Left/Right or U? Estimating the Dimensionality of National Party Competition in Europe

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Comparative studies report the rise of left- and right-wing Eurosceptic parties that have transformed national party competition in Europe toward an inverted U-shaped configuration: peripheral parties at the left and right of the party spectrum oppose while centrist parties support several features of European integration. To describe the tempo and timing of this transformation and the heterogeneity across countries, we construct a Bayesian finite mixture factor analysis that estimates the election-specific probability of a one-dimensional left/right versus a two-dimensional inverted U-shaped national party configuration. The results show a general trend toward “U” but with significant variation across countries and time, including cases with a reversal of this trend.

The recent rise of left- and right-wing Eurosceptic parties is well documented by comparative studies (Kriesi 2007; Marks, Wilson, and Ray 2002; Taggart 1998; Van Elsas and van der Brug 2015). A prominent explanation for this general trend is that European integration with the ongoing transfer of policy-making competences to the European Union (EU) level is promoting a conflict “about more or less European integration derived from deep social, cultural, national and territorial traditions,” which crosscuts the traditional left/right conflict of party competition in Europe (Hix and Lord 1997, 27). The resulting configuration mirrors an inverted U shape: peripheral parties at the left and right of the party spectrum oppose while centrist parties support several features of European integration (Hix and Lord 1997; Marks et al. 2002).

Similar to other applications of mixture modeling to test competing theories in political science (e.g., Imai and Tingley 2012), this article uses a Bayesian finite mixture factor analysis to identify time- and country-specific variation in the transformation of national party competition. For each election, we estimate whether parties are more likely to be ordered either along the one-dimensional left/right dimension or the two-dimensional inverted U-shaped configuration. The estimated election-specific probability can be interpreted as a model-choice quantity that varies across countries and time and that allows us to paint a dynamic picture of change in the dimensionality of policy spaces across Europe. Our estimates are based on the Comparative Manifesto Project (CMP) data, and we additionally use expert survey knowledge on the current configuration of party families from the Chapel Hill Expert Survey (CHES) to construct informed prior densities.

BAYESIAN FINITE MIXTURE FACTOR ANALYSIS
To estimate the election-specific configuration in party competition, we apply our approach to the coded manifesto data

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from the CMP (Budge et al. 2001) covering parties’ pro-
grammatic electoral declarations of all EU member countries
between 1945 and 2010. To use CMP data in a spatial con-
text, we follow Lowe et al. (2011) and transform coded mani-
esto data into issue-specific positions of political parties (König
and Luig 2012). This transformation is necessary because
the data generation of the CMP is based on saliency theory,
which counts the frequent usage of the 56 coded categories
instead of the parties’ spatial location (Laver and Garry
2000). These issues cover a broad range of topics from administra-
tion to the welfare state. A detailed description of the data is
available in the online appendix.

We define \( y_{j} \) as the \( j \)th \((j = 1, \ldots, J) \) row of our data ma-
trix with \( L \) \((l = 1, \ldots, L) \) columns. Each cell contains the po-
position of a party \( j \) on an issue scale \( l \) for a particular na-
tional election. Building on Bayesian factor analytic models
(e.g., König, Marbach, and Osnabrügge 2013; Quinn 2004), we
assume that each issue position is a weighted sum of latent
party positions plus measurement error. The weights are the
factor loadings and indicate the extent to which a particular
latent party position is determined by each issue scale. Similar
to previous factor analytic models for CMP data, our model
assumes that the latent policy space is orthogonal and the
factor loadings are constant across countries and over time
(e.g., Gabel and Huber 2000). This assumption could be re-
liaxed if additional assumptions are introduced to identify the
model.\(^1\)

Formally, let \( \chi_{j} \) be the unobserved \( D \)-dimensional po-
tion of a party in an election (the factor), and let \( \lambda \) be the
\( L \times D \) matrix of factor loadings. We can then write the mix-
ture of factor analysis models as follows:

\[
y_{j} = \begin{cases} 
\lambda_{l} \chi_{l,j} + \epsilon_{1} & \text{if } k_{j} = 0 \\
\lambda_{l} \chi_{l,j} + \lambda_{2} \chi_{2,j} + \epsilon_{2} & \text{if } k_{j} = 1 
\end{cases}
\]

\( \epsilon_{1} \sim \text{N}(0, \Sigma_{1}) \)

\( \epsilon_{2} \sim \text{N}(0, \Sigma_{2}) \),

where \( k_{j} \) is a binary indicator variable that indicates whether
a party has a one- or two-dimensional position. Note that,
if we could directly observe this variable, two ordinary factor
analysis models—the first being one-dimensional and the sec-
ond two-dimensional—are estimable. However, since we do
not know the dimensionality of an election-specific policy

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\(^1\) For example, if we allow for variation of the factor loadings across
elections, the factor loadings and mixture probabilities covary across
the same set of observations, rendering them jointly inestimable without making
additional assumptions that restrict either some of the mixture probabilities
or some of the factor loadings to be dependent.
CHES data (Hooghe et al. 2010; Steenbergen and Marks 2007). We center all parties’ priors that are not part of a party family at 0 and assign a variance of 11, which effectively provides no a priori information about the location of the party in the latent policy space.

