



Multidimensional party polarization in Europe: Cross-cutting divides and effective dimensionality

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Party polarization

- A key quality of democratic politics
 - “Degree of ideological differentiation among political parties in a system” (*Dalton 2008*)
- Associated with a variety of factors
 - Voter turnout
 - Ideological voting
 - Satisfaction w/ democracy



A spatial perspective

- European politics structured by (general) left-right
 - Way to summarize political preferences of voters/parties (e.g., *Downs 1957; Huber & Powell 1992*)
- But... politics has become multidimensional
 - Non-economic dimension/cleavage
 - Centred around socio-cultural issues
 - New party families (e.g., greens, radical right)
(e.g., *Bornschier 2010; Hooghe & Marks 2018; Kitschelt 1994; Kriesi et al. 2006*)



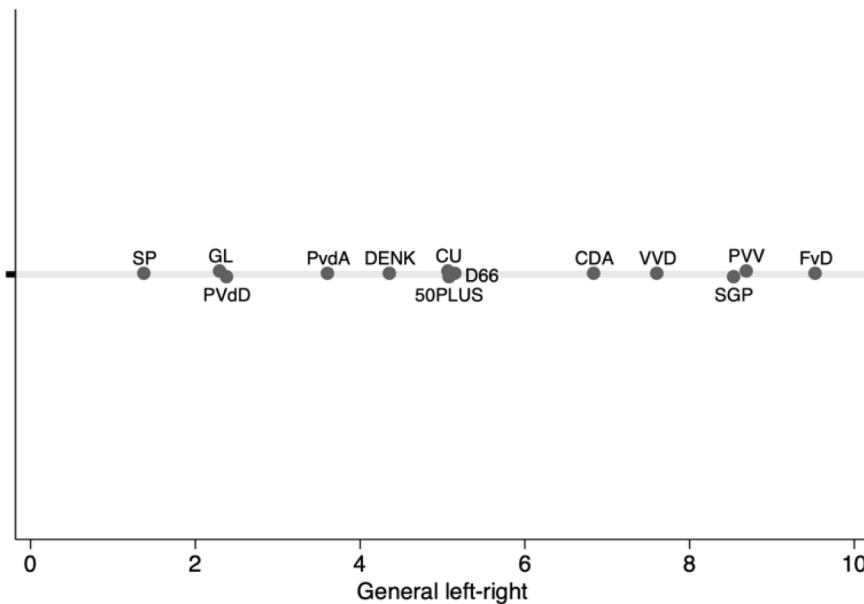
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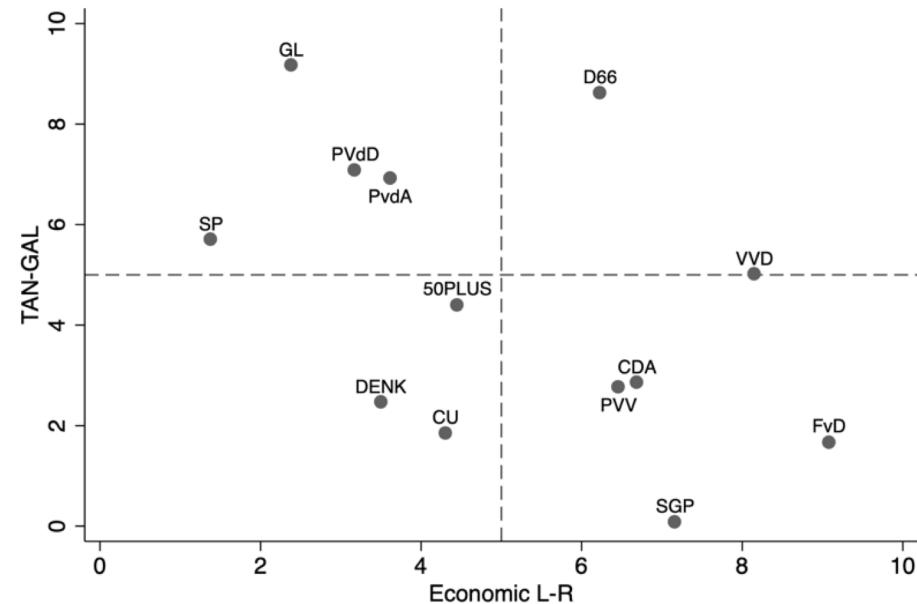
→ Yet, main polarization measures remain **one-dimensional**

General L-R vs. two-dimensionality

The Netherlands

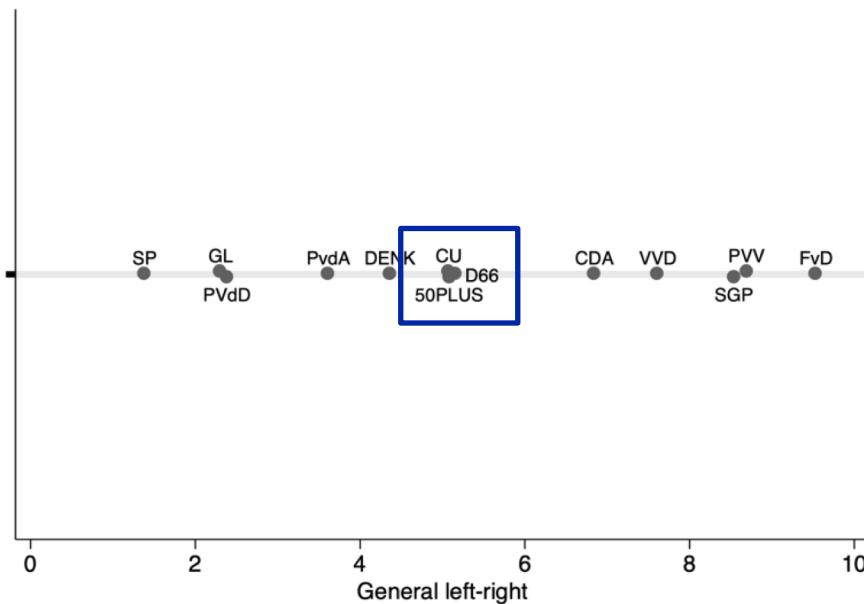


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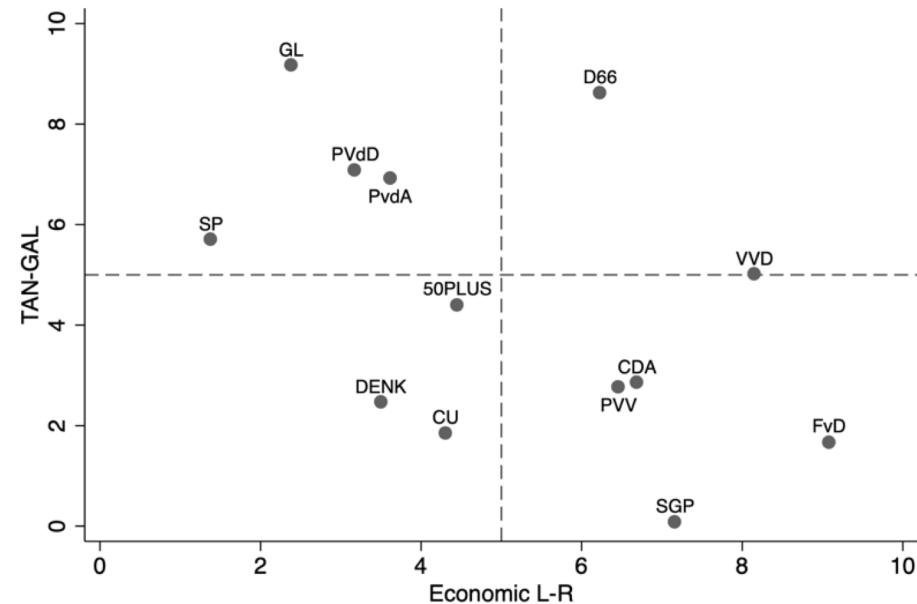


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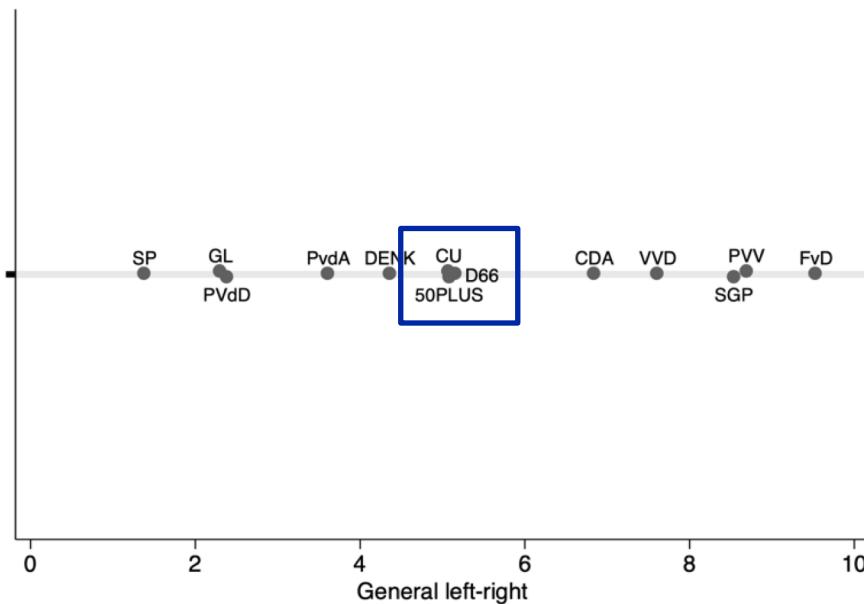


