



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

Jelle Koedam, Garret Binding, and Marco Steenbergen

University of Zurich



# 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)



## A spatial perspective

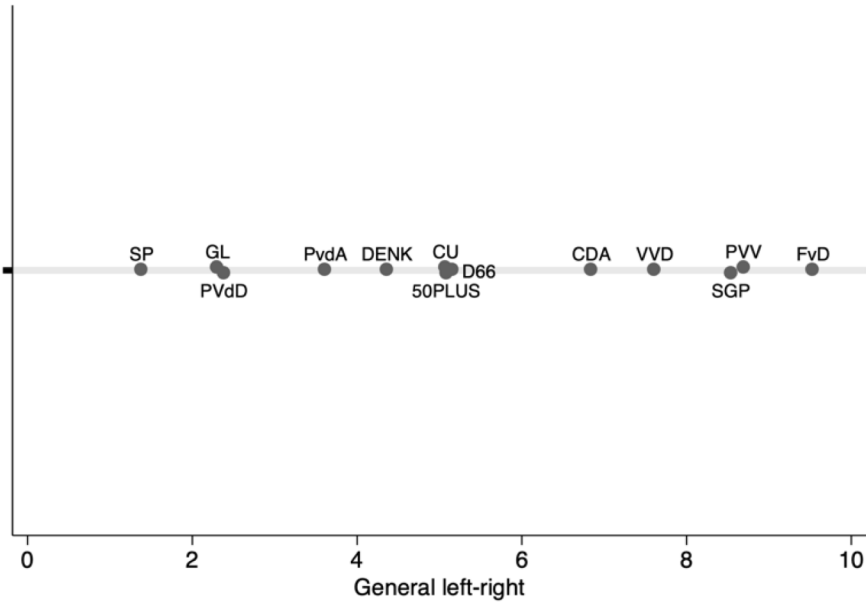
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→ Yet, main polarization measures remain **one-dimensional**

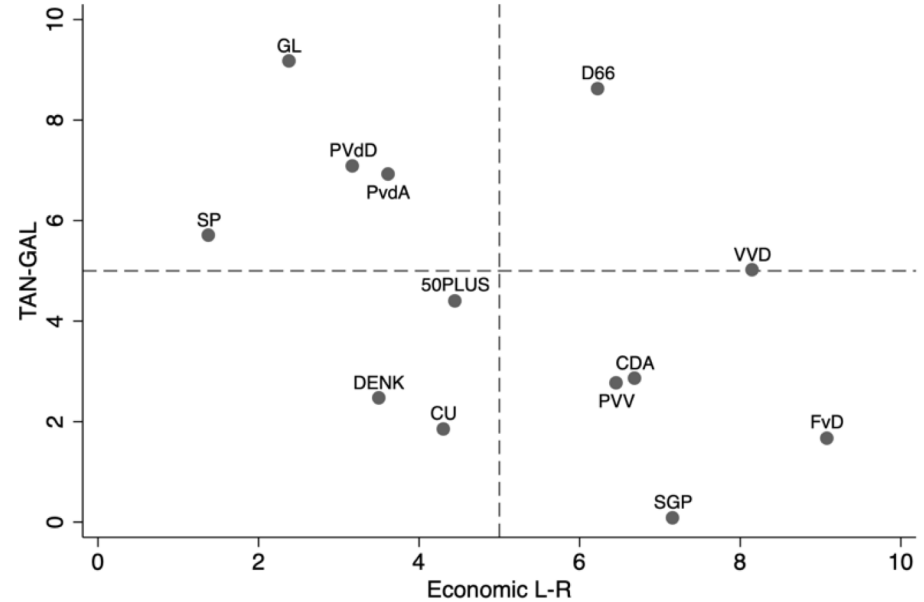


# General L-R vs. two-dimensionality

The Netherlands



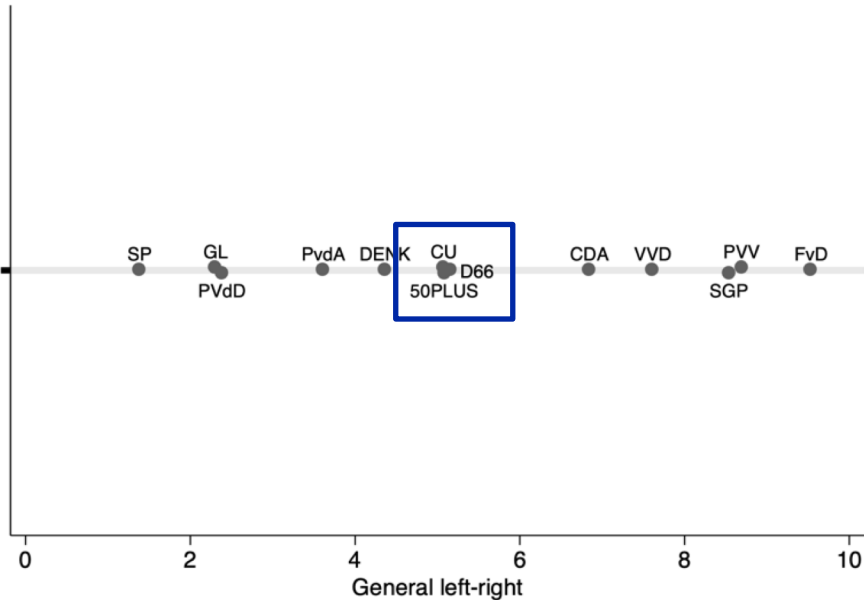
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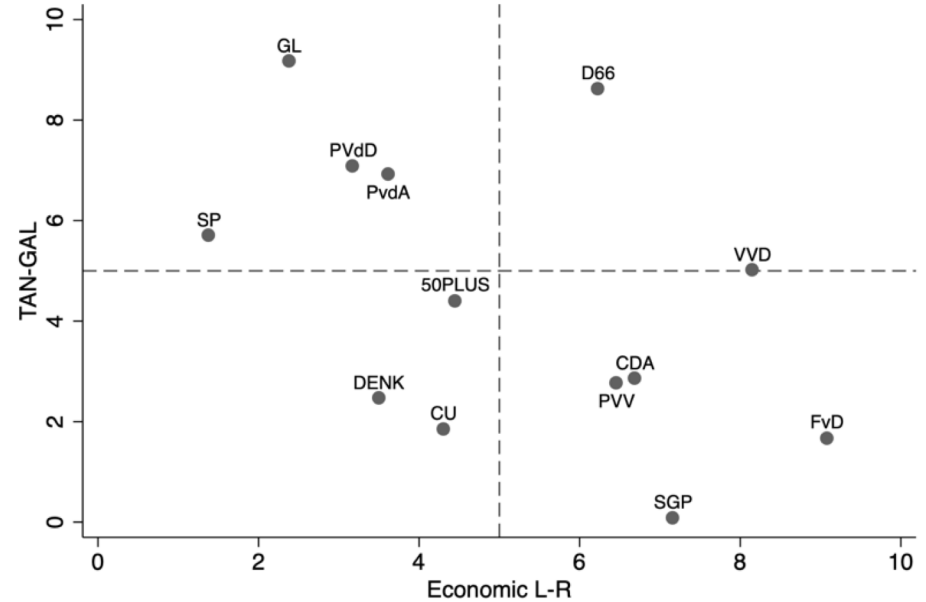


