Europe’s Common Ideological Space

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Abstract
This paper presents a new method to estimate the locations of voters, parties, and European political groups in the same ideological space using left-right placements by voters from the 2009 European Election Survey. We demonstrate that the improvement in party estimates that one gains from fixing various survey bias issues is significant. Our scaling strategy provides left-right party positions for 162 parties — more than traditional expert survey studies currently provide. We test the convergent validity of these positions in multiple ways and demonstrate how rescaled voter and party positions can be used in cross-national studies.

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1 Introduction

The study of European party competition is nowadays unthinkable without comparative measures of the ideological positions of political parties and voters. Party locations are latent, but we can infer them using a wide variety of data sources, including observed roll call votes in legislatures (Hix et al., 2007), expert surveys (Hooghe et al., 2010; Benoit and Laver, 2006), and election manifestos (Klingemann et al., 2006; Slapin and Proksch, 2008). If one is interested merely in the most fundamental dimension of party competition, these sources complement each other in producing highly correlated left-right party position estimates, but they each also enjoy advantages in specific research contexts. For example, roll call data are well suited to recovering estimates of positions for specific legislators, while expert surveys are an excellent data source if researchers are interested in examining party placements without having other observable data available. Similarly, party positions obtained through manifesto data tend to perform especially well when variation in party positions over time and on different issue dimensions is important to the researcher.

In this paper, we propose the use of perceptual data from voter surveys to locate voters and parties in a common European ideological space. While the potential to use surveys for locating parties over time or on specific policy dimensions is limited at best, surveys do enjoy some significant advantages. First, they cost little in the sense that the questions required for estimation have regularly been asked of respondents in cross-national surveys like the European Election Study. Thus, no incremental effort to gather additional data is necessary. Secondly, surveys tend to produce estimates for a larger number of political parties than is typical of current expert surveys or manifesto analyses. Finally, and most importantly, surveys are specifically tailored to locate voter positions as well, making the data especially well suited to studies examining interactions between parties and voters.

Despite this potential, the use of perceptual data to locate parties presents a number of unique problems that have not yet been resolved. One central issue, closely identified with the work of Brady (1985) and King et al. (2003), is the problem of dealing with
systematic respondent-level bias, a problem more commonly known in the literature as differential item functioning (DIF). Stated differently, if a respondent believes that party A lies to the left of party B, there are multiple ways this idea can be expressed — on an 11-point left-right scale, parties A and B could be placed at 1 and 2, or at 4 and 8 respectively. Secondly, biases in scale perception may also manifest themselves at the cross-national level. More specifically, if respondents in France place party A at a 4 and respondents in Bulgaria also place party B at a 4 on the same 11-point scale, does this necessarily imply that party A and party B occupy the same ideological position on the left-right scale?

We provide an easy to implement two-step solution that deals with both issues. First, we purge systematic perceptual biases of survey respondents within countries to place parties and voters on the same national scale. Subsequently, we rescale country-specific estimates into a common European ideological space by exploiting the fact that national parties affiliate with political groups in the European Parliament. Estimates of uncertainty are then generated through the use of the non-parametric bootstrap (Efron and Tibshirani, 1994). Our scaling strategy provides party positions for 162 parties — more than traditional expert survey studies can provide — together with their standard errors, and, for the first time, comparable voter placements and left-right positions for the European political groups.

Our paper proceeds in four stages. First, we identify and discuss common problems that appear in cross-national studies of voters and parties. Next, we discuss the specifics of our model, which combines earlier work by Aldrich and McKelvey (1977) and Groseclose et al. (1999). In our results section, we validate our estimates in three ways. First, we examine party and voter locations in the United Kingdom in greater detail. We find that our estimates appear to be substantively consistent with prior expectations, while estimates that fail to correct for perception bias are not. We then test the validity of our estimates against expert surveys and find that the two correlate highly. Finally, we provide a simple application of our estimates, discussing what our estimates imply about the viability of a populist party in Germany. We conclude with a discussion of directions
Voters and Parties in Cross-National Comparisons: Common Problems

Comparative scholars typically face two challenges in cross-national research. First, cross-national research designs require that parties are placed in the same ideological space so that ideological distances between, say, government coalition parties are comparable across countries. We argue that most of the time comparability is assumed rather than estimated and quick fixes are not always possible. Second, we show that scale perception issues are likely to exist in surveys and that these can cause problems if not accounted for.

2.1 Comparing Political Parties across Countries

Comparative studies of party systems, coalition formation, or policy making would not be feasible without accurate measures of party positions. Most research tries to capture the conflict between parties on the principal dimension of conflict, often expressed as the “left-right” dimension of politics. For example, suppose there are three scholars who all would like to learn how partisan ideology affects politics. The first scholar is interested in examining whether ideological conflict between governing parties in parliamentary systems decreases legislative productivity. The second scholar wants to examine why some socialist parties in Europe take centrist positions but not others. Finally, another scholar poses the question to what extent the ideological positions of legislative parties affect the way these parties increase welfare spending to compensate and reduce the risks associated with globalization.