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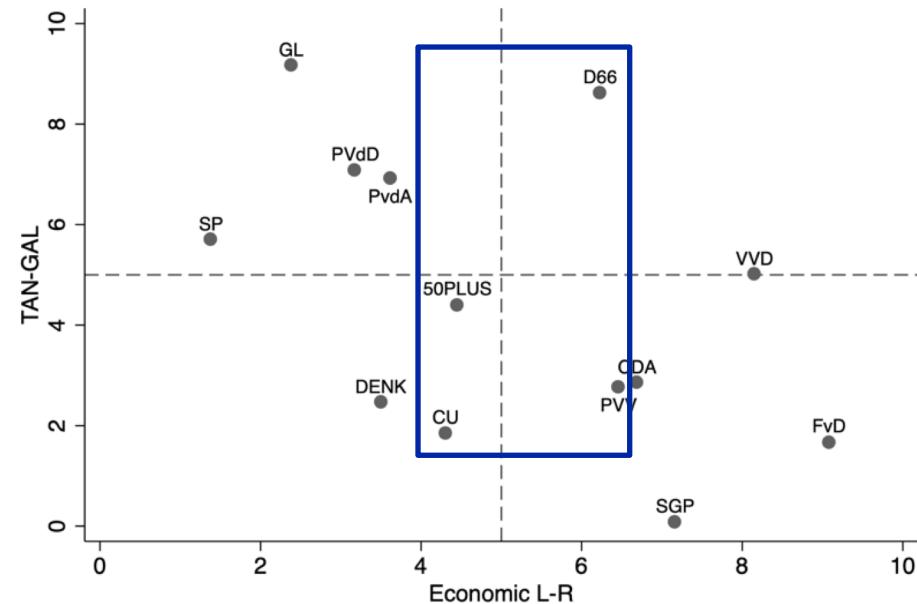


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Meaning(s) of left-right

1. Left-right as “super” issue dimension
 - Reflects main conflict in country
 - Content can change over time
(e.g., *Gabel & Huber 2000; Huber & Inglehart 1995*)

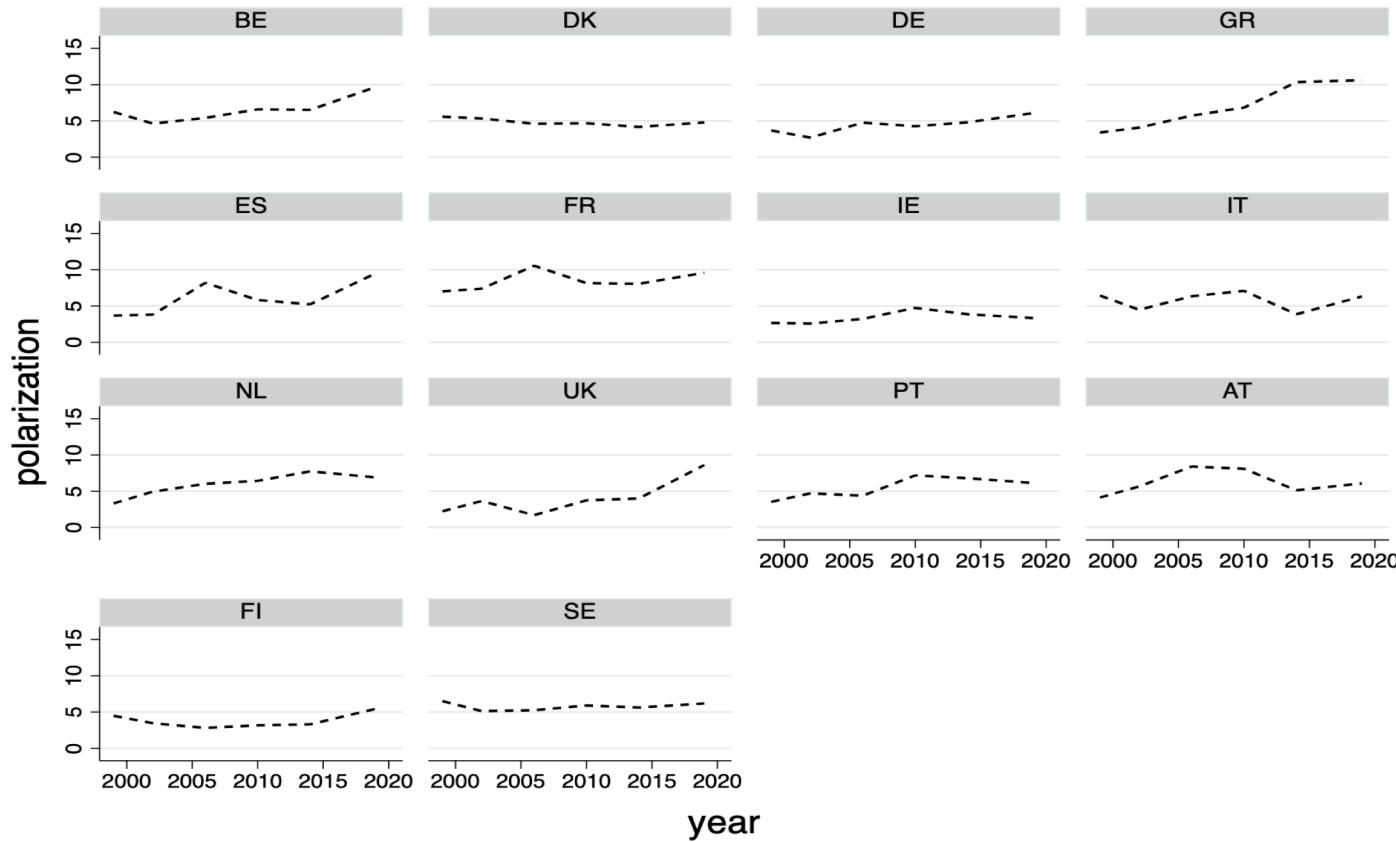
2. Left-right as economic dimension
 - Primarily associated with economic issues
 - Distinct from 2nd cultural dimension
(e.g., *Hooghe et al. 2002; Kitschelt 1994*)



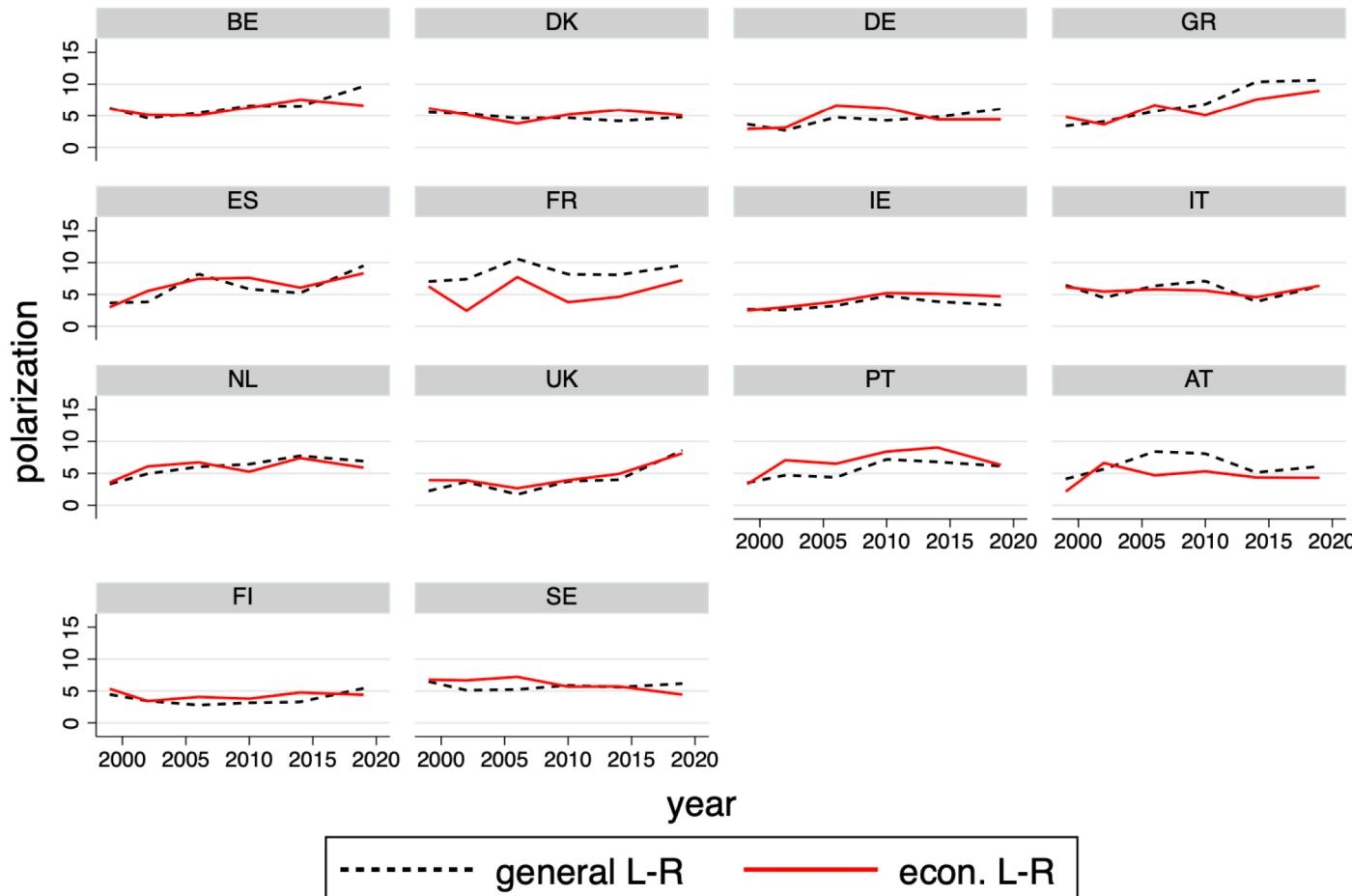
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- Both conceptions argument for multidimensional measure
- Increased specificity and comparability
 - Possibility of orthogonality

