL} , α_{iC} , α_{iR}

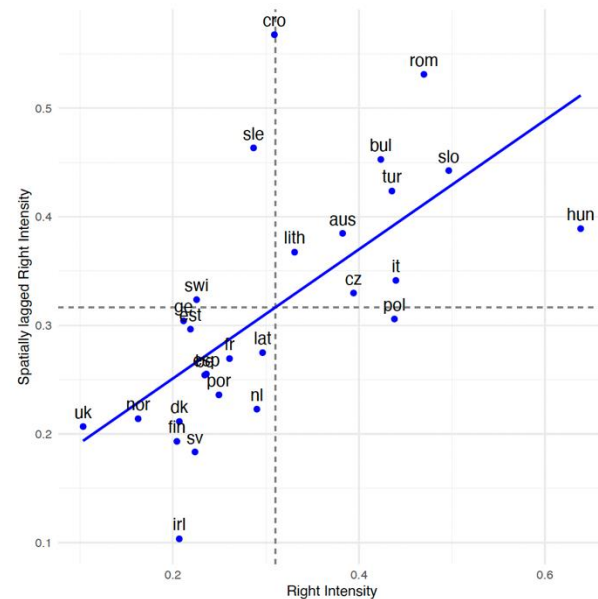
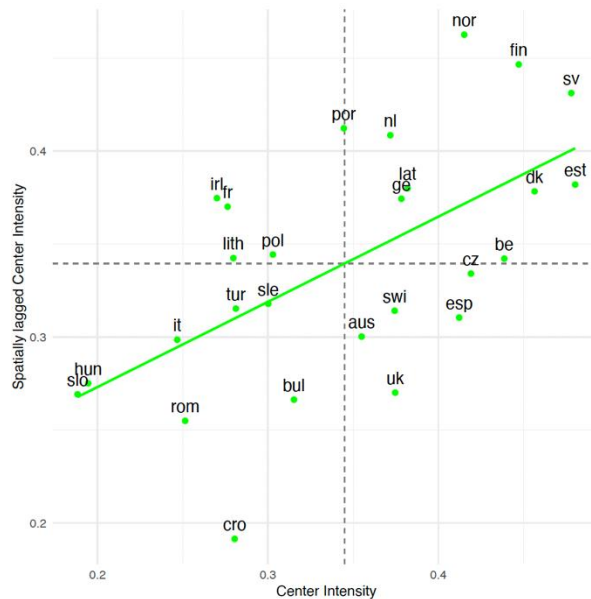
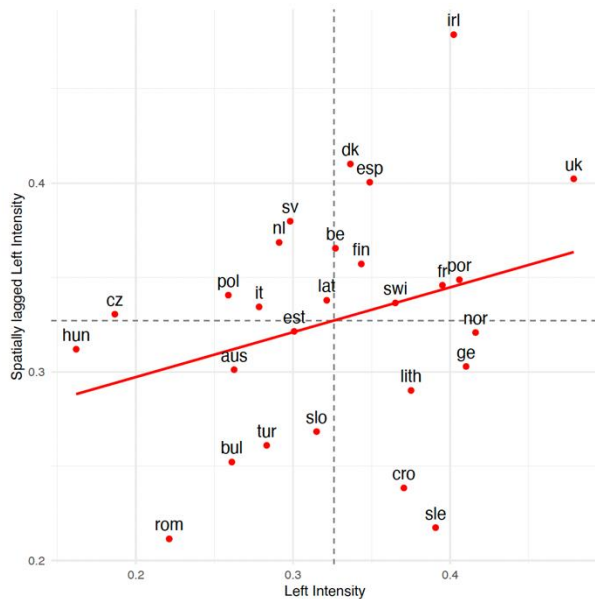
ADA coefficients of i -th party in country c

s_i

i -th party's parliamentary seat share



Spatial dependence in the Intensity Indices



Drivers of countries' political orientation

Intensity Indices are the response variables in three **Beta regression models**

Predictors: Three (standardized) Principal Components (VAF = 71%) of the country-level averages, weighted by s_i , of the 19 dimensions

- PC1: Social conservative-authoritarian policy
- PC2: Neoliberal policy
- PC3: Extractivist nationalist policy

Beta regression models

$$Y = I_c^L$$

	Estimate	Std. Error	z-value	p-value
(Intercept)	-0.7445	0.0187	-39.70	< 0.001
PC1	-0.2039	0.0194	-10.51	< 0.001
PC2	-0.0948	0.0187	-5.06	< 0.001
PC3	-0.2517	0.0195	-12.93	< 0.001

$$Y = I_c^C$$

	Estimate	Std. Error	z-value	p-value
(Intercept)	-0.6598	0.0306	-21.594	< 0.001
PC1	-0.2503	0.0325	-7.692	< 0.001
PC2	0.2351	0.0308	7.634	< 0.001
PC3	-0.0555	0.0314	-1.766	0.0774

$$Y = I_c^R$$

	Estimate	Std. Error	z-value	p-value
(Intercept)	-0.8465	0.0205	-41.24	< 0.001
PC1	0.4564	0.0204	22.34	< 0.001
PC2	-0.0690	0.0212	-3.25	0.00116
PC3	0.3282	0.0209	15.70	< 0.001