All three are comparative scholars and prefer to examine their question in cross-national studies. Fundamentally, all three rely on the comparability of ideological estimates across countries. Typically, this is assumed rather than estimated. The primary sources for party positions to be used in cross-country settings are the Comparative Manifestos Data (Budge et al., 2001; Klingemann et al., 2006) and expert surveys (Benoit and Laver, 2006; Hooghe et al., 2010). In both instances, the cross-country comparison is pos-
sible only by assuming that the applicability of the manifesto coding scheme is identical and the text sources comparable, or, in the case of expert surveys, that the questions are understood the same by country experts.

The same is true for voter surveys, which present voters in different countries with identical questions and scales on which respondents place political parties. Typically, the identical question framing is considered sufficient to compare answers from different countries. Suppose we have cross-national surveys and calculate party positions using simple mean placement of the parties by respondents. Returning to our earlier example, the first scholar calculates distances between parties and then deals with cross-national comparability issues by including country fixed effects in a statistical model to control for cross-national differences. The second scholar examines only socialist parties but has one observation per country, so country fixed effects are not possible in this case. In fact, he relies on party location estimates to make inferential statements such as “party A in country 1 is more centrist on the left-right dimension than party B in country 2”. Similarly, the last scholar relies on the relative positioning of parties to examine the effect of party position on policy adoption and also needs to rely on fixed effects to control for shifts in party positions across countries.

In the past decade, scholars have paid closer attention to how ideological estimates can be compared across different political institutions and actor groups. In the US context, scholars have proposed solutions to bridge the legislature, the presidency, and courts (Bailey, 2007), media outlets and legislators (Grose close and Milyo, 2005), and media outlets and justices (Ho and Quinn, 2008). Common to these approaches is the idea that additional sources of data, more commonly known as “bridging observations”, can be used to rescale estimates from different institutional settings into a common space. For example, Poole (1998) exploits the fact that Congressmen often serve as senators to bridge ideological estimates in the U.S. House and Senate. Similarly, Bailey (2007) uses executive statements expressing approval or disapproval of various Supreme Court decisions to bridge ideological estimates of justices and legislators into a common space, and Groseclose and Milyo (2005) construct estimates of media outlet ideology by exploiting
the propensity of media outlets and legislators to cite various think tanks.

In the European context, our goal is to rescale position estimates of national parties and voters into an ideological space that is common to all of Europe. This problem is complicated by the fact that many scales need to be rescaled simultaneously, as each country will have its own set of party placements. We address this issue by exploiting the membership of national parties in their respective political groups inside the European Parliament. The key idea justifying the use of European political group membership as a bridging observation is the assumption that national parties choose their party group affiliations largely on the basis of left-right ideological conflict — an assumption that enjoys substantial empirical support in the work of Hix et al. (2007) and McElroy and Benoit (2010).

2.2 Scale Perception Issues

The core challenge in generating cross-national party estimates from surveys arises from scale perception issues that lead to interpersonal incompatibilities of the answers (King et al., 2003). These problems likely exist in both expert and voter surveys, but the issue is probably more problematic in the latter than in the former. The problem is that answer categories or scales are interpreted differently. This is certainly not limited to ideological scales. For instance, King et al. show that survey respondents in non-democratic China report higher levels of political efficacy than respondents in democratic Mexico. This paradox is due to the fact that Chinese citizens report higher levels of influence in government because they have lower standards for what should count as a satisfying level in any given response category. This response-category differential item functioning can be addressed by supplemental survey questions that provide a common reference point question with the same response categories. The answers to these “anchoring vignettes” can be used to re-scale answers in surveys across respondents in different institutional settings into a common space.

1The expectation is that the level of political information is higher among experts than among voters, but this need not necessarily be true, in particular when questions in expert survey demand a great deal of knowledge about the party system and policies.
In the context of ideological scales, the problem manifests itself in two ways. In a seminal article written over thirty years ago, Aldrich and McKelvey have pointed out, first, that respondents anchor the scales according to their own interpretation of the endpoints, and second, that respondents may additionally interpret the intervals on the response scales differently (Aldrich and McKelvey 1977). This implies that survey respondents may, in fact, agree where various parties stand on a left-right dimension, but because each respondent shifts and stretches the response scale, the reported positions deviate. As a result, perceptions of parties will differ, but this variation in party positioning may be explained to a large extent by scale perception issues. Despite these important findings, and despite of the solution provided by Aldrich and McKelvey, most survey data users continue to assume the problem away.