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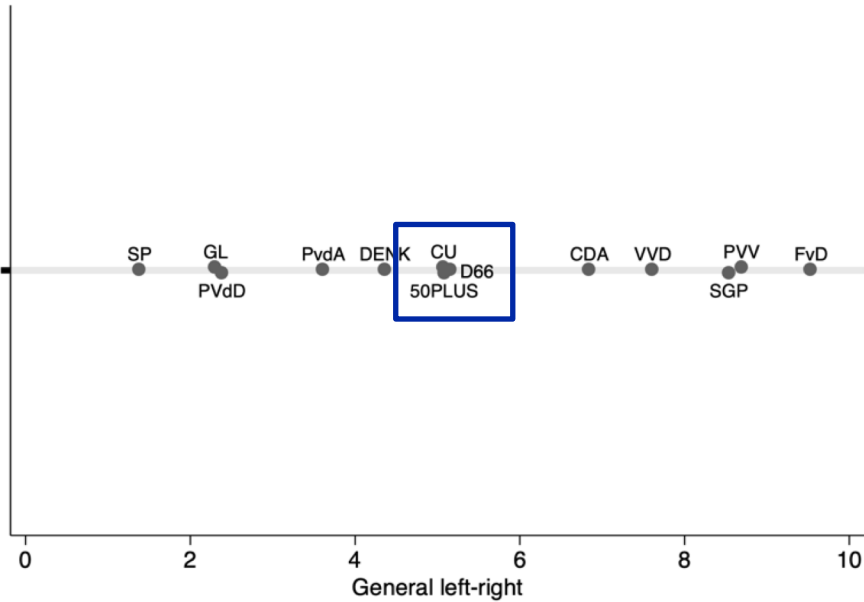
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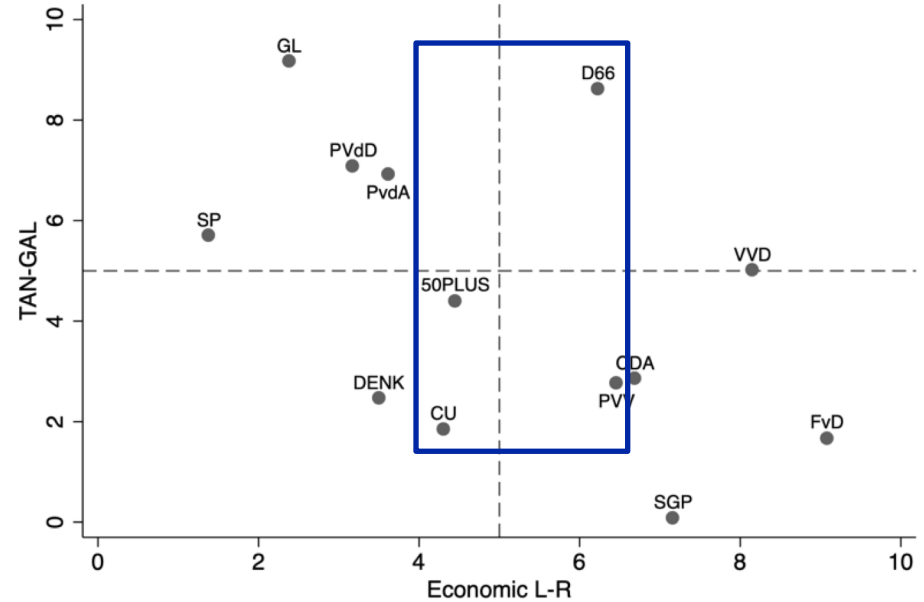


# General L-R vs. two-dimensionality

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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 2<sup>nd</sup> cultural dimension

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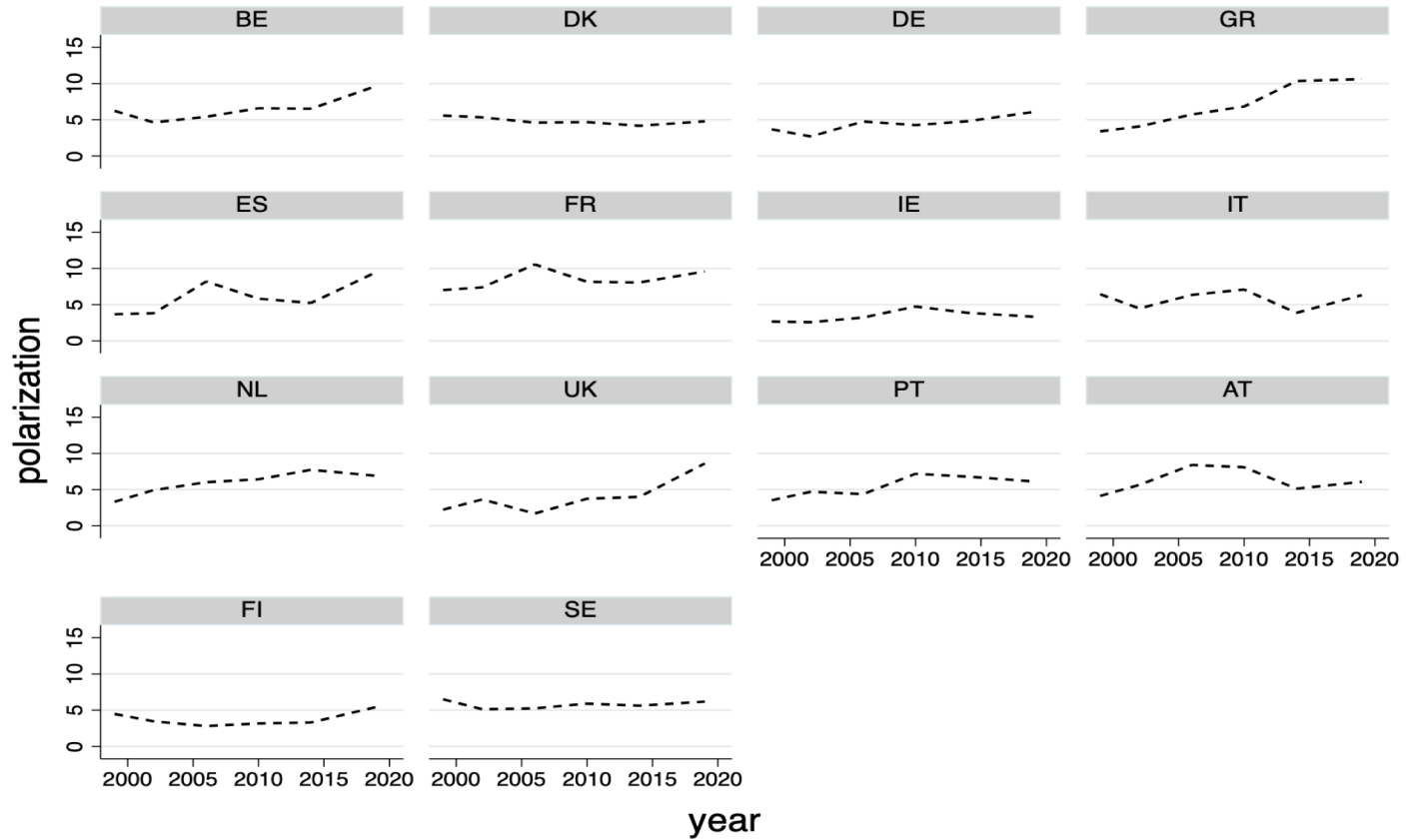
*(e.g., Hooghe et al. 2002; Kitschelt 1994)*