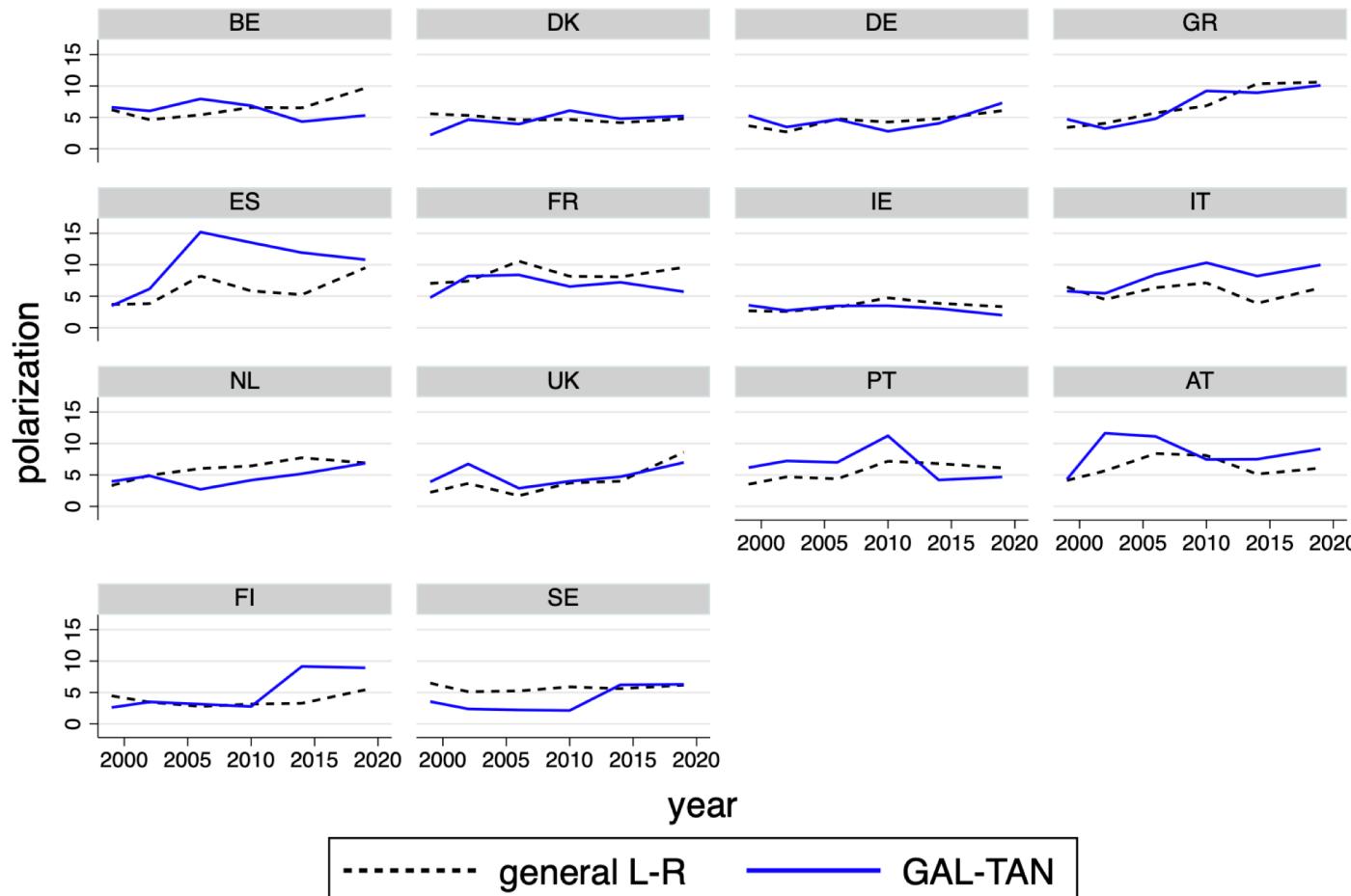
Polarization over time



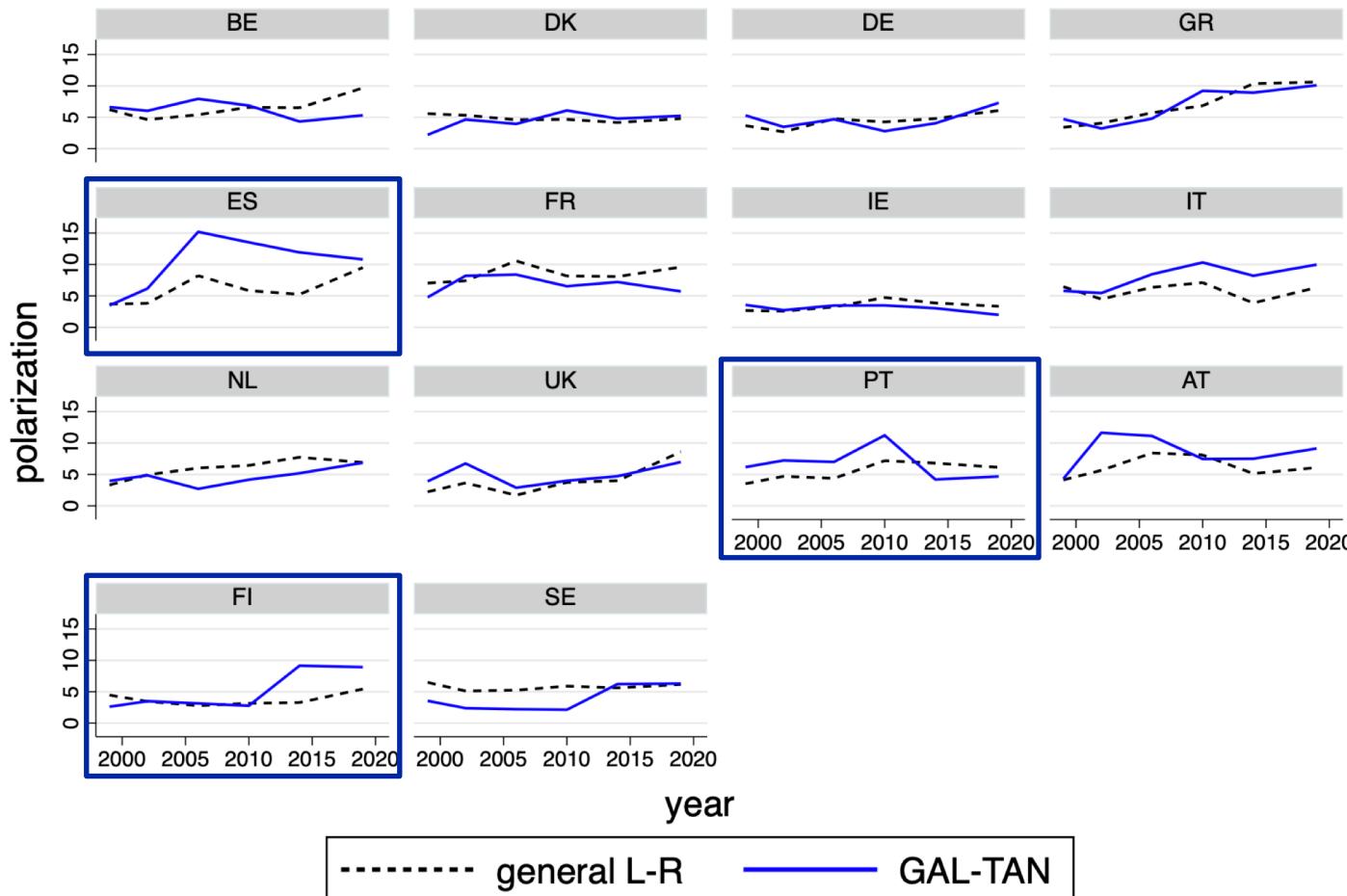
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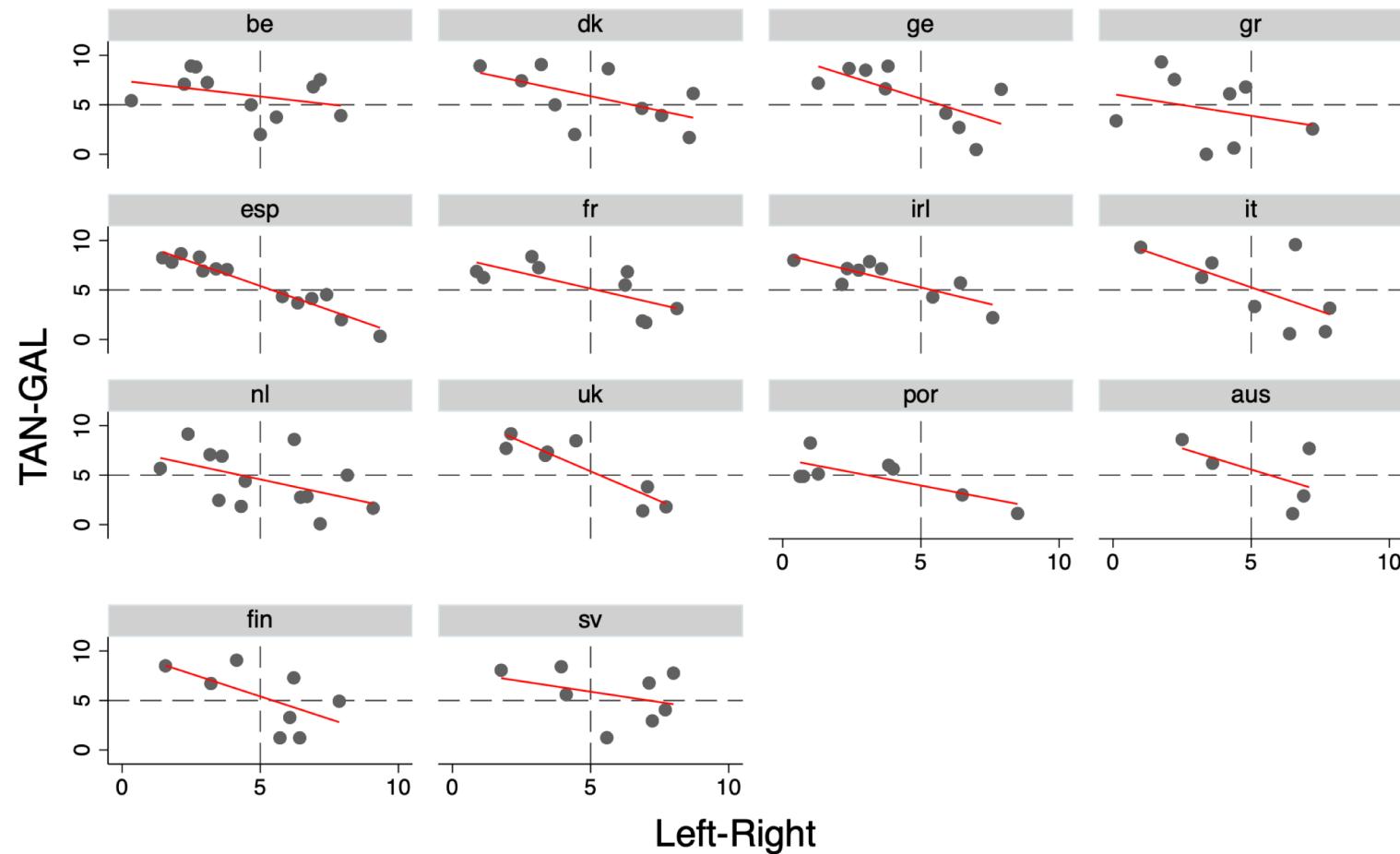




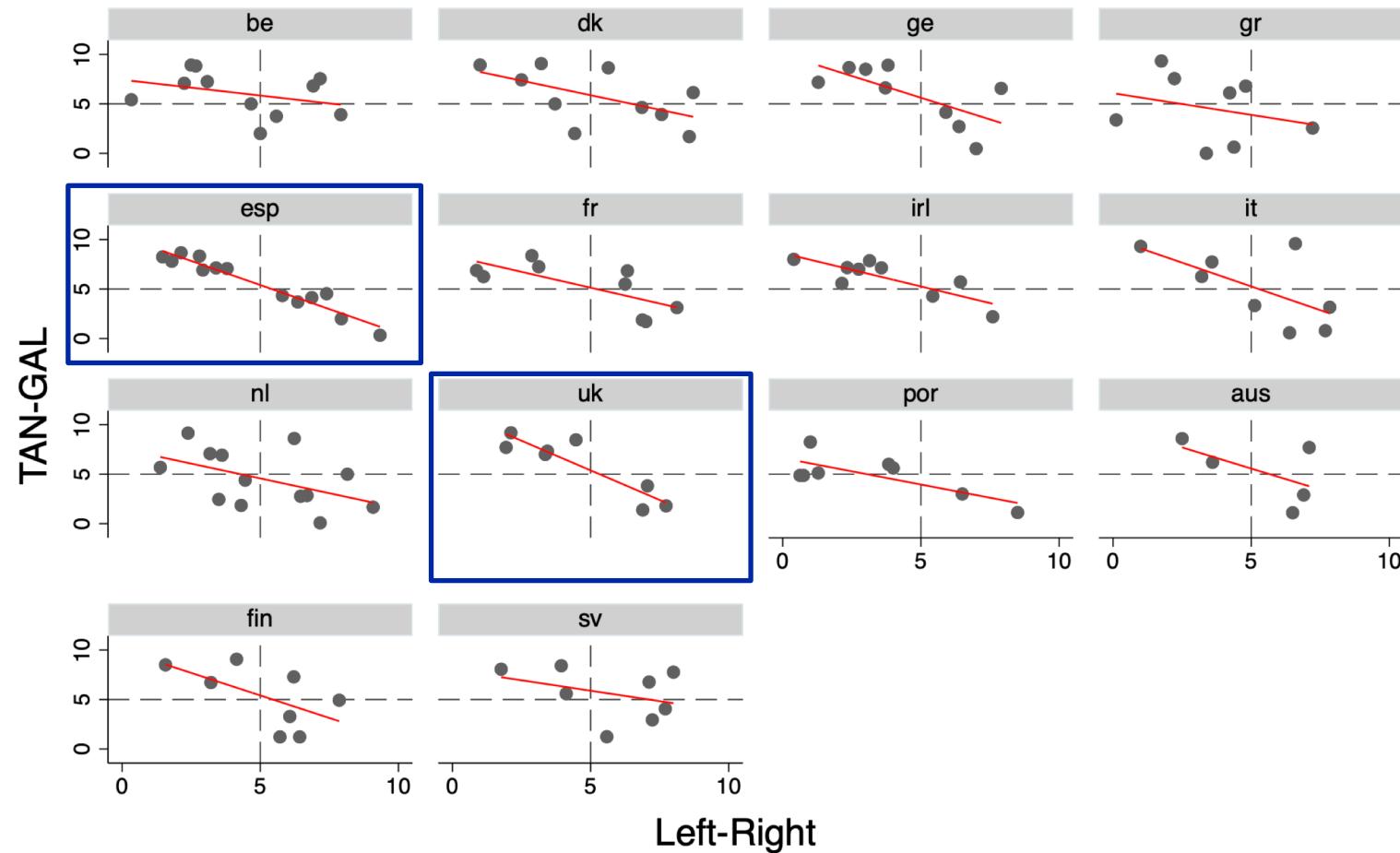
Methodological approach

- Starting point
 - Theoretically assume two-dimensionality
 - Economic + cultural dimension
- **Main complication:** Do dimensions *align or crosscut?*
 1. ‘Diagonal’ structure → 2nd dimension adds limited information
 2. Two-dimensionality → 2nd dimension not properly captured