Table 1 provides a stylized example depicting the scale perception issue that Aldrich and McKelvey address, showing how three voters place the three major political parties in the United Kingdom on an 11 point left-right scale. The key to note is that both voters are using the scale in a similar way and perceive parties in the correct rank order. However, each voter perceives the scale with very different levels of bias and stretch. Voter 1 sees little ideological distance between the three major parties and believes they all lie far to the left. In contrast, Voter 2 sees an enormous amount of distance between the three parties without the leftward bias of voter 1. The rescaled positions show a more moderate depiction of the United Kingdom political space, with some distance between the three major parties and centered on the Liberal Democrats as the midpoint of the space. The more moderate depiction of the United Kingdom space is likely to be more reasonable than either mapping reported by the voters, in light of the fact that there are likely two other political parties (i.e. the U.K Independence Party and the British National Party) still to be placed to the right of the Conservatives.
3 The Model

We present an estimation approach that addresses the issues in all both literatures. For comparative scholars interested in cross-national comparisons of parties, our common space estimates allow different parties to be compared across countries. For scholars interested in survey methodology and issues of differential item functioning, we argue that while vignettes are an ideal solution when implemented at the survey design phase, they require several additional, and therefore potentially costly, questions in surveys. Unless such vignettes are consistently placed in other surveys, their use is limited. Our approach relies on the standard questions found in many comparative surveys today and does not require additional questions. Finally, for scholars interested in cross-institutional research, we show how the concept of bridging observations can be exported to surveys, tailored here to the European context.

To obtain cross-national party position estimates, we use voter self-placements and their placements of political parties from the 2009 European Election Survey. Our model estimates the ideological locations of parties in two stages. In the first stage, we apply a model developed by Aldrich and McKelvey (1977) to obtain ideological estimates of national parties and voters. These estimates correct for individual scale perception differences (differential item functioning) and are comparable within countries. Using these estimates, we then apply a technique adopted from Groseclose, Levitt, and Snyder (1999) to rescale those estimates into a common European ideological space using European Parliament groups as a bridging observation. This generates voter and party placements that are cross-nationally comparable. Additionally, we recover ideological estimates of the European political groups in the same ideological space as auxiliary estimates that prove useful in validating our estimates. Finally, uncertainty estimates of party positions are easily generated easily via a non-parametric bootstrap.
3.1 Correcting for Individual Left-Right Scale Perception Differences

In the first stage, we estimate party locations within each country using the left-right placement question in the 2009 European Election Survey (EES, 2009; Egmond et al., 2010), which asks respondents to place various national parties on a continuous 0-10 scale. Assume there are $J$ parties to be placed on the scale and $N$ respondents. These parties each occupy a latent position $Y_j$ ($1 \leq j \leq J$) on a one-dimensional scale that is normalized with mean zero and unit sum of squares. The $i$-th respondent’s ($1 \leq i \leq N$) individual perception of the $j$-th party is the true position with error distributed following standard Gauss-Markov assumptions, that is, $Y_{ij} = Y_j + \epsilon_{ij}$. The individual perception $Y_{ij}$ is the perception that is recorded on the survey as $X_{ij}$ if the assumption of constant item function holds across all respondents. However, Aldrich and McKelvey allow for differential item functioning to be accounted for by assuming that each individual has separate perceptual bias and stretch parameters $c_i$ and $w_{ij}$. These parameters distort the reports of respondent $i$’s placement of party $j$ such that:

$$c_i + w_i X_{ij} = Y_{ij} = Y_j + \epsilon_{ij}$$

Under this assumed model of behavior, the Aldrich-McKevley procedure jointly estimates the individual bias and stretch vectors $\hat{c}$ and $\hat{w}$ and the party locations $\hat{Y}_j$ by minimizing the sum of squared residuals across all respondents and parties such that

$$\sum_{i,j} \epsilon_{ij} = \sum_{i,j} \hat{c}_i + X_{ij} \hat{w}_i - \hat{Y}_j \text{ subject to the identifying constraints that } \hat{Y} \text{ has mean zero and unit variance.}$$

The application of Aldrich and McKelvey’s technique to the European Election Survey produces estimates of left-right party locations that are nationally comparable. It also produces estimates of each respondent’s location in the same ideological space by transforming self-reported placements with their individually-estimated bias and stretch parameters. These jointly scaled scores significantly improve our position estimates, an

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2 This technique assumes continuous scales. Readers who wish to employ similar techniques on data of a clearly ordinal nature are advised to consult Quinn (2004) for ordinal alternatives.