### → Both conceptions argument for multidimensional measure

- Increased specificity and comparability
- Possibility of orthogonality

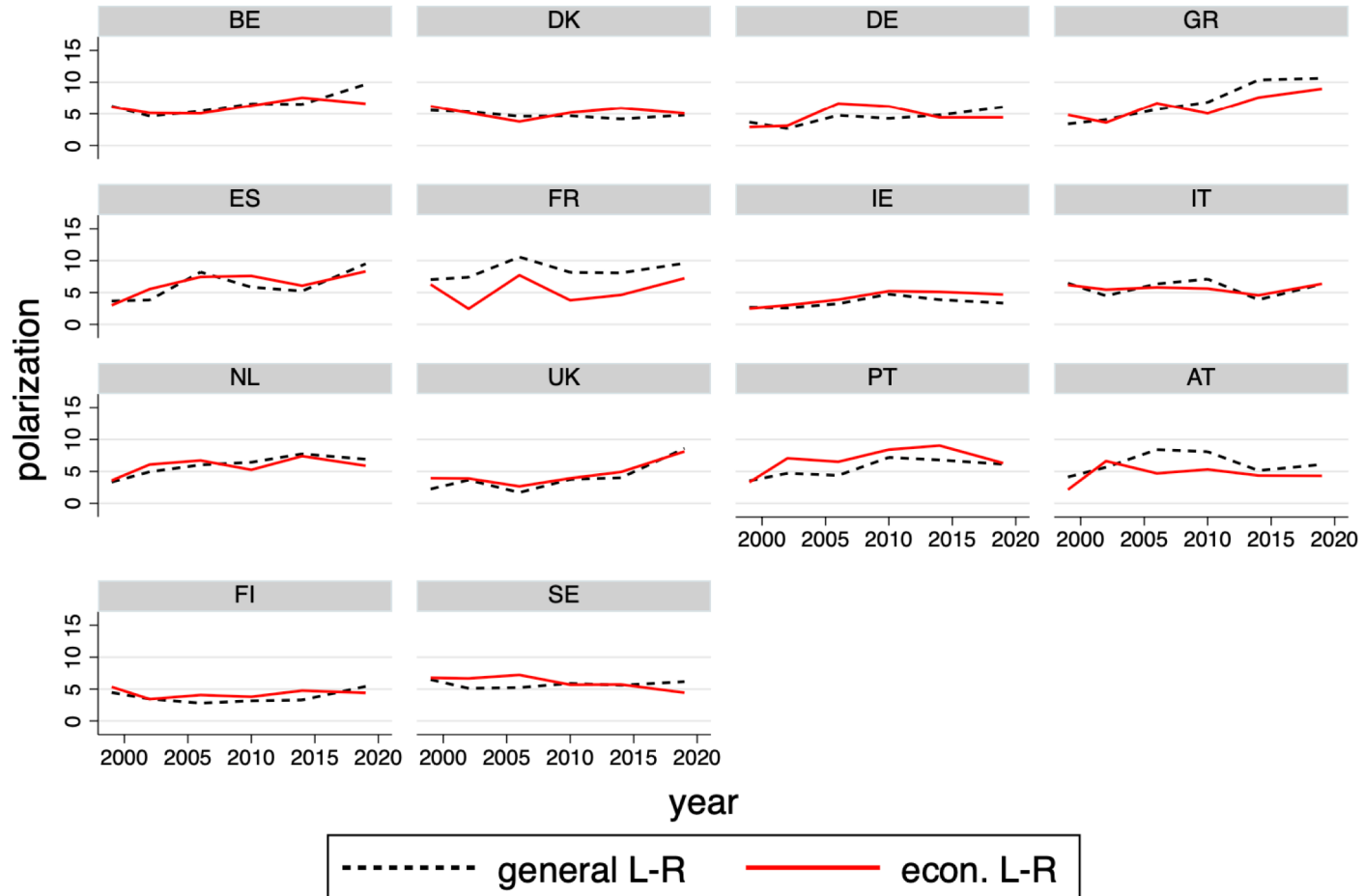


# Polarization over time



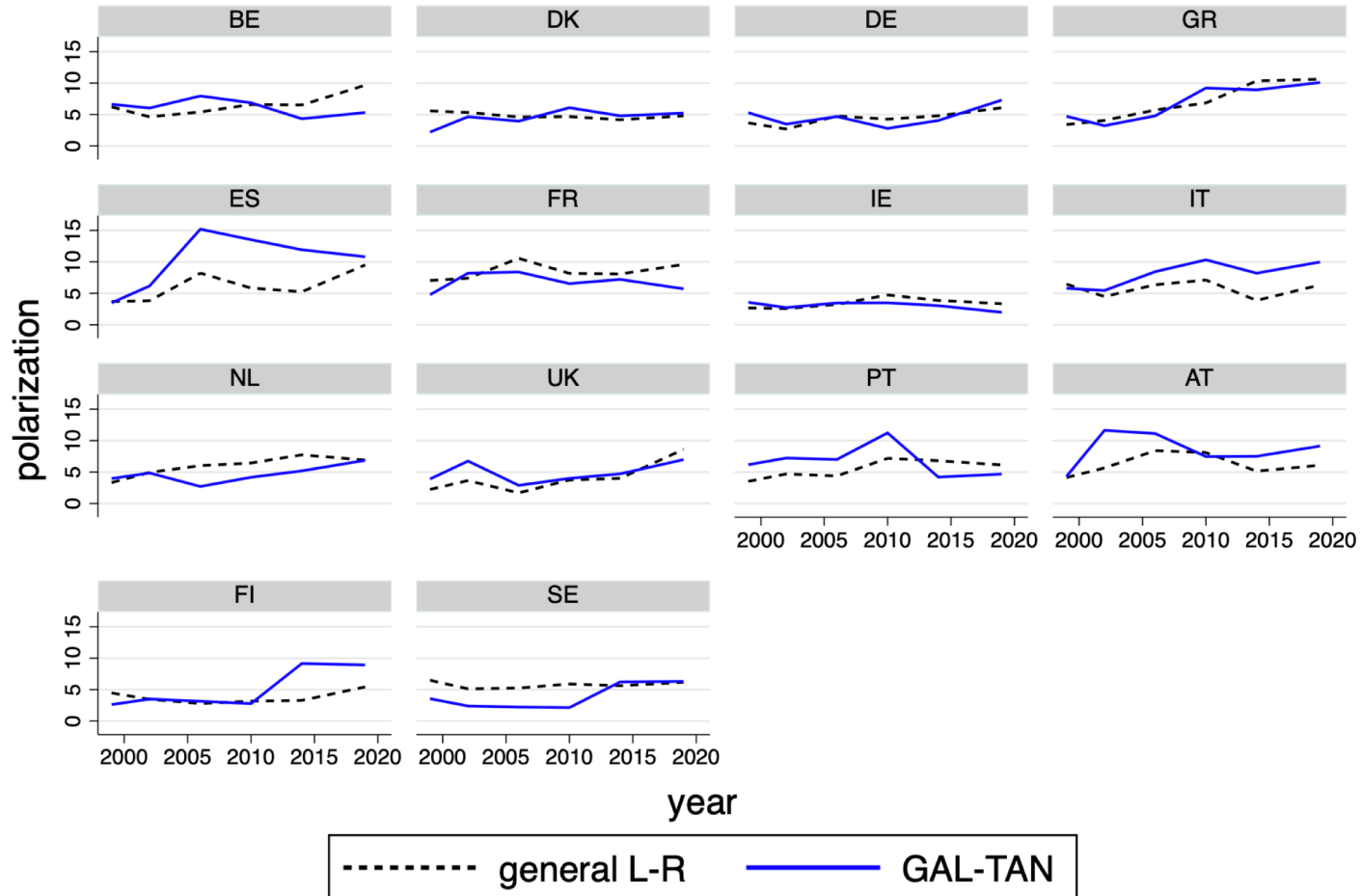


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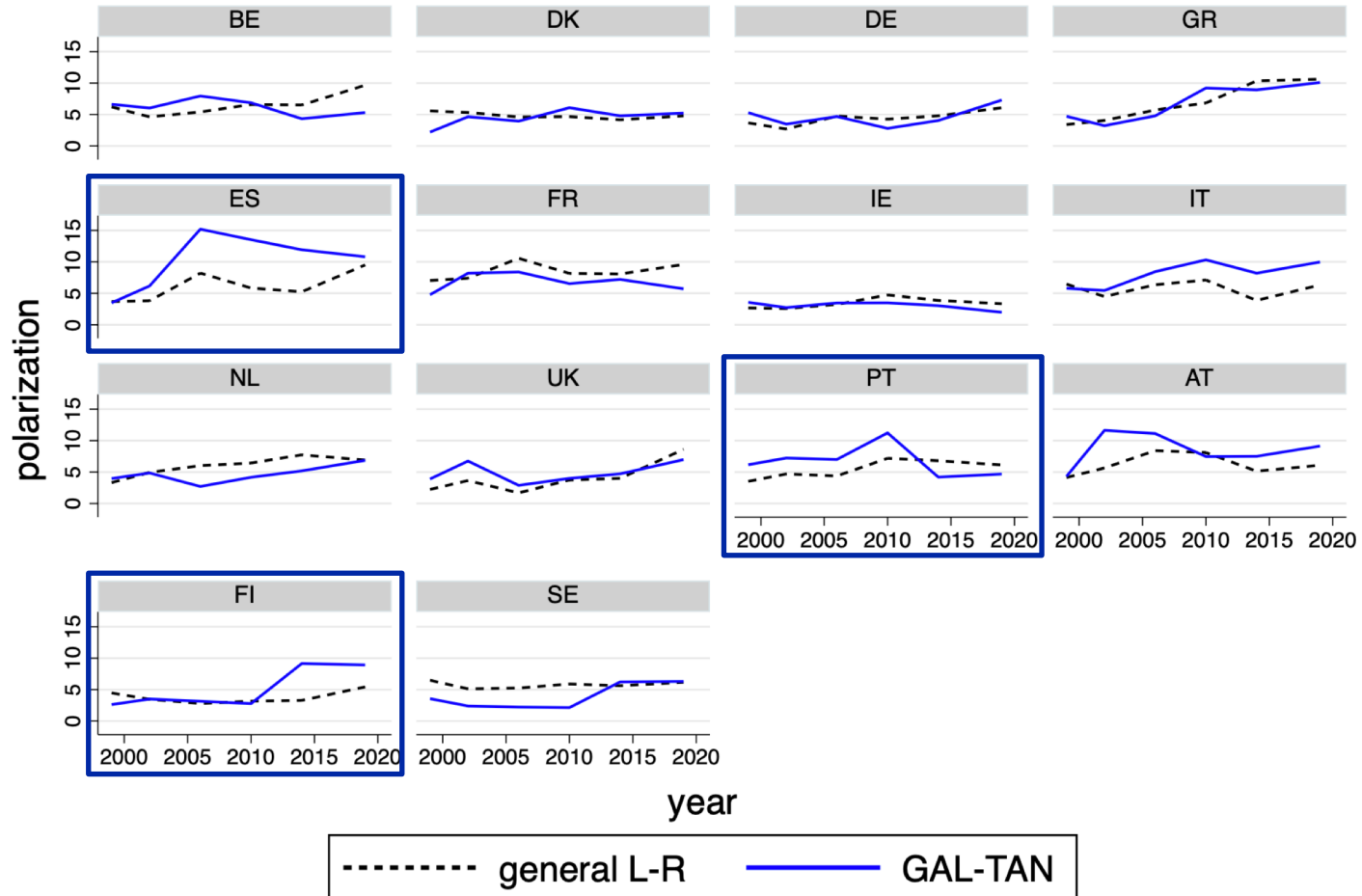