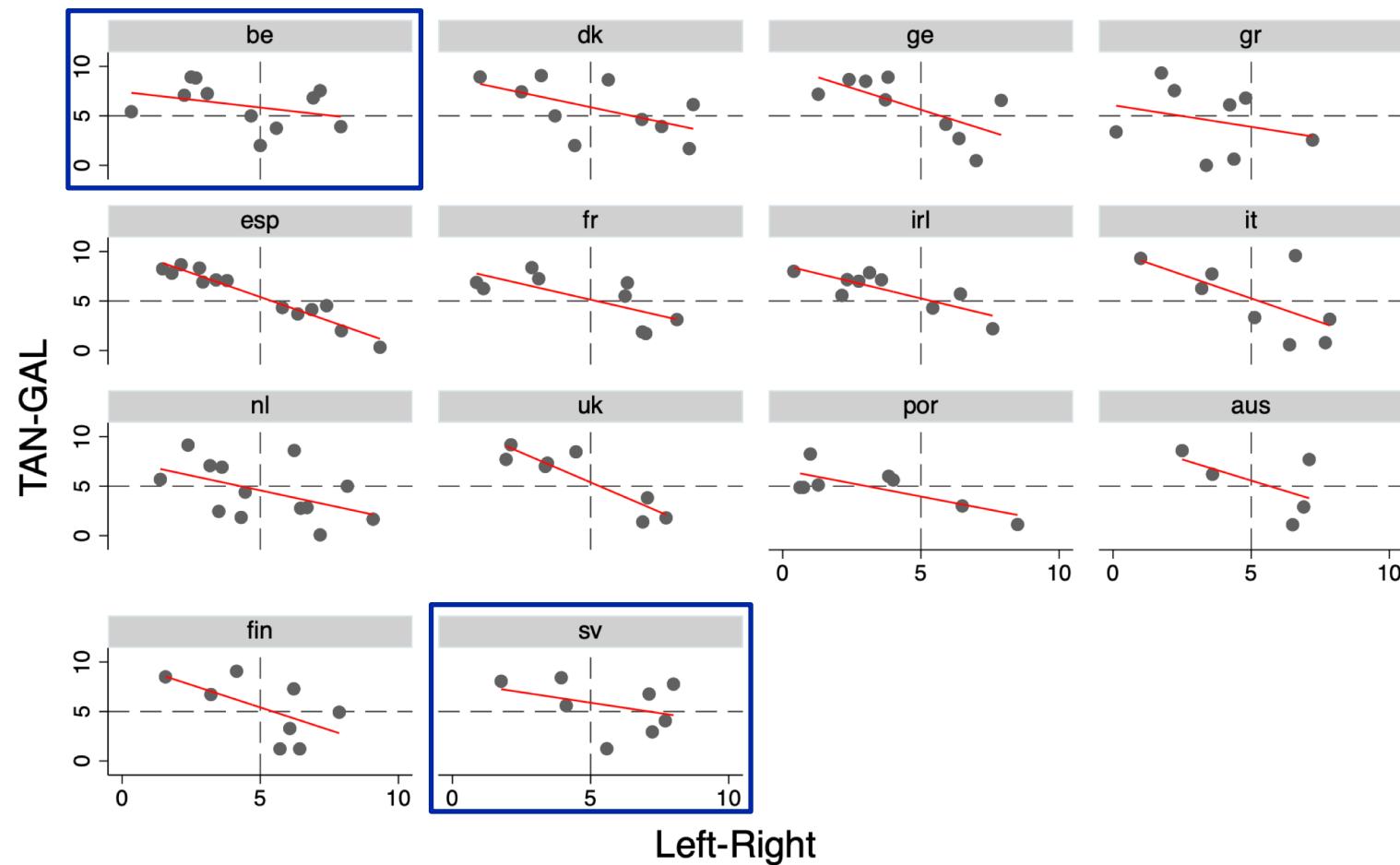
CHES 2019



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- Solution: Account for (lack of) orthogonality
- Downgrade when dimensional positions are correlated



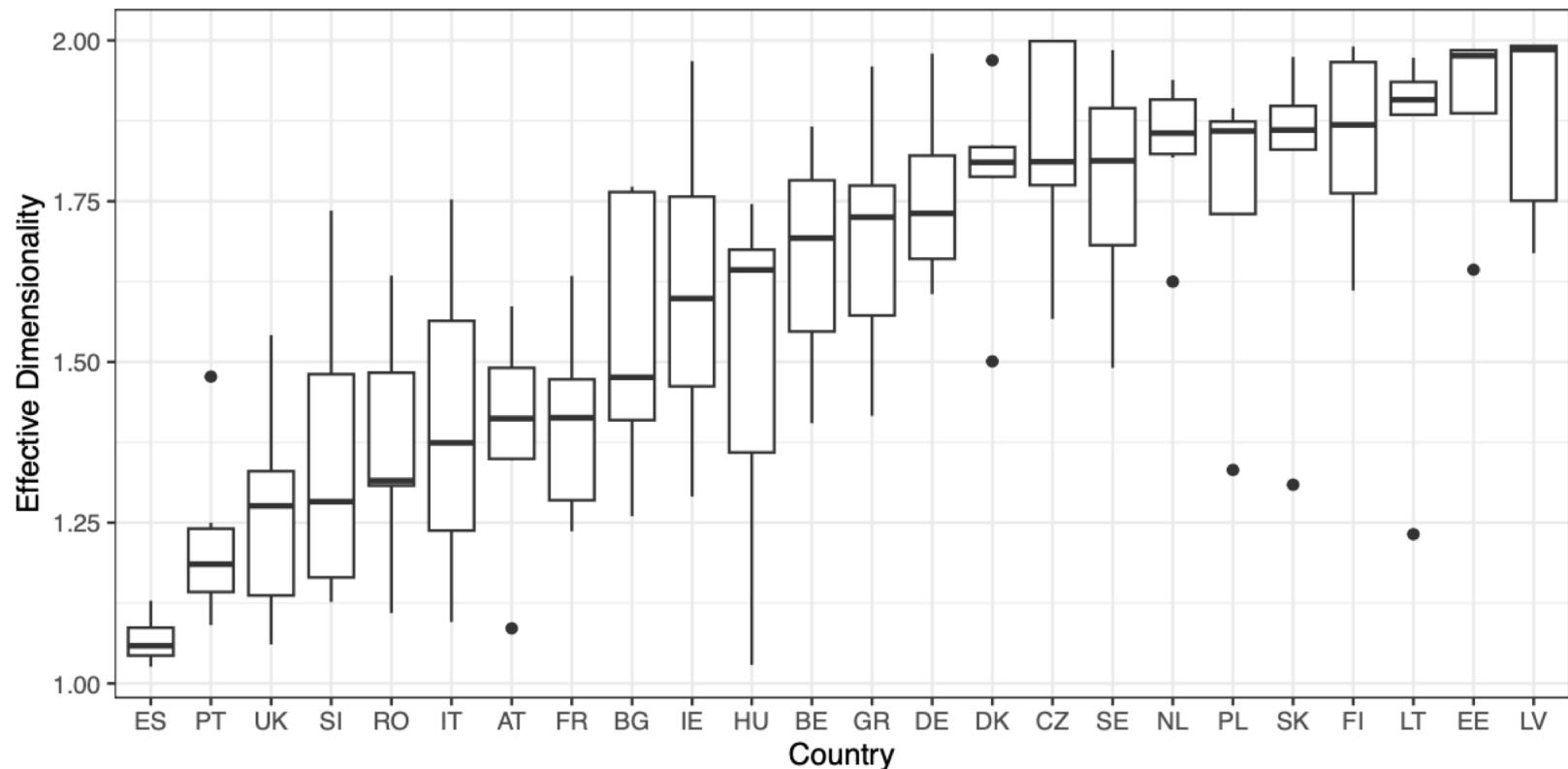
Effective dimensionality

- We derive the normalized eigenvalues of the correlation matrix
- These are converted into Shannon's entropy
- The exponent yields ED (*Del Giudice 2020*)

$$ED = \prod_{d=1}^D \left(\frac{\lambda_d}{D} \right)^{-\frac{\lambda_d}{D}} \in [1, D]$$

ED by country

Figure 2: Effective dimensionality by country





Multidimensional polarization measure

- Natural extension of most common approach
 - Variance-based measure (e.g., *Dalton 2008*)
 - Positional distribution by dimension
 - Weight by party size (i.e., vote share)
 - Chapel Hill Expert Survey (CHES) data (economic + cultural)