3 For reference purposes, Aldrich and McKelvey refer to these as ‘stimuli’.

4 Principally, this means independently distributed errors that are normally distributed with mean 0.
argument we pursue further when applying our scores to a simple spatial model of voting with valence.\footnote{Notably, Palfrey and Poole (1987) use Monte Carlo simulation to show that the Aldrich-McKelvey procedure recovers party locations well, even if errors are heteroskedastic over stimuli.}

### 3.2 Correcting for Cross-Country Differences

The aim of the second stage is to make voter and party locations comparable across countries. This is not possible with the first procedure alone, because while each country will likely have a different mean ideological location and variance, these parameters are assumed to be identical across countries under Aldrich-McKelvey. Let $\alpha_k$ be a country-specific shift parameter. Now suppose there are two countries that separately have $\alpha$ values of 0 and 0.5, but identical stretch parameters $\beta_k$. This implies that the mean of the parties in the second country lies 0.5 units to the right of the mean of the first country, so failure to account for this shift (i.e. assuming $\alpha = 0$ for both countries) will bias our estimates of all parties in the second country by 0.5 units. In practice this would mean that, say, the German party mean position is assumed to be the same as the French party mean position, while in reality the party system in France may be shifted towards the left compared to the party system in Germany.

Facilitating cross-national comparisons therefore requires that each country’s set of party locations be rescaled into a common space. To do this, we exploit the political group affiliations of each party in the European Parliament following the 2009 elections as cross-country bridging observations. Specifically, we assume:

$$Y_{jkm} = \alpha_k + \beta_k x_m + \epsilon_{jkm} \quad \forall j, k, m$$

where $Y_{jkm}$ is the position of party $j$ ($1 \leq j \leq J_k$) in country $k$ ($1 \leq k \leq K$) and European group $m$ ($1 \leq m \leq M$) as recovered in the first-stage Aldrich-McKelvey procedure. These scores are assumed to be functions of country-specific shift and stretch parameters $\alpha_k$ and $\beta_k$, and the position of the corresponding European group $x_m$. We further assume that the error term $\epsilon_{jkm}$ is distributed normally with mean zero and variance $\sigma^2$, which
allows estimation of our key parameters of interest through maximization of the likelihood function:

\[
L(\hat{\alpha}, \hat{\beta}, \hat{x}|Y) = \prod_{j=1}^{J} \prod_{k=1}^{K} \prod_{m=1}^{M} \phi\left(\frac{Y_{jkm} - \alpha_k - \beta_k x_m}{\sigma}\right)
\]

Identification of the model requires the constraining of two parameters. We accomplish this by constraining \(\alpha = 0\) and \(\beta = 1\) for a specific country, thus effectively placing all parties into the ideological space of that country.\(^6\) Following estimation of all parameters, each first-stage score can be rescaled into the transformed common space scores as follows:

\[
Y_{ijk}^T = \frac{Y_{ijk} - \hat{\alpha}_k}{\hat{\beta}_k}
\]

Estimation of the parameters of interest is similar to the procedure proposed by Groseclose et al. (1999). Yet, there are a few important differences. For Groseclose et al., \(Y_{jkm}\) are not party scores, but legislator ideal points obtained from the Americans for Democratic Action (ADA). Secondly, Groseclose et al. calculate standard errors for their adjusted ADA scores by inverting the Hessian of the equation above. This may potentially understate the true uncertainty of the adjusted scores in two ways. First, ADA scores are treated as data that are measured without error, yet they are simply ideal points calculated using no more than 30 roll call votes each year. Secondly, the model specified assumes that the error term for an individual at any point in time is uncorrelated with past or future errors. While this assumption may be true, it is noteworthy that other dynamic scaling techniques (e.g. Martin and Quinn, 2002) explicitly make the opposite assumption of autocorrelated errors. By scaling across countries, we avoid the second issue entirely, and we address the first issue by estimating uncertainty via the non-parametric bootstrap (Efron and Tibshirani, 1994) in both stages of estimation. Finally, a crucial difference between the two applications lies in the interpretation of \(x_m\). For Groseclose et al., \(x_m\) is an individual meta-parameter that captures the mean ideal point of the legislator over

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\(^6\)As in all scaling problems, identification is strictly relative, so the choice of country is completely arbitrary. We ran our model by initially rescaling positions into the Bulgarian party space, and we again Z-transform all the scores to have mean zero and unit variance. The final estimates are not affected by the choice of which country’s ideological space is chosen for the initial rescaling.
time in the common space and is largely a “nuisance” parameter. In our application, \( x_m \) instead represents the locations of the European political groups in the common ideological space, a substantively important set of estimates that cannot otherwise be obtained from the European election survey data.