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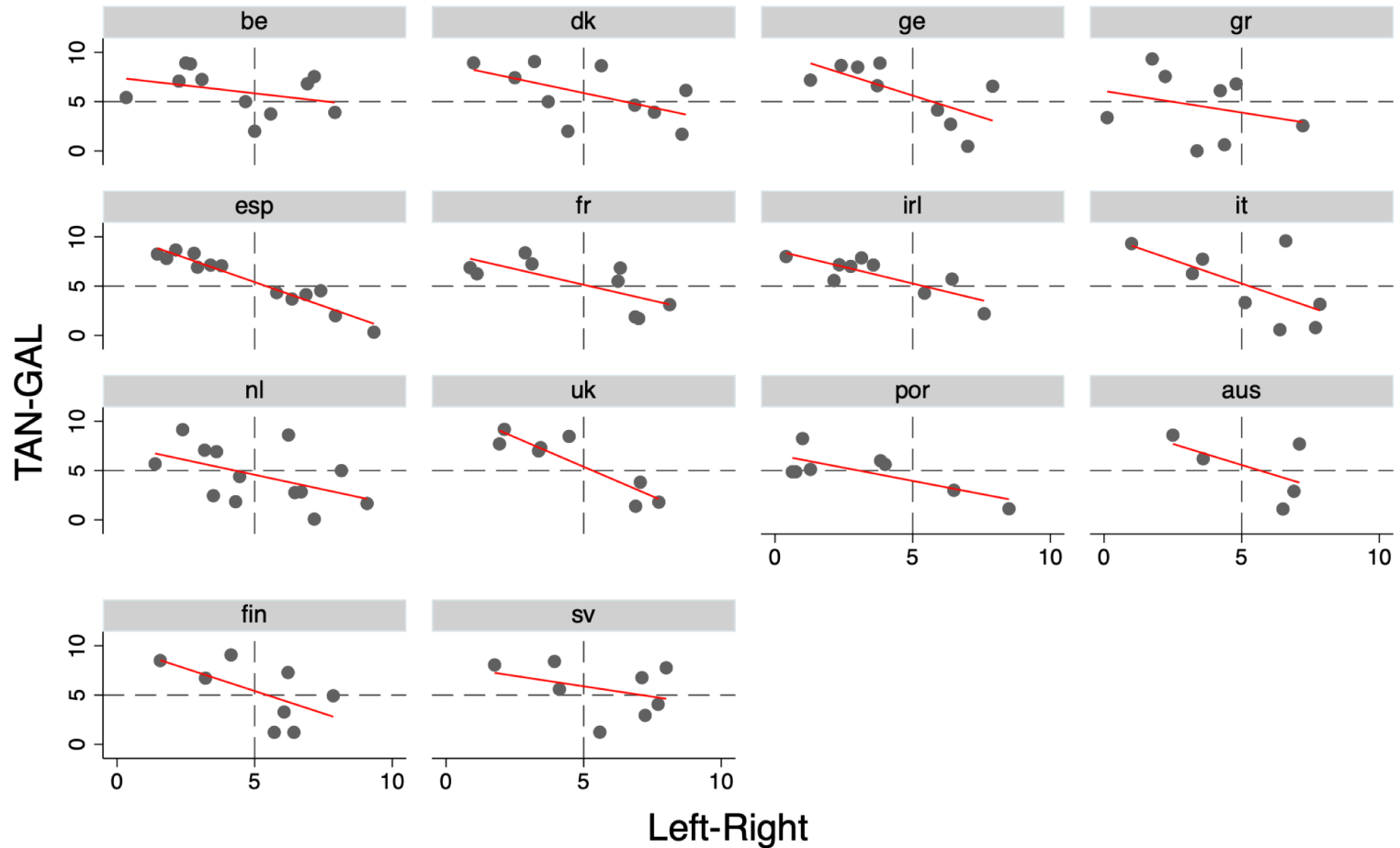