Figure 1 illustrates the party positions of the CHES data and the superimposed prior density by party family. As documented by the comparative literature on Eurosceptic parties (e.g., Taggart 1998), the relation between party positions on the left/right in the second scenario has an inverted U shape. In other words, the more extreme a party’s position with respect to the left/right, the more critical the party is toward European integration. The data also suggest that Green and Conservative parties are more critical toward Europe than Socialist, Liberal, and Christian-democratic parties.

Using informative priors raises questions on their impact for the posterior estimations. First, we note that our priors provide no information about differences between parties from the same family. Consequently, all posterior differences between parties from the same family arise only from the data. However, our priors are deliberately informative with respect to the shape of the latent space because they assign parties belonging to the same family subspaces. Second, the location of parties to subspaces is not deterministic. If the data diverge greatly from the prior, they overwhelm the prior information and the party family’s posterior subspace (e.g., the collection of party posterior means) moves away from the prior subspace.²

RESULTS AND CONCLUSION
We make inferences about the parameters of interest by summarizing simulated draws from the posterior density of our model using JAGS. Details on Markov Chain Monte Carlo parameters and convergence diagnostics are in the appendix. While we obtain samples from three sets of parameters—the configuration parameters ($\pi$), factor loadings ($\lambda$), and latent positions of the parties ($\chi$)—we present only the estimated election-specific configuration parameter for the 15 countries that joined the EU up to the mid-1990s. In the appendix, we discuss the results for the other parameters and various robustness tests. Furthermore, we confirm the validity of our results by comparing our estimated party positions to other expert survey data and an existing classification of Eurosceptic parties (Taggart 1998).

The estimates for the configuration parameter suggest that, on average, the probability of a one-dimensional left/right configuration decreases from 66% after World War II to approximately 32% in 2010. However, there is considerable heterogeneity across countries in this trend. Figure 2 shows the probability of a left/right configuration for each national election in 15 EU member states, which we order along the country’s accession date to the EU. To interpret the country-specific trends, we use the average fitted curve of a local polynomial regression.

The figure reveals three types of trends. First, the probability of a one-dimensional left/right configuration in national party competition decreases over time. Belgium, Germany, Italy, Luxembourg, and the Netherlands exhibit a strong monotone, negative trend beginning in the 1970s. Closer inspection of these EU founding members shows that France is more likely to have an inverted U-shaped configuration beginning in the late 1950s; Belgium, the Netherlands, and Luxembourg, beginning in the early 1980s; and Germany and Italy, beginning in the late 1990s. Austria and Sweden, which acceded in 1995, appear to have had an inverted U-shaped configuration since the 2000s. Interestingly, Greece acceded in the beginning of the 1980s and shows a trend

2. For all remaining parameters for which we have little a priori information, we use vague priors. In particular, regarding the factor loadings ($\lambda$), we employ zero-centered multivariate normal priors with a diagonal covariance matrix with all elements set to 100, and for the variance components ($\omega$), we use gamma priors ($a0 = 0.001, b0 = 0.001$). For the configuration parameter set ($1 - \pi, \pi$), we use the uniformly shaped beta prior ($d = (1,1)$). This prior embodies our a priori belief that both configurations are equally likely. Note that we run robustness tests to check the impact of our priors.
very similar to that of the founding members. Second, some countries have either a one- or two-dimensional configuration almost all the time after World War II. Denmark’s and Finland’s national party competition remains a one-dimensional left/right configuration. The trends of Great Britain and Ireland, the two other accession countries of this period, are nonmonotonic but suggest an inverted U-shaped configuration. Third, Portugal and Spain, which jointly acceded in the
mid-1980s, exhibit a monotone trend until the first decade of the twenty-first century and an indicative reversing trend thereafter.

To the extent that the features of European integration become more salient over time, the inverted U-shaped configuration of party positions will have important implications for national party competition with a change in the dimensionality of the policy space, which “is a central determinant of political competition and outcomes” (Gabel and Hix 2002, 934). While existing studies often need to assume that the dimensionality of the policy space is fixed in national party competition, we conclude that the dimensionality differs substantially across countries and time. Accordingly, scholars can use our results to specify the dimensionality of the policy space when comparing national party competition across countries and time. We leave it to future research to advance our theoretical knowledge about the conditions under which national party competition changes and how these changes affect the parties’ behavior, such as the making and breaking of (coalition) governments and law making.

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