### 3.3 Generating uncertainty estimates

Following Efron and Tibshirani (1994), we are able to generate standard errors for our estimates using a non-parametric bootstrap. Bootstrapping is done by resampling survey respondents from the European Election Survey with replacement and reestimating both the national-level party estimates and the cross-national rescaling on the resampled data. We repeat this process over 100 iterations. Note that this simulates the uncertainty present in the respondent sampling process, but assumes no uncertainty in our knowledge about the European group affiliation of each party. We therefore assume that parties have sorted themselves into an ideologically compatible European group — an assumption that generally appears to be reasonable in most cases when we inspect our estimates.\(^7\)

### 4 Results

In the following section, we discuss the model fit and present key results from the estimation. We show that our scaling procedure produces left-right scores of parties and voters in a common space for 162 parties that have high convergent validity with expert surveys. In a first step, we examine the nationally rescaled party and voter placements and apply them to a spatial model of valence in the UK. In a second step, we show that the cross-nationally scaled left-right estimates correlate highly with expert surveys.

#### 4.1 Examining National Aldrich-McKelvey Estimates

Our data are 11-point left-right placements of different parties from the 2009 European Election Survey.\(^8\) We begin with a discussion of various summary statistics that suggest

\(^7\)An important exception to our assumption of reasonable sorting is Estonia, which we discuss in greater detail later in the paper.

\(^8\)This estimation is done for all countries except Malta. We omit Malta because as a two party system, the two country-specific parameters are uniquely identified. Results from Belgium, Denmark, Sweden,
good model fits. We then examine estimated party locations in the United Kingdom, and compare those scores to estimates obtained under the assumption of constant item functioning. Using both voter and party locations to estimate a simple spatial model of voting with valence, we show that, as expected, the rescaled estimates provide a better fit than the raw mean placements of party positions.

Table 2 examines the summary statistics of our country-level estimates. One immediate item to note is that a substantial fraction of the country-level samples disappear due to missing data issues. Respondents only remain in the sample if they place themselves and all other parties on the left-right scale. While the European Election Study surveyed 1,000 respondents in each country, as many as 716 respondents get dropped in cases such as Bulgaria. This problem is likely to be particularly acute in countries where respondents are asked to place parties that are difficult to locate, resulting in survey non-response. Nevertheless, samples in all countries are sufficiently large. Each estimation also identifies a set of respondents with negative weights — that is, respondents who see parties in a “mirror image” space where parties on the left and right are reversed. Palfrey and Poole (1987) demonstrate that these are largely individuals with very low levels of political information. Building on this idea, they hypothesized that one reasonable measure of the political information for each respondent is the correlation between the individual’s perceived location of the parties and the scaled party locations. We constructed an information measure from respondents by applying a standard two-parameter item response model to a battery of seven political information questions in the European Election survey, and found that our survey measure correlated with the Aldrich-McKelvey derived

and Spain from the first stage estimation are included, but due to unresolved issues with the coding of the survey they are dropped from the joint rescaling for now.

Saiegh (2009), for example, is able to estimate party locations in Costa Rica using as few as 31 respondents. An alternative way to estimate party positions using perceptual data is Poole’s basic space procedure (1998), which can be thought of as a generalization of the Aldrich-McKelvey technique to matrices with missing data and multiple dimensions. This technique has the benefit of retaining many observations that are discarded, but does not permit the estimation of voter ideal points in the same space. The latter is a significant issue in light of our use of the spatial model of voting later in this paper. Furthermore, we compared estimates for each country using Aldrich-McKelvey and Poole’s Basic Space separately and found no meaningful differences — scores for every country in the sample correlated at $r = 0.98$ or above with the exception of Romania, which correlated at $r = 0.81$. 

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measure at $r = 0.28$. The moderate magnitude of this relationship is largely consistent with that reported earlier by Palfrey and Poole.

Two other fit statistics provide additional guidance in interpreting our model results. The reduction in variance is a ratio of the overall variance of perceptions in scaled data, divided by the average variance in the unscaled data. Substantively, it captures the percentage of variance that is corrected when differential item functioning is accounted for. These reductions range from approximately 112% of the variance in the original data in the case of Romania to roughly 5% for Italy. The $R^2$ statistic measures the percentage of variance in the scaled positions that can be explained by the left-right dimension. In general we observe a large percentage of variance explained, a finding that is largely expected because the data input into the model are left-right placements.

4.2 Example 1: Voters and Parties in the UK

The summary statistics just described suggest a good statistical fit for our countries of interest, but reveal little about the substance of those estimates. Figure 1 explores this issue by examining the estimates for the United Kingdom. On the left panel we show the recovered party coordinates overlayed on top of a density plot of rescaled voter ideal points. We find that the three major national UK parties (Labour, the Liberal Democrats, and the Conservatives) are recovered in an order consistent with prior expectations. Three smaller parties (Plaid Cymru, the Scottish National Party, and the Greens) are all located between Labour and the Conservatives, close to the Liberal Democrats. To the right of the Conservatives are the UK Independence Party and the British National Party, also consistent with prior expectations. The procedure is therefore able to recover party locations with survey data that is highly consistent with those obtained via expert surveys (Benoit and Laver, 2006; Hooghe et al., 2010). Stated differently, following the language of Campbell and Fiske (1959), our scores exhibit a high degree “convergent validity” in the sense that they are highly correlated with expert surveys while purportedly measuring the same concept.