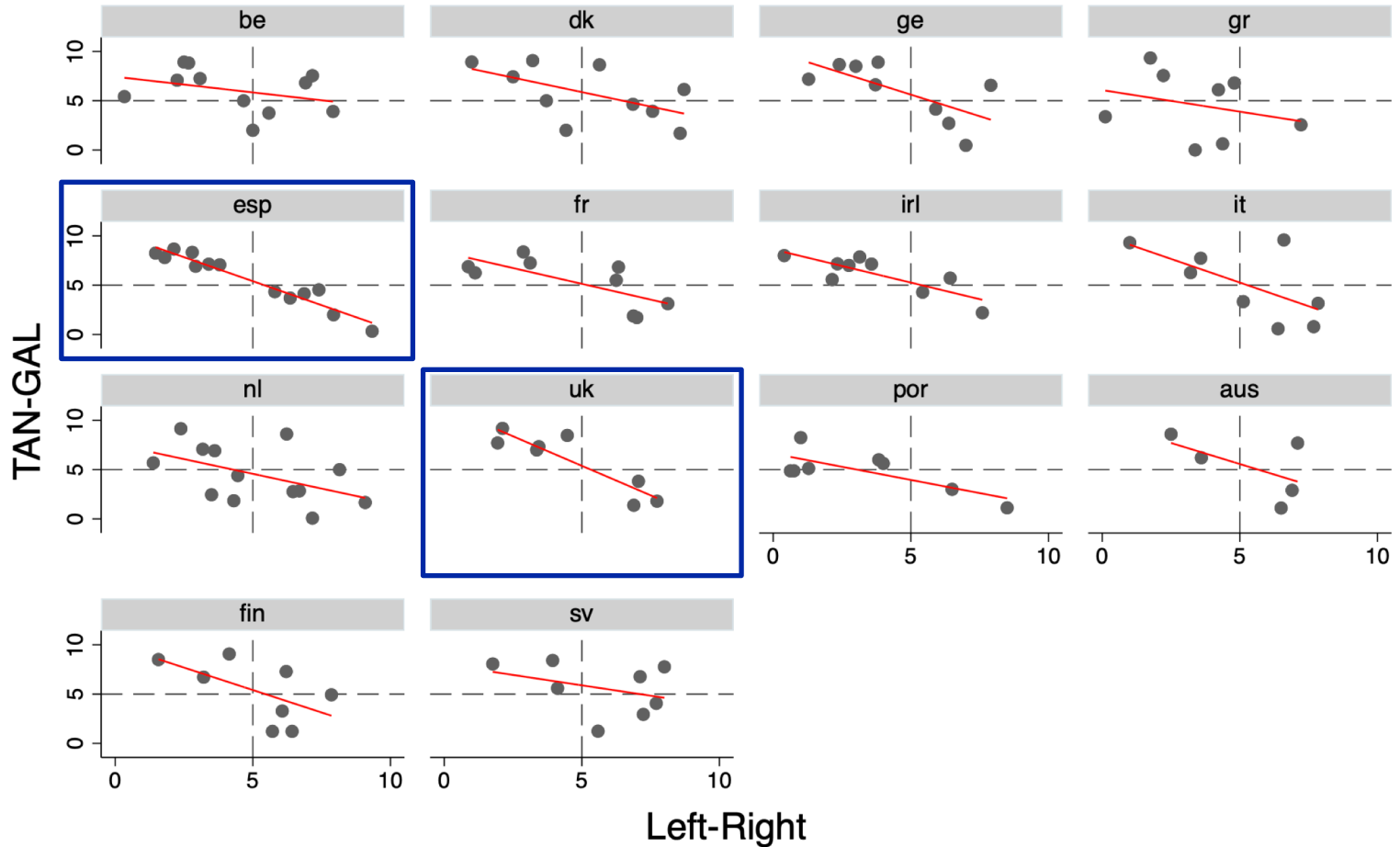
## Methodological approach

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

# CHES 2019

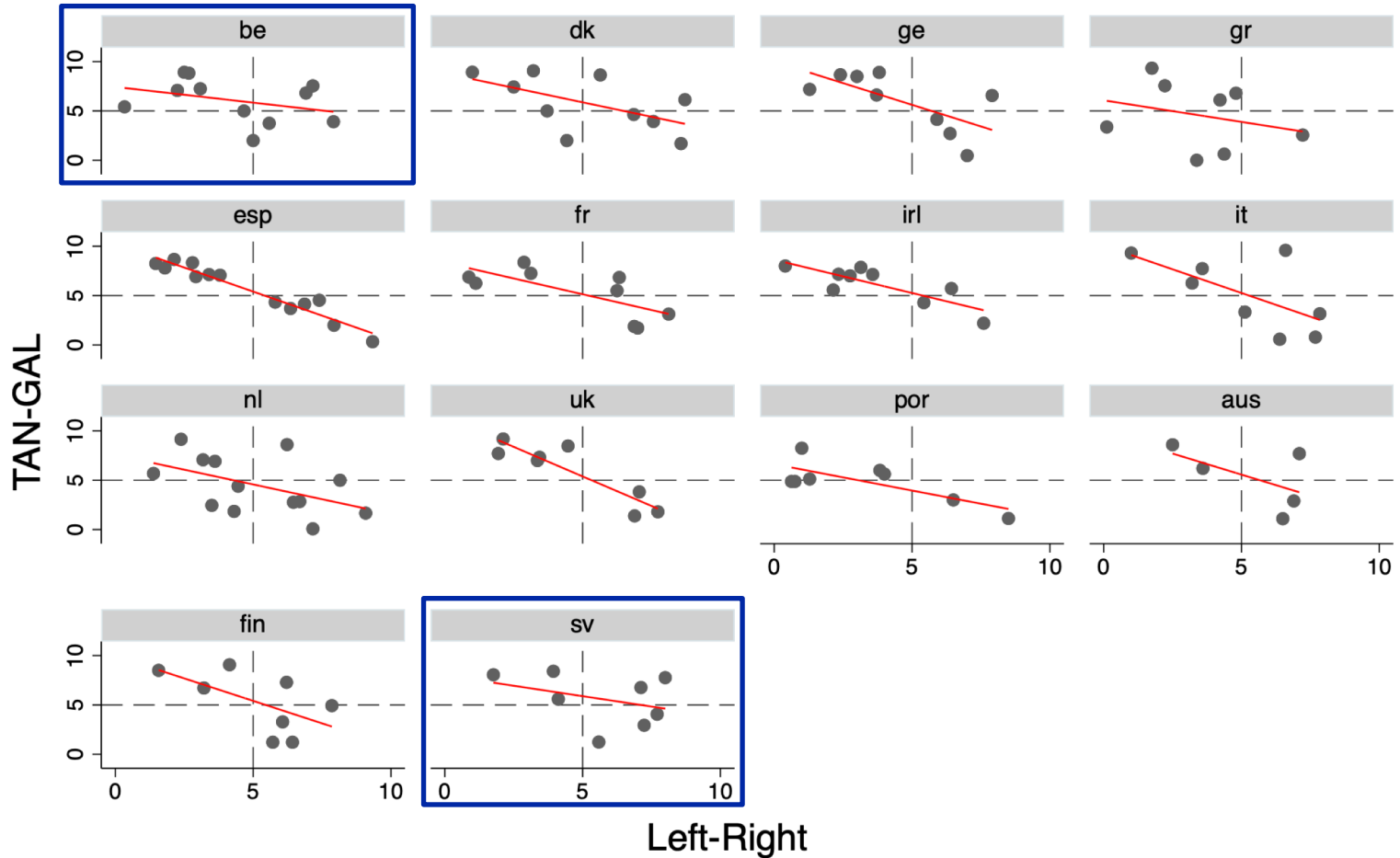


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  - **Main complication:** Do dimensions *align or crosscut*?
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- Solution: Account for (lack of) orthogonality
- Downgrade when dimensional positions are correlated



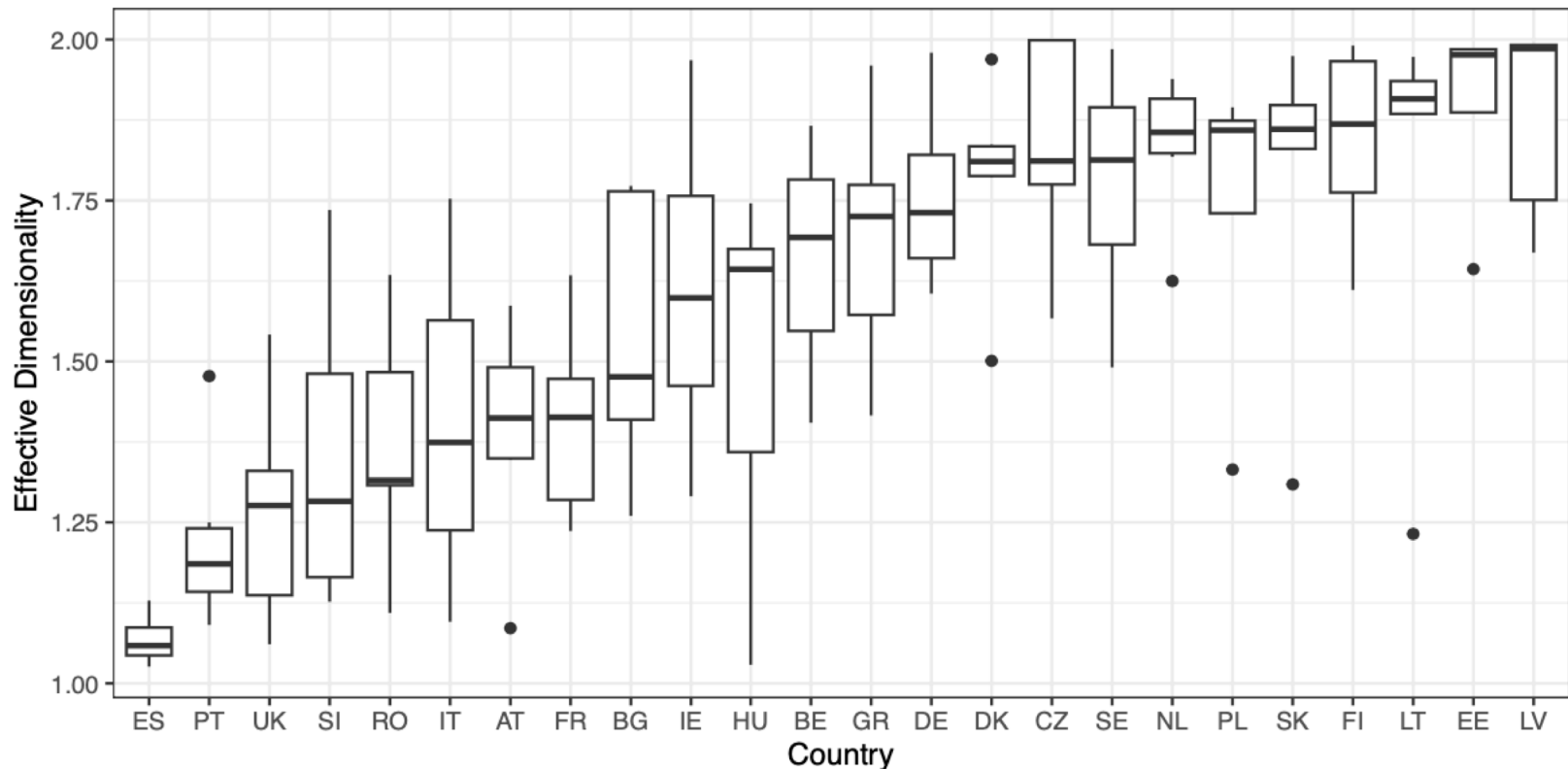
## Effective dimensionality

- 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)