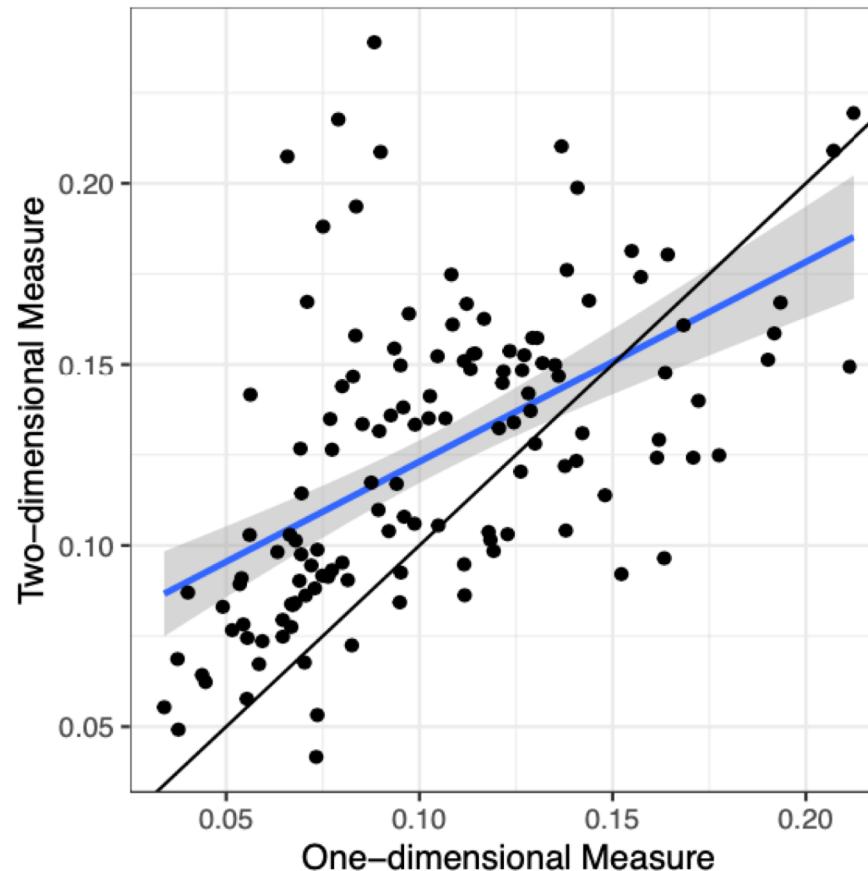


Multidimensional polarization measure

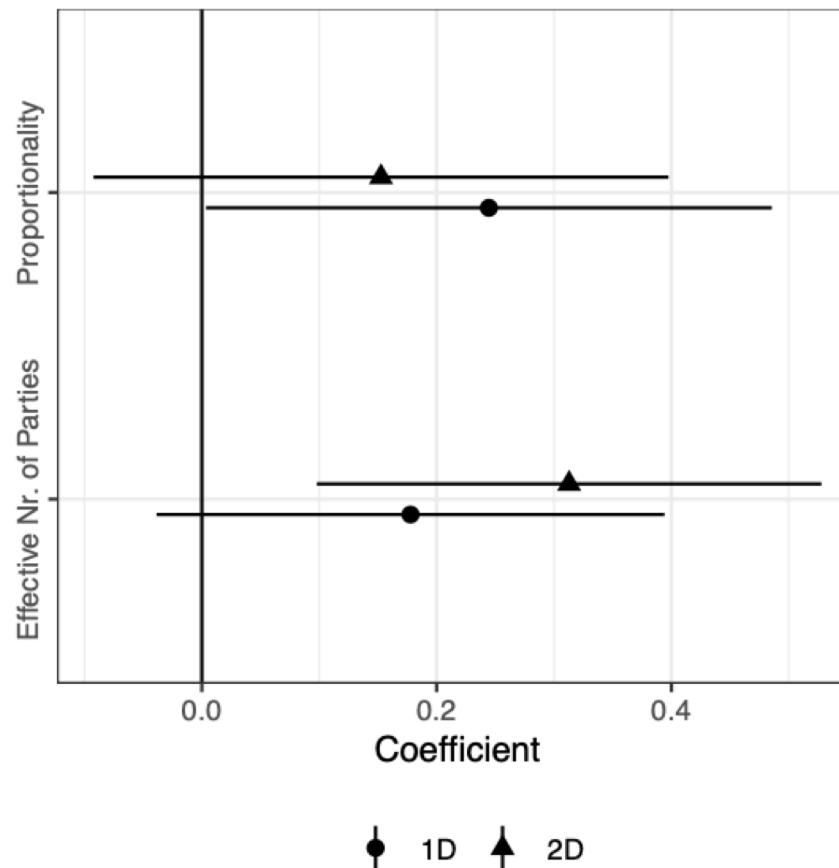
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- Moving parts
 - Sum of the two weighted variances
 - Correct with **effective dimensionality**

$$Polarization_D = \frac{ED}{D} \sum_{d=1}^D \sigma_{Id}^2$$

Correlation one- vs. two-dim. measure



Correlates with institutional factors

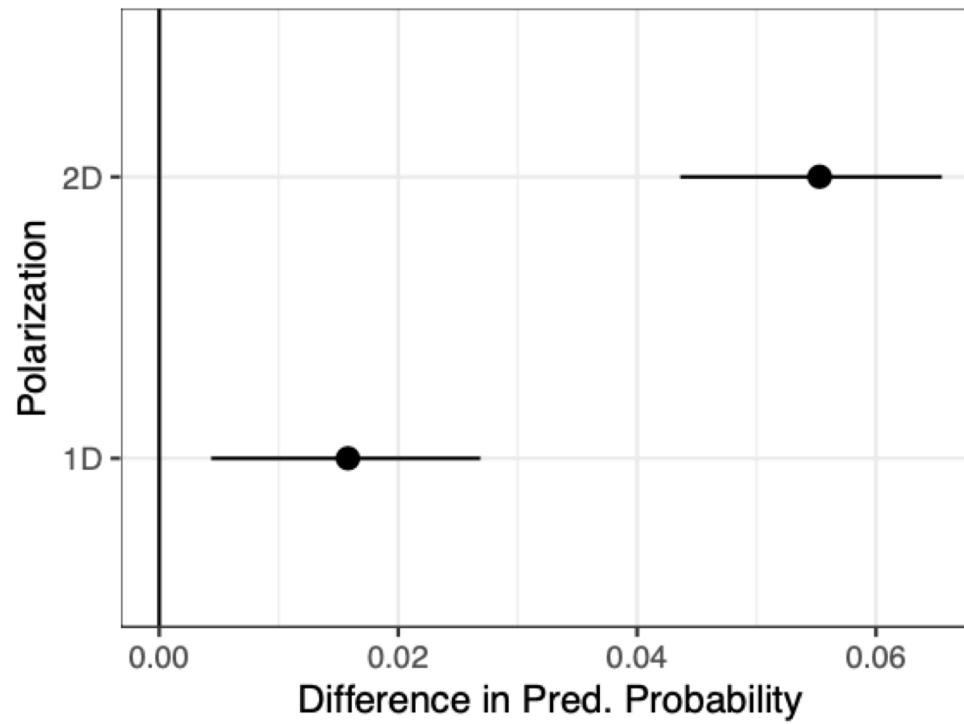




Empirical application

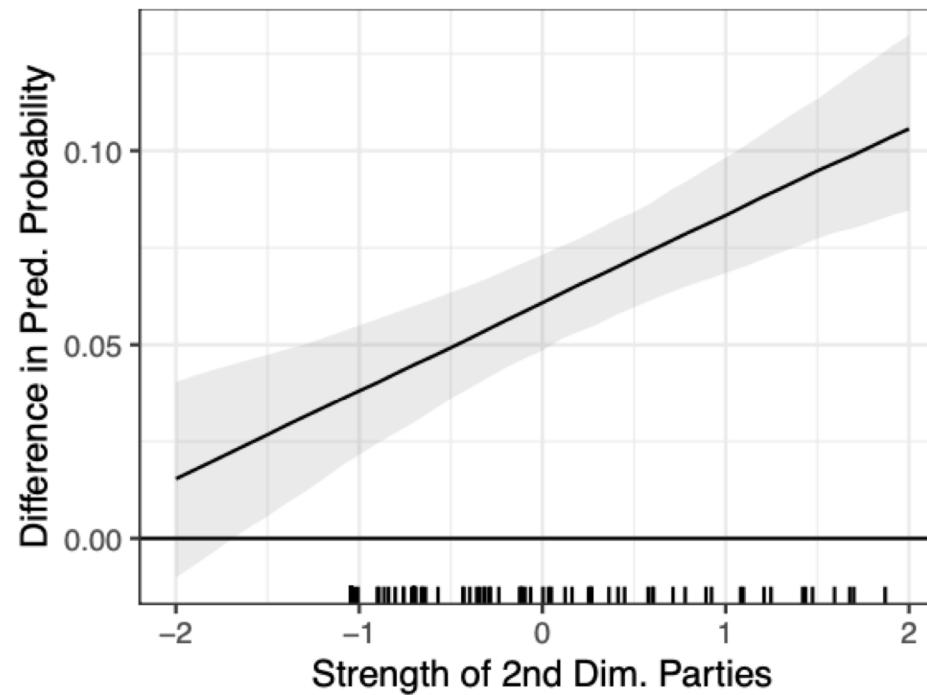
- Various avenues for future research
 - For now, focus on mass partisanship (*Lupu 2015*)
- Elite polarization strengthens party-voter ties
- Importance of 2nd dimension politics
 - Issue entrepreneurs (e.g., *De Vries & Hobolt 2020*)
 - Mainstream response (e.g., *Meguid 2005*)
 - Voter polarization (e.g., *Bischof & Wagner 2019; Silva 2018*)

Overall effect on partisanship



(a) 1D vs. 2D

Conditional effect on partisanship



(b) 2D by strength of cult. dim. parties



Discussion

- Relevance of multidimensional polarization
 - Risk underestimating (effects of) cultural conflict
 - Normative implications of cross-cutting divides
- Overcoming constraints
 - Increase number of time points
 - Challenging to replicate with voter data
- Possible extensions
 - Three (or more) ideological dimensions
 - Account for dimensional salience
 - Connection to affective polarization



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Thank you!