INSERT FIGURE 1 HERE
While our rescaled scores exhibit good convergent validity after correcting for differential item functioning, unscaled scores do not always share the same properties. We calculate unscaled party locations by simply taking the mean party placement of each party on the 11-point scale, and plot our scaled scores against the unscaled ones with a regression line on the right panel of Figure 1. These scores not only differ significantly, but yield a completely different configuration of parties. While Labour, the Liberal Democrats, and the Conservatives are still aligned from left to right, there is substantial movement among all other parties. Under the unscaled means, the three smaller leftist parties (the Greens, Scottish Nationals, and Plaid Cymru) are all located to the left rather than the right of Labour. Furthermore, both the UK Independence Party and the British National Party are located to the left of the Conservatives. Expert survey data suggests, however, that the British National Party is to the right of the Conservatives (Hooghe et al., 2010). Even more distressing is the high degree of confidence that is implied by these estimates — each line on the plot captures the 95% confidence interval of each estimate\textsuperscript{10}, so we can reject the possibility that the UK Independence Party and the British National party is to the right of the Conservatives.

While party locations recovered under Aldrich-McKelvey (AM) exhibit high convergent validity with expert surveys, the rescaling technique has the additional benefit of rescaling each survey respondent into the same ideological space. This allows a wide variety of theories regarding the spatial model of voting to be empirically tested (Downs, 1957; Enelow and Hinich, 1984). In applications of such models, the ideological distance between the voter and the party is typically a key variable of interest, and this distance can only be measured if both the voter and the party’s ideal point are measured on the same scale. We estimate one such model here – a simple spatial model of voting with valence in one dimension.

Let $i$ denote an individual who is considering voting for party $j$ ($1 \leq j \leq J$). Individual $i$ has ideal point $x_i$, while party $j$ has ideal point $\theta_j$. Assuming quadratic utility, the

\textsuperscript{10}Standard errors for scaled party locations are derived from a non-parametric bootstrap, which is described in greater detail in the next section. For unscaled means, standard errors were calculated analytically.
deterministic spatial utility that voter $i$ receives for choosing party $j$ is $U_{ij}^S = -(x_i - \theta_j)^2$. However, we also assume that each party has a valence parameter $v_j$ that captures the non-spatial component of utility that each voter (or the omitted spatial components orthogonal to left-right). The parameter $v_j$ can substantively be thought of as the value of the party brand that it carries in the electorate regardless of its positioning on the left-right scale. Following the random utility framework of McFadden (1973), we can then specify the full utility that voter $i$ gets from voting for party $j$ as the sum of the non-spatial, spatial, and stochastic utilities, or $U_{ij} = v_j - (x_i - \theta_j)^2 + \epsilon$. If we further make the assumption that $\epsilon$ is distributed as a Type 1 extreme value distribution, then following Dhyrmes (1978) the probability that voter $i$ chooses party $j$ among the $J$ possible party choices is:

$$Pr(V_{ij} = 1) = \frac{U_{ij}}{\sum_{k=1}^{J} U_{ik}} = \frac{e^{v_j - (x_i - \theta_j)^2}}{\sum_{k=1}^{J} e^{v_k - (x_i - \theta_k)^2}}$$

This is a conditional (multinomial) logit model with alternative and individual-specific variables, with $\hat{v}$ as the parameters of interest to be estimated using $x_i$ and $\theta_j$. $v_j$ is only identified in relative terms, so we constrain $v_j = 0$ for the Labour party. To simplify our model, we only retain voters who voted for one of the top four parties in the 2009 European election (Labour, the Liberal Democrats, the Conservatives, and the UK Independence Party). We construct our objective function based on the choice model described above and present two versions of our valence estimates in Table 3. In the unscaled estimate, $x_i$ is the self-reported left-right location of the voter, and $\theta_j$ is the mean placement of the party on the left-right scale by all voters. In the AM estimates we instead use the party and voter locations shown on the left panel of Figure 1.

\[\text{INSERT TABLE 3 HERE}\]