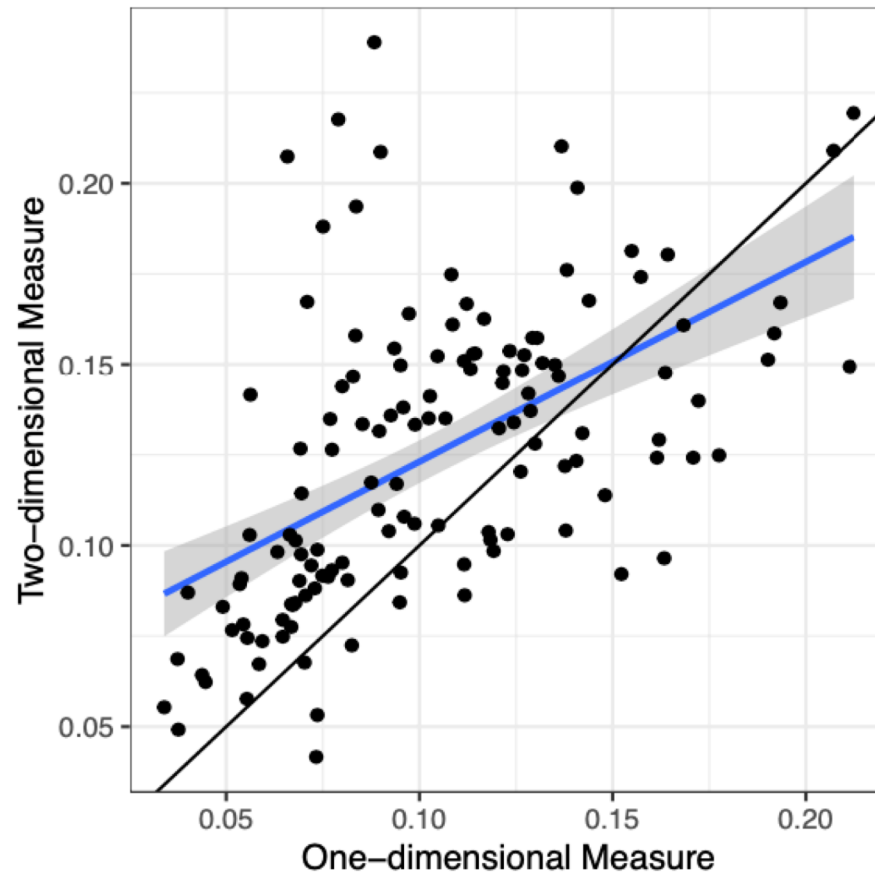
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  - Chapel Hill Expert Survey (CHES) data (economic + cultural)
- Moving parts
  - Sum of the two weighted variances
  - Correct with **effective dimensionality**

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

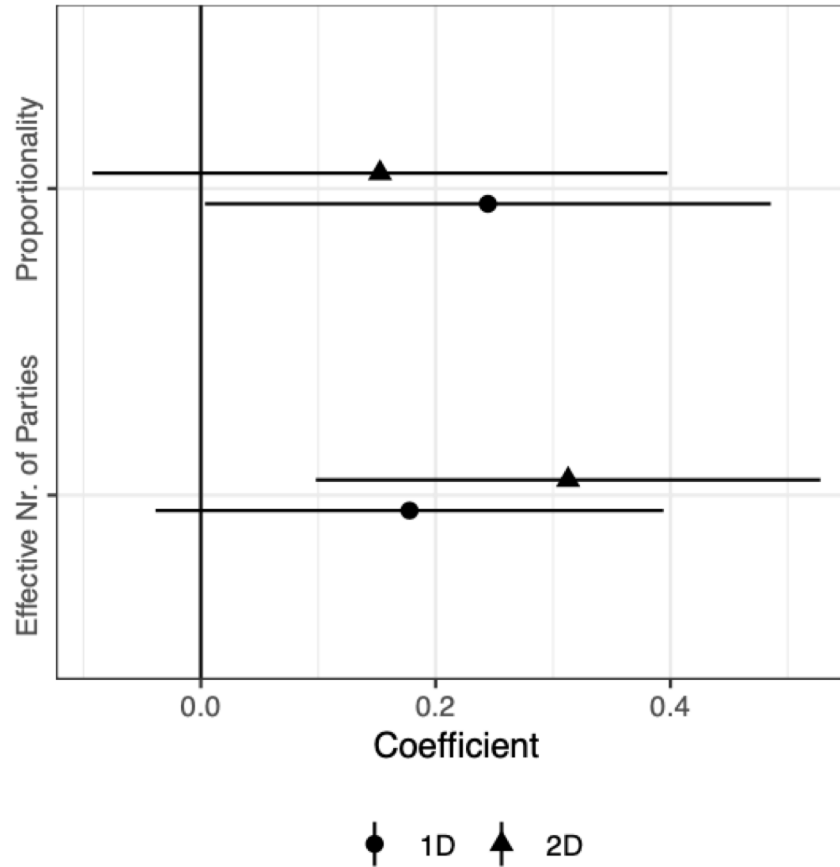


## Correlation one- vs. two-dim. measure





# Correlates with institutional factors





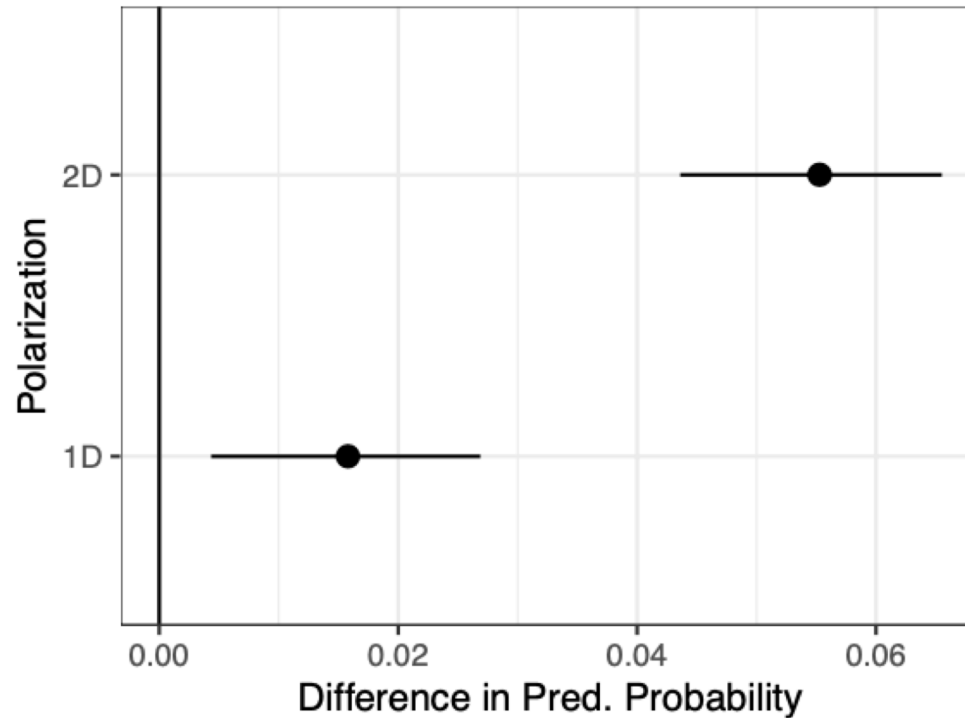


## Empirical application

- Various avenues for future research
  - For now, focus on mass partisanship (*Lupu 2015*)
- Elite polarization strengthens party-voter ties
- Importance of 2<sup>nd</sup> 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*)