Hypothetical examples

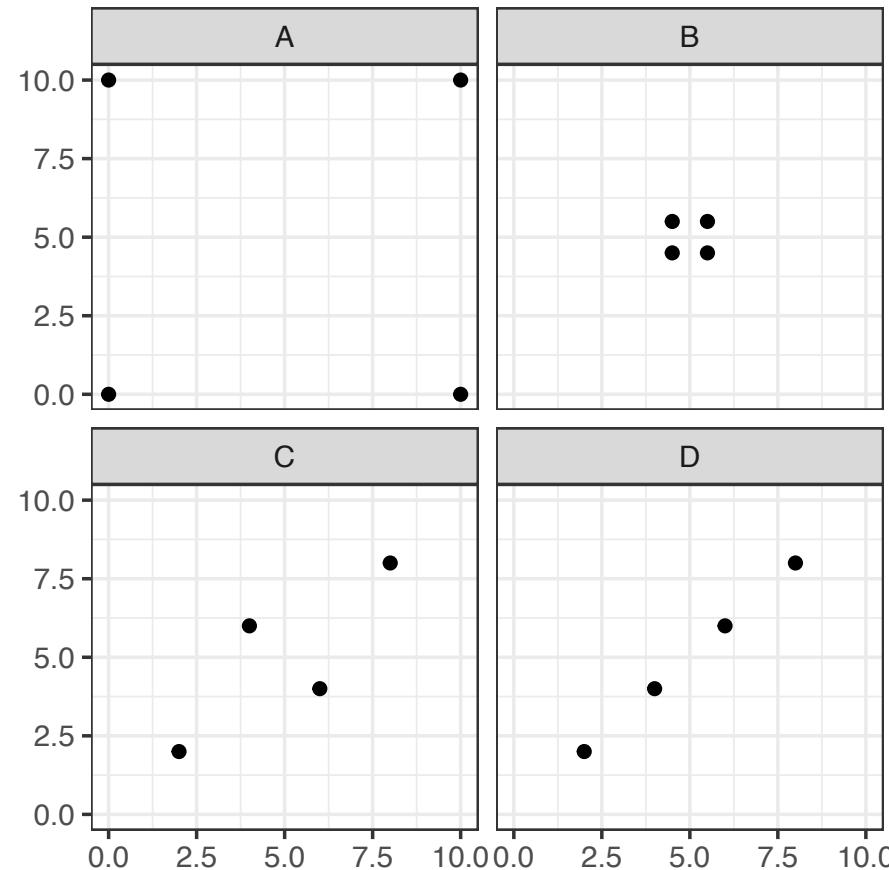
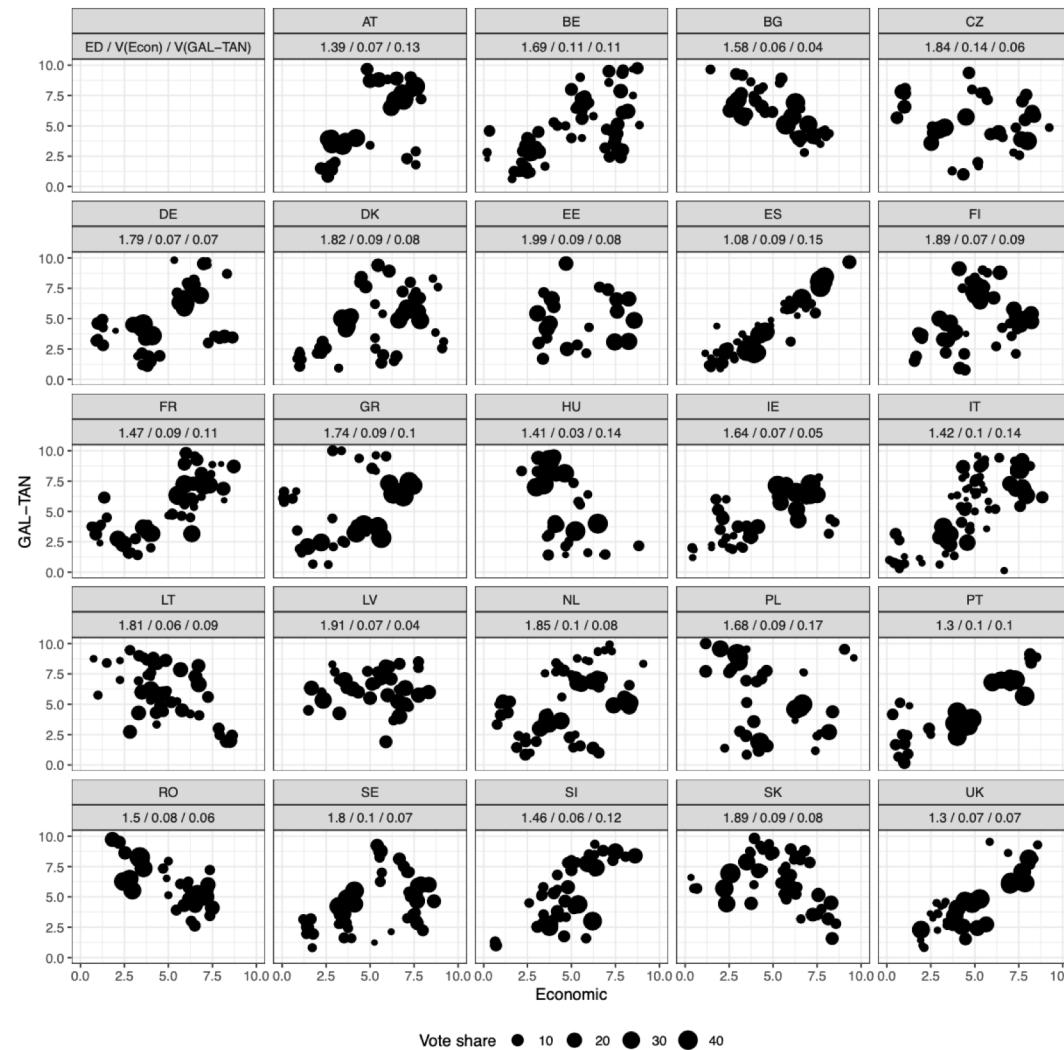
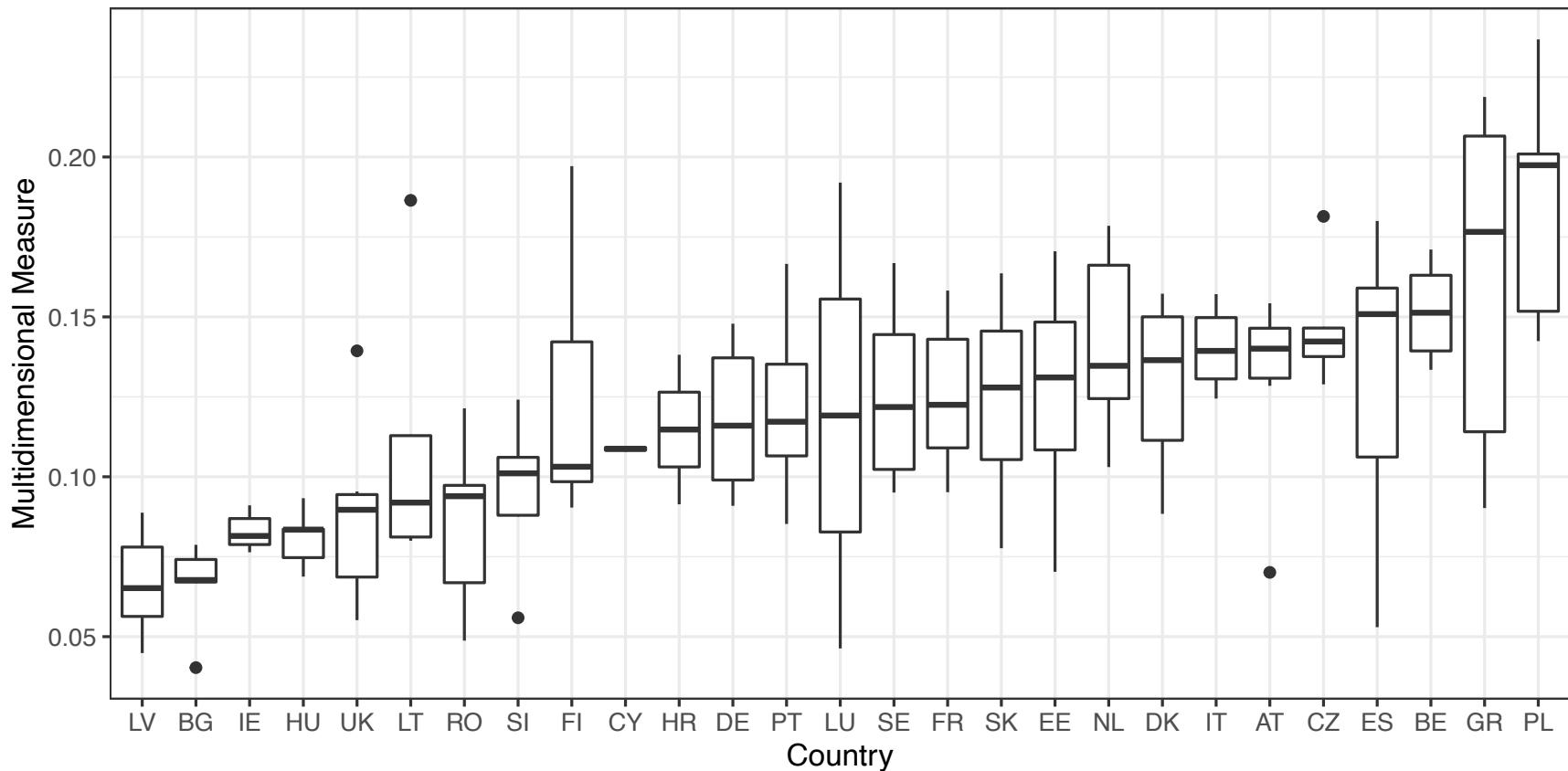