Our estimates of the spatial model using both sets of estimates shows that the model fits using AM-derived estimates is considerably better, as the maximized log-likelihood is almost 300 points higher for a relatively small sample of $N = 218$. These likelihoods are directly comparable because the two models use the exact same parameters (i.e. the
difference in degrees of freedom between the two models is zero). Model fits using the two
different data sets also imply substantively different results — Liberal Democrats and
the UKIP are estimated to have relatively powerful party brands using unscaled data,
while the Conservatives are not. In contrast, our rescaled estimates imply that every
party brand is powerful relative to Labour in the sense that they draw more votes that
their spatial location alone would dictate — on a likelihood ratio test with 3 degrees of
freedom against a null model with no valence parameters, we reject the null of no valence
differences at $\alpha = 0.01$. Labour’s valence disadvantage in European Parliament elections
relative to all other parties in UK is consistent with theories of comparative political
behavior and the notion of “second-order” elections (e.g. Reif and Schmitt, 1980) —
as the party in government, Labour is likely to lose vote shares in any “second-order”
European election. Finally, our estimates are consistent with popular portrayals of a 2009
Labour government that was deeply unpopular in the wake of the 2008 financial crisis
and a resurgent Conservative and Liberal-Democrat opposition.

Substantively, our valence estimates also “make sense” in the context of the spatial
mapping of actors that we produces in earlier in Figure 1. To illustrate this point more
clearly, Figure 2 replicates the left panel of Figure 1 along a cumulative distribution
function of the population. Note that approximately 30% of the UK electorate lies to
the left of Labour, the most left-leaning party in the UK. Under perfect one-dimensional
spatial voting with no valence or stochastic utility, Labour should win all the votes of
that part of the electorate. However, Labour only won 15.7% of the vote in the 2009
European election, which suggests that they are at a valence disadvantage relative to
other UK parties, consistent with our valence estimates in Table 3.

A similar mode of reasoning also helps to explain our valence estimate for the UK
Conservatives. Under the same assumption of perfect spatial voting, the Conservative
party is predicted to win the support of all voters lying between the Conservative/UKIP

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11Labour should also win over voters lying between the Labour and Liberal Democrat cutline as well —
this only strengthens our argument that Labour has a valence disadvantage relative to other parties.
cutline and the Conservative/Liberal Democrat cutline. While our cumulative distribution plot suggests that this block of voters comprises about 20% of the UK electorate, the Conservatives won 27.7% of the total vote share. This strong performance above the expectations of perfect spatial voting is reflected in the high valence estimate we observe for the UK Conservative party. Again, this finding is also consistent with what theories of voting behavior would predict for the success of opposition parties in European elections.

In light of our estimates, one interesting counterfactual to consider is the impact that a Liberal-Democrat move to the left might have on voters to the left of the Labour party, assuming the other three major parties stayed in the same spatial location. The counterfactual is substantively intriguing in the sense that with two parties with strong valence on their right, a move to the right by the Liberal Democrats is unlikely to win many more voters on the right. Would a move to the left instead win over many Labour voters from a Labour party with weak valence? Our model suggests that this is unlikely.

Figure 3 simulates the effect of a leftward shift in position by the Liberal Democrats on the probability of a vote for Labour. We simulate this probability for voters with ideal points at Labour’s current position, and to the left of Labour at \( x = -1 \) and \( x = -2 \), and allow the Liberal Democrat location to vary between their current location and the current location of Labour. Our simulation shows little effect on the probability of a Labour vote for voters located at Labour’s position and \( x = -1 \), and an 8% decrease in the probability of a vote for Labour for a voter at \( x = -2 \). While this may seem like a large shift, Figure 2 shows that only a tiny fraction of the UK electorate lies in the neighborhood of \( x = -2 \). The graphic also presents an intriguing puzzle — if only 21% of voters at Labour’s position are voting for Labour regardless of where the Liberal Democrats place themselves, who are the other 79% voting for? A similar fraction are voting for the Liberal Democrats, but importantly, many are voting for the other two

\[ ^{12} \] The counterfactual is clearly unrealistic because shifts in party location by any major party are likely to cause other party shifts (Fowler and Laver, 2008). Rather, our larger point is that one can simulate vote probabilities across a wide range of different assumptions about how parties behave under electoral competition.
major parties, especially the Conservatives. Our results suggest that significant numbers of voters with ideal points around the Labour party’s position are voting Conservative because at that position, high levels of Conservative party valence, i.e. issues orthogonal to left-right, trump spatial considerations. Only when voters are located far from the Conservatives (i.e. the voter at \( x = -2 \)) does the spatial component of utility begin to trump Conservative valence. Voters are more likely to punish the government by refusing to vote along spatial considerations and instead defect to a opposition party. According to this theory the valence term consists of factors such as government popularity and economic factors that are not simply a consequence of traditional ideological position of voters and the perceived position of parties on the left-right dimension.

4.3 Cross-National Estimates

In this section we discuss our cross-national party location estimates, which are derived from taking the national party scores estimated under Aldrich-McKelvey and rescaled under the assumption that parties belonging to the same European political group will share similar political preferences on the left-right dimension. We begin with an examination of our estimates and check for obvious estimation patterns and outliers. Next, we discuss some properties of our estimates. We find that our rescaled estimates demonstrate convergent validity with expert surveys. We then discuss the estimates of our auxiliary shift and stretch parameters, arguing that these contribute significantly to the fit of some countries and that they are consistent with prior substantive research findings.