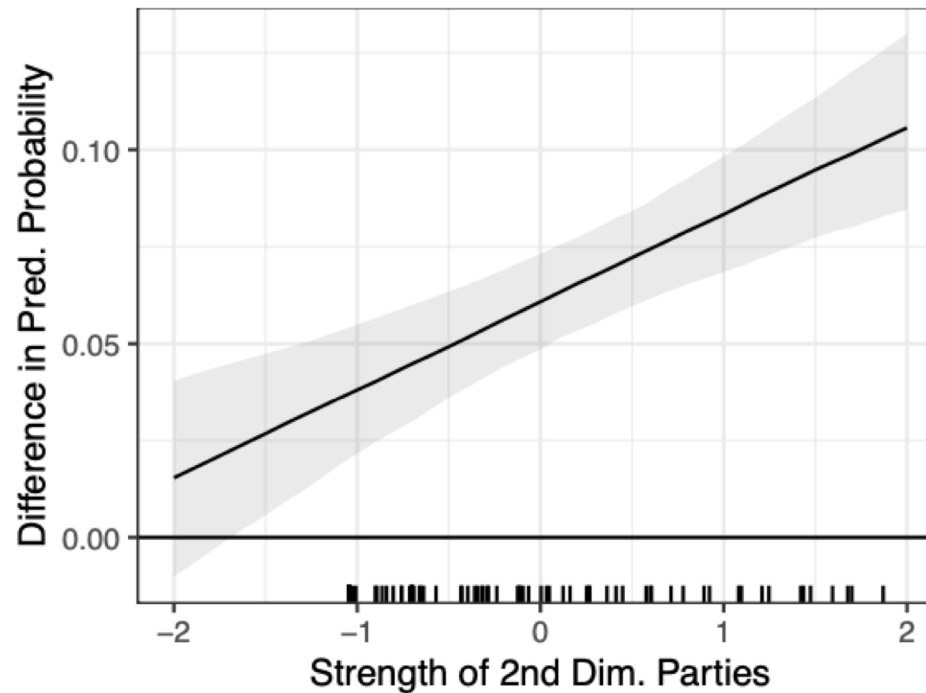


# Overall effect on partisanship



(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

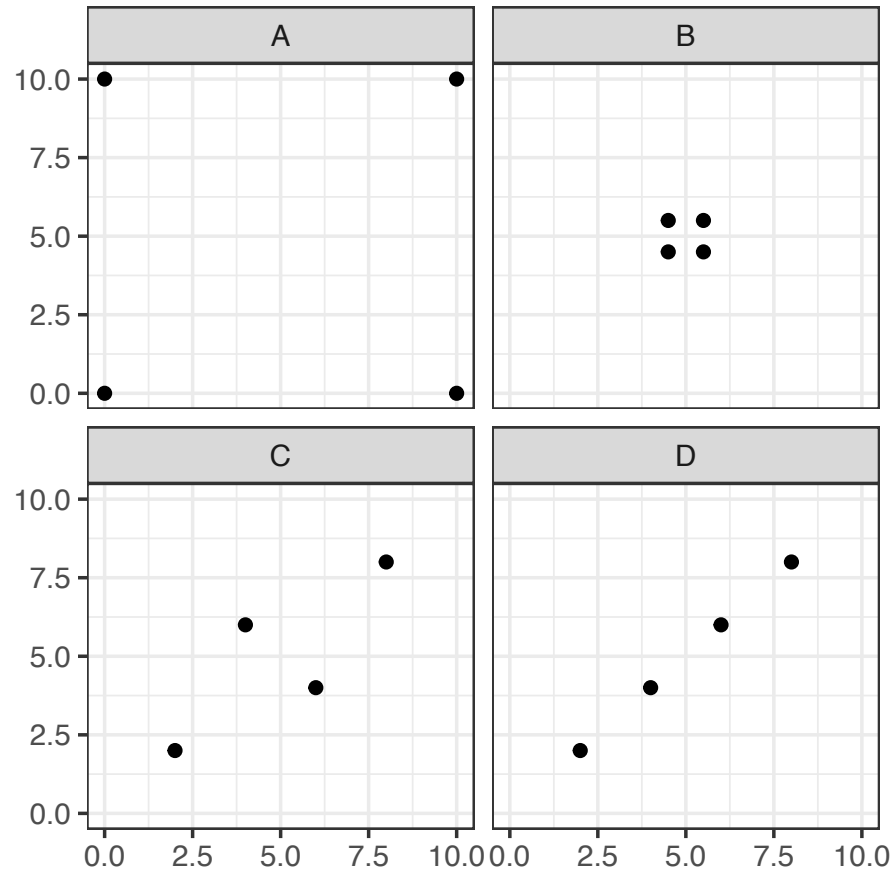
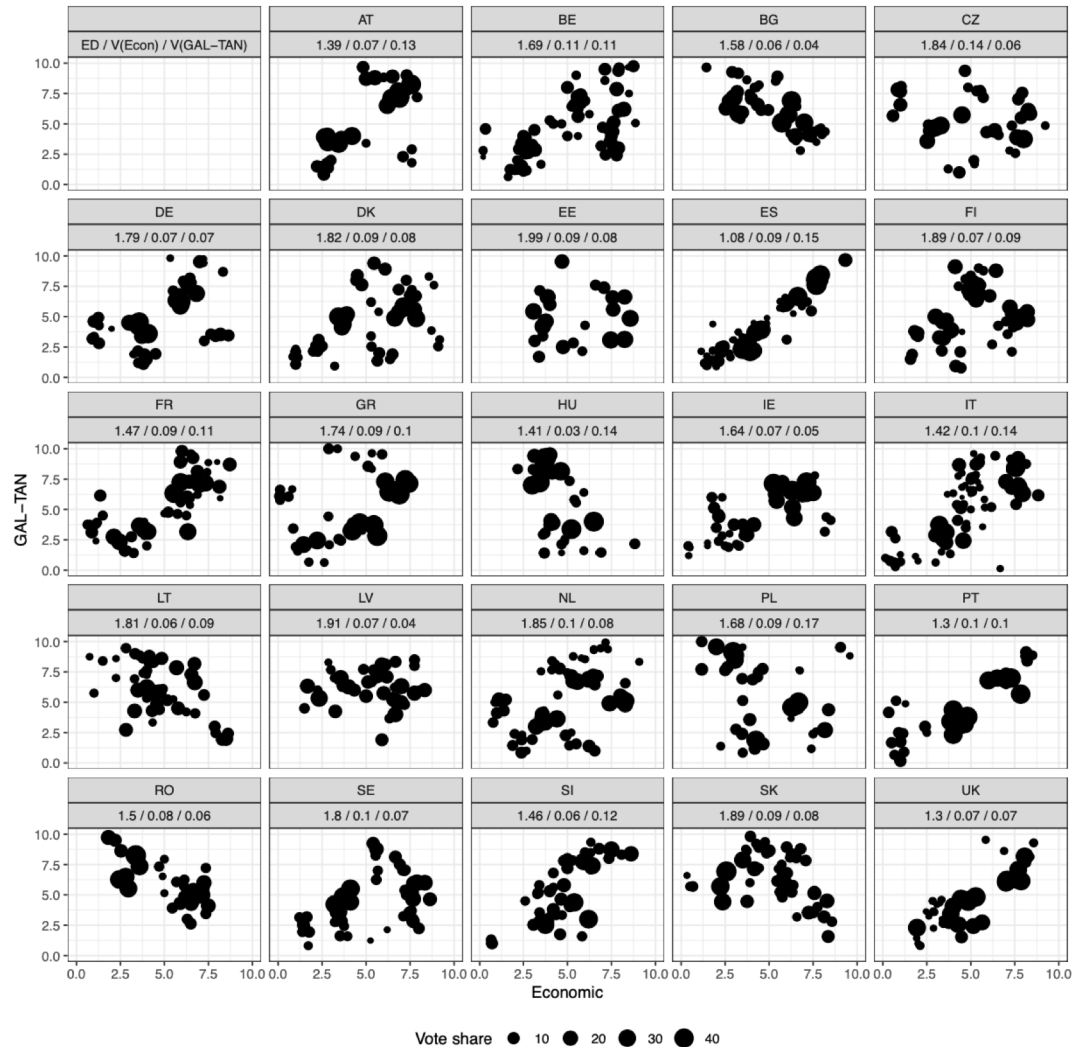
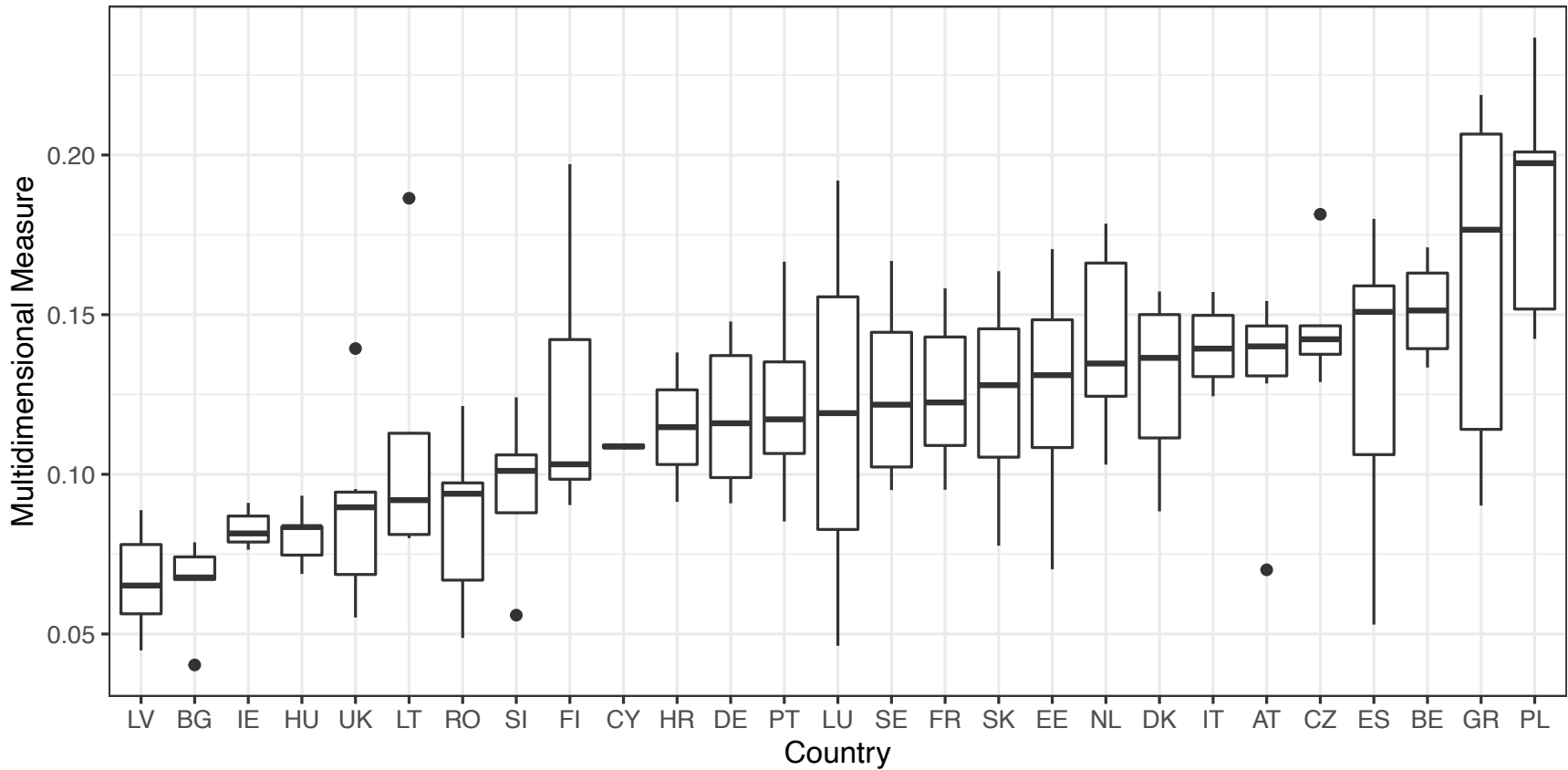