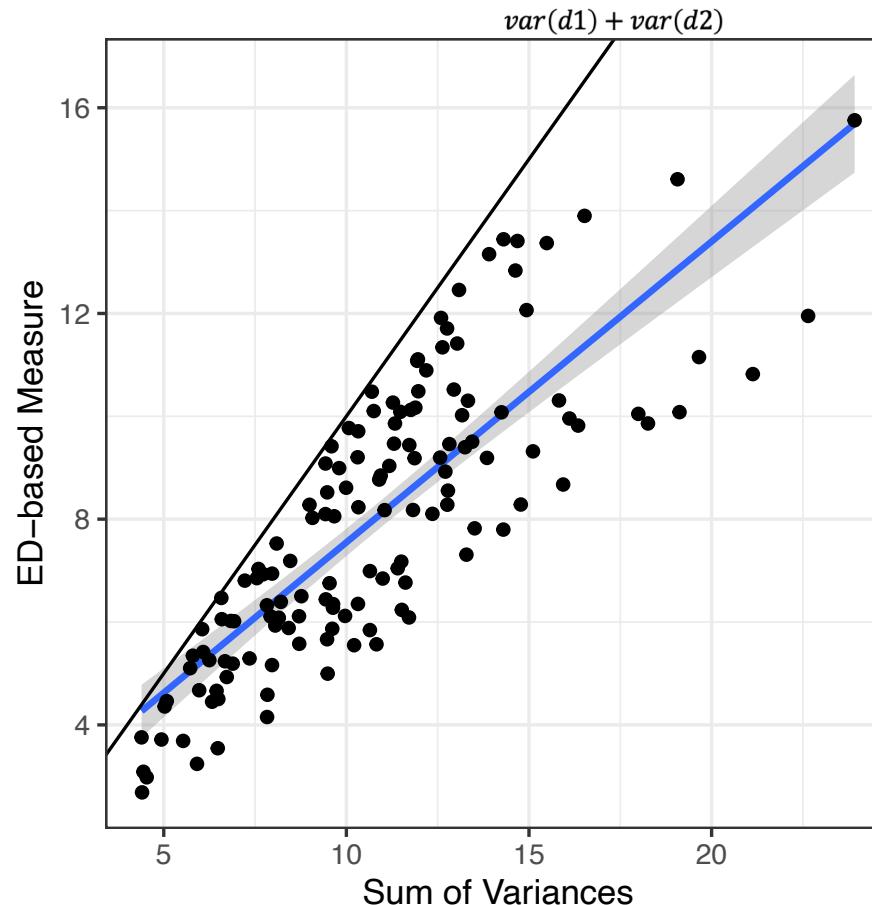
Figure 8: Party positions in two-dimensions across countries and survey waves (CHES)



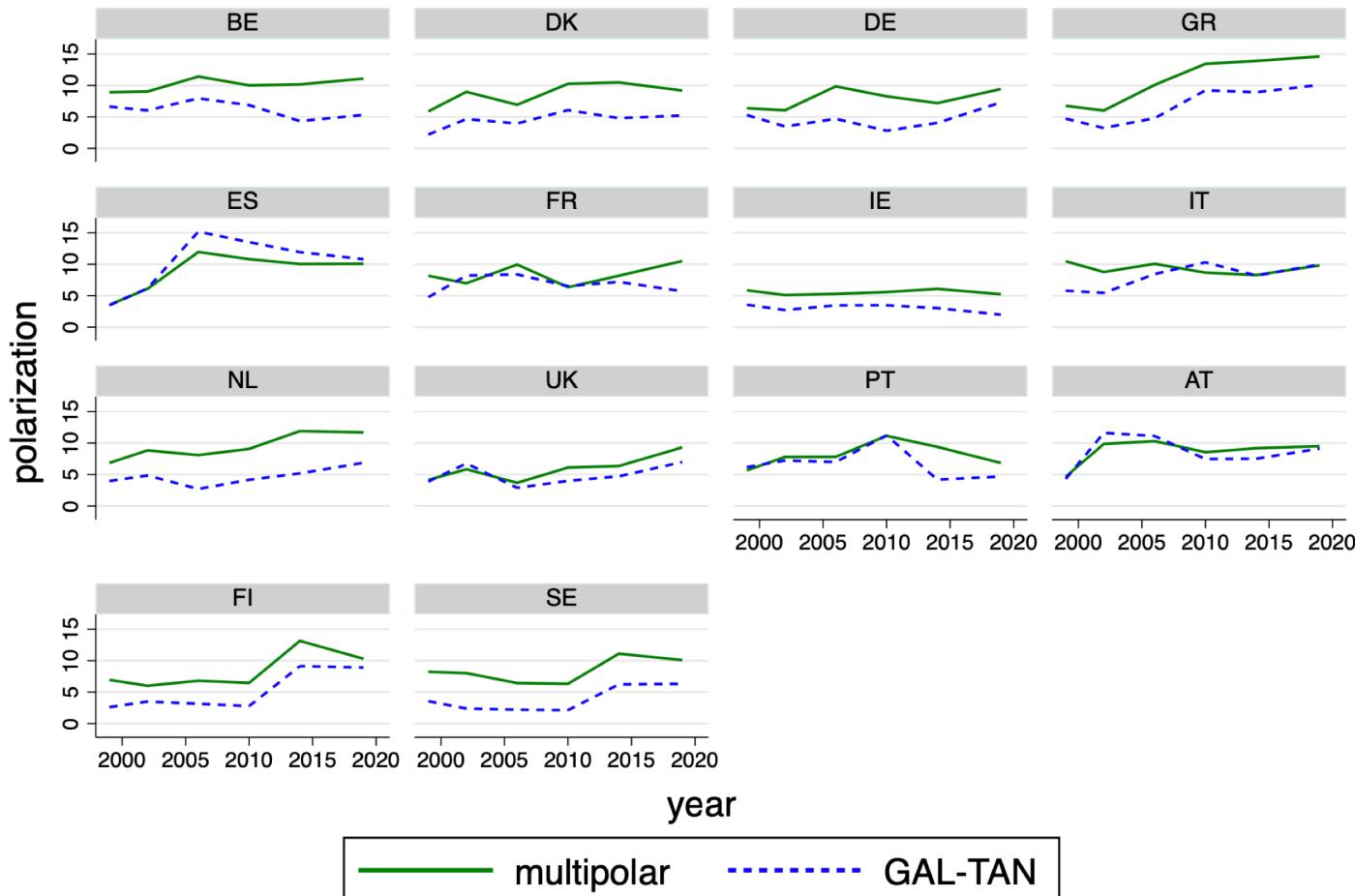
Polarization by country



Illustrating downgrading



Polarization over time



Polarization over time