Drivers of countries' political orientation

Given that the residuals of the 3 beta regression models show no significant spatial autocorrelation, we investigate the **spatial dependence in the predictors (PCs)**

Only **PC1** shows significant spatial dependence

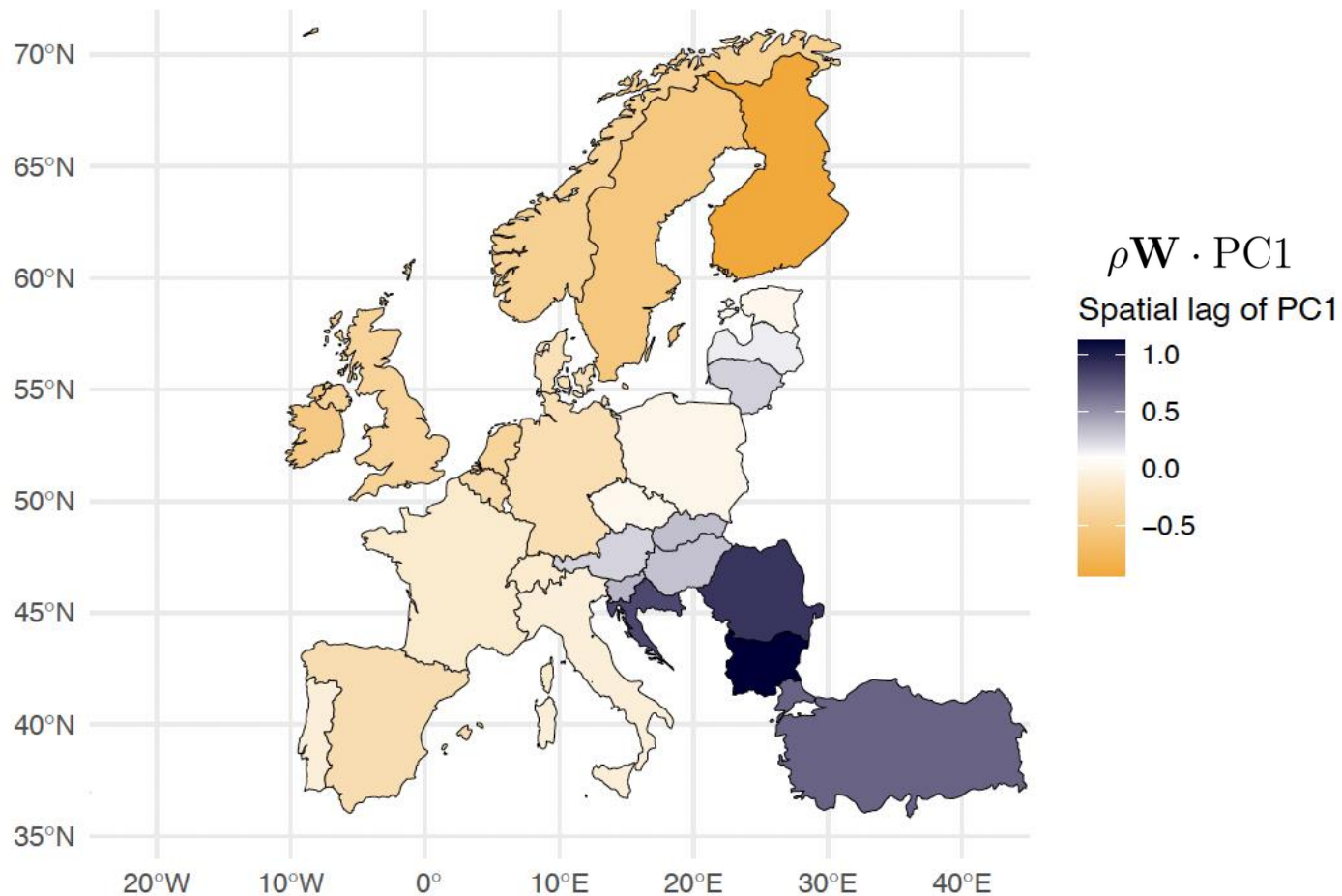
The spatial patterns observed across European countries in their national political orientations is primarily driven by differences in social conservative-authoritarian policy orientations (PC1)

Drivers of countries' political orientation

To quantify the global spatial dependence detected in PC1, we estimated the spatial autoregressive **SAR model**:

$$PC1 = \rho \mathbf{W} \cdot PC1 + \beta + \epsilon$$

Results show strong and significant spatial dependence: countries resemble neighbors, and the SAR model substantially improves fit compared to a non-spatial model



Conclusions

Countries show clear **geographic clustering in political orientation**

Patterns are mainly **driven by social conservative-authoritarian values**

Limitations & Future Research

- Limited sample and aggregated data
- Focus on cross-sectional data (no dynamics over time)
- Future work: spatio-temporal analysis and spatial extensions of ADA



THANK YOU