Figure 4 plots the distribution of party positions for the European political groups using the rescaled estimates (top) and the raw mean positions from the survey (bottom). Once country-specific shift and stretch effects have been removed from the variation in party positions, the European groups look more compact than they do using simple means. Another way to compare the unscaled party mean positions with the rescaled estimates is
to look at those parties that cross group lines. Specifically, we look at the two major groups in the EP, the Group of the Progressive Alliance of Socialists and Democrats (S&D) and the Group of the European People’s Party - Christian Democrats (EPP). Table 4 shows that, using unscaled positions, there are a number of S&D parties with a position more to the right than the most leftist EPP party and vice-versa. However, this does not occur when we examine positions that have been rescaled using our two-step procedure. For these estimates, there are no cross-overs of parties from the two major EP groups.

Figure 5 presents the cross-national party position estimates separately for each political group. In general, the level of consistency between the left-right orderings of the national parties and their European group affiliation is very high — national parties that are more left-leaning than their rivals tend to affiliate with more left-leaning European groups. Variation in ideological heterogeneity on the left-right scale across European political groups is another important feature than appears in our estimates. Notably, national parties belonging to the three left-leaning European political groups (EUL-NGL, Greens-EFA, and S&D) are much more tightly aligned (i.e. lower variance around European political group mean) than the right-leaning European political groups. This is largely expected for a Euroskeptic group like the EFD, but is more surprising for groups like ALDE.

As a simple validation of our estimates, we compare our cross-national party estimates to those from the 2006 Chapel Hill expert survey (Figure 6). Our estimates correlate with scores derived from expert surveys at $r = 0.893$, suggesting a very high level of consistency. This convergent validity bodes well both for the expert survey literature as well as our estimates. We emphasize here that our estimates complement rather than replace expert surveys. Our technique will tend to perform well in cases where researchers wish to conduct research on a larger set of parties that are included as part of the EES

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13 Scores have been Z-transformed after rescaling to allow for easier interpretation. Positions for parties not affiliated with a political group are estimated but not plotted here.

14 But note the outlying ALDE parties, which are discussed in the paper.
but excluded from expert surveys. Our earlier valence example also suggests that our technique will perform well in situations where researchers wish to incorporate voter distances from parties as a variable in their analysis. Notably, our technique does not generalize well to obtaining estimates of party locations on specific issue dimensions, nor does it allow us to estimate party position changes over time.

After running a non-parametric bootstrap, we find that the mean standard error of our party estimates is 0.10. Since our rescaled estimates are Z-transformed, this implies that our standard error spans about 0.10 standard deviations of the European ideological space.\(^\text{15}\) The magnitude of this standard error is slightly larger but in line with standard errors for ideal points derived by other scaling procedures such as Poole and Rosenthal’s DW-NOMINATE (Lewis and Poole, 2004; Carroll et al., 2009).

One particular set of estimates in our data appears very unusual and requires further explanation. Estonia has two political parties that are members of the ALDE group (Eesti Keskerakond and Eesti Reformierakond), but these two parties occupy opposite ends of the political spectrum with other parties located in between them. Furthermore, it has a right wing party (Res Publica) that is a member of the EPP coalition, but lies to the left of the far right party (Eesti Reformierakond) despite being a member of a more right-wing coalition. This alignment is highly unusual, and our estimates suggest that a realignment of the Estonian parties or a change in membership in European group is likely.\(^\text{16}\)

As part of the rescaling process, we obtain estimates of the locations of the European political groups. An important point to note is that these estimates are obtained solely as by-products of the cross-national scales — unlike the national party locations which are in

\(^{15}\)The stretch of our scale is of course determined by which parties are included in the European Election Survey. Figure 2 shows that this space includes no less than the five major parties in each country, but if one includes small extremist parties in various countries the range of the scale would likely be considerably larger.

\(^{16}\)We conducted an additional test to determine if our estimator was in any way driving the unusual result in Estonia, plotting our recovered party locations against the mean placement of each party across all respondents. The rank ordering of the parties was unchanged after estimation and correlated with unscaled means at \(r = 0.97\), but our estimator pushed the location of Eesti Keskerakond further to the left than the estimated location using unscaled means. This suggests some uncertainty about the actual location of Eesti Keskerakond, but it in no way undermines our claim that the alignment of parties in Estonia is highly irregular.
part obtained from voter placements of the parties, no voter placements of the European political groups were used to obtain these estimates. These estimates are, of course, substantively important to European party research, but they also serve a useful purpose in