Figure 8: Party positions in two-dimensions across countries and survey waves (CHES)



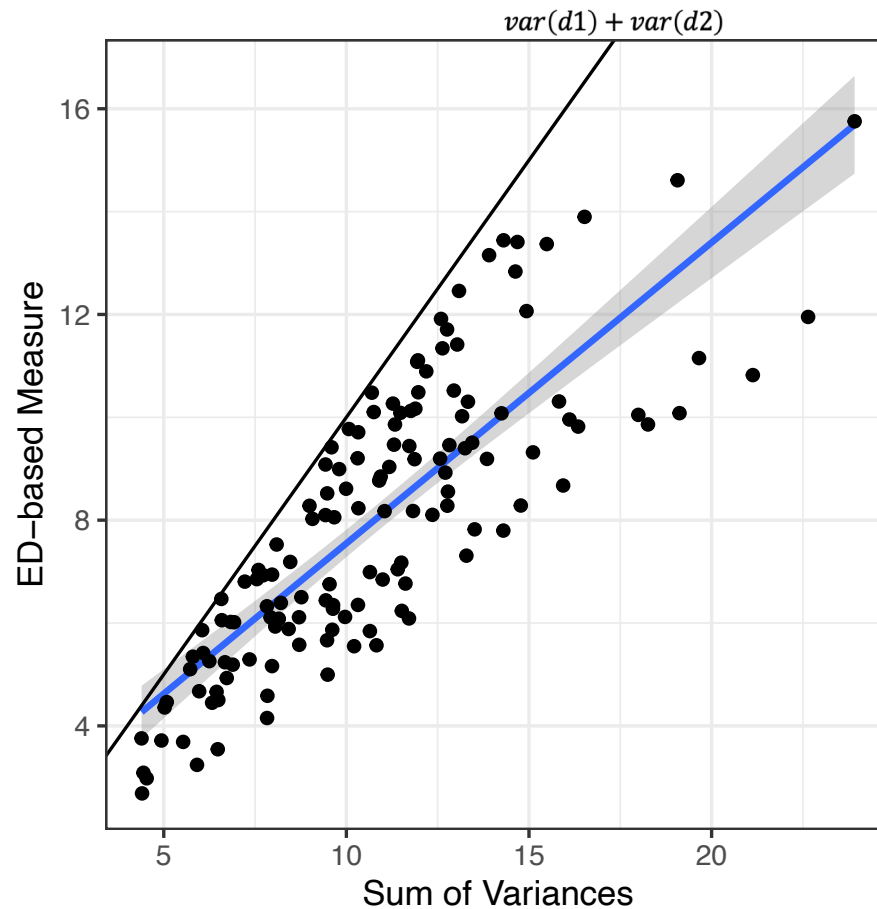


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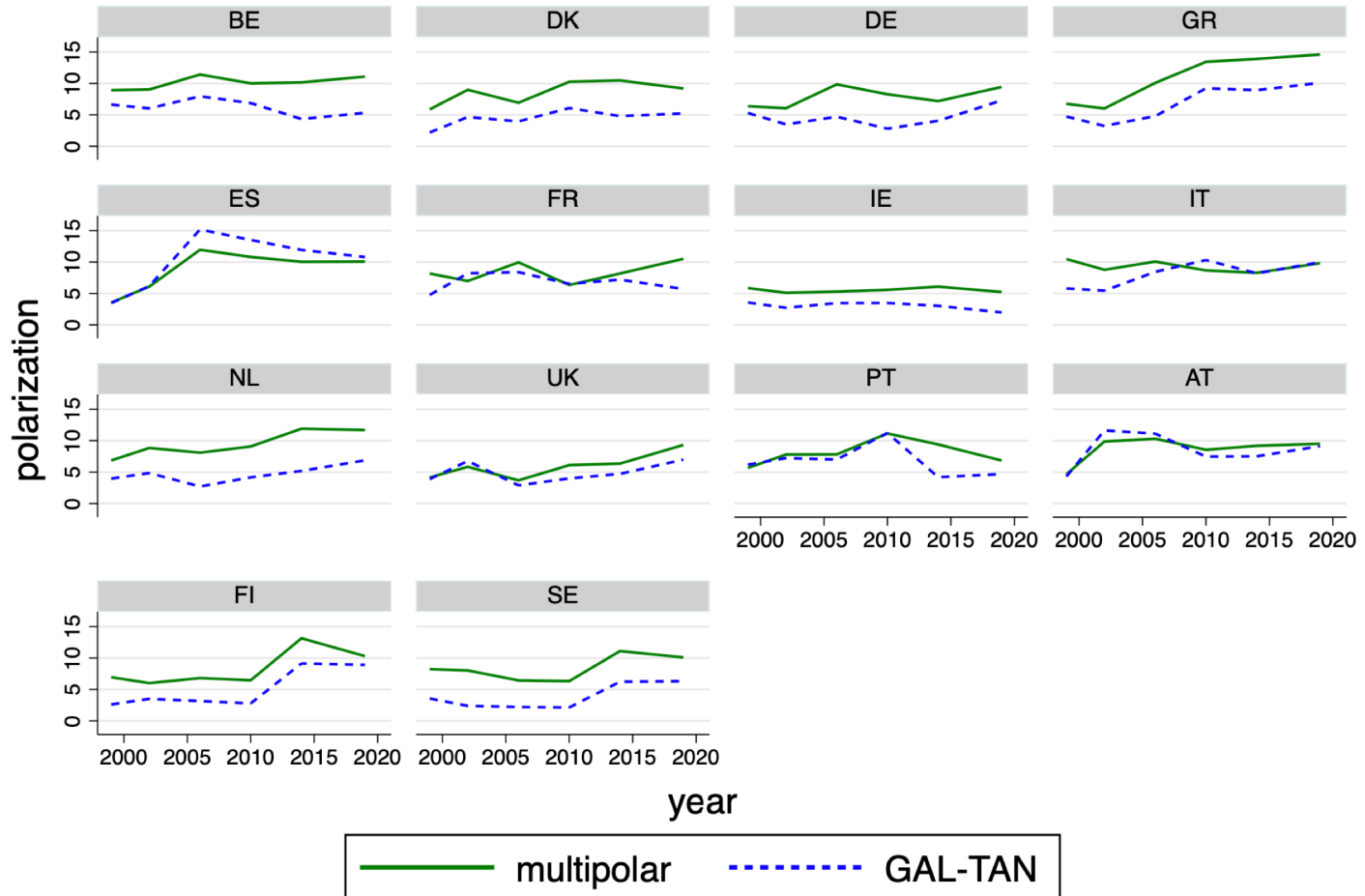


# Illustrating downgrading





# Polarization over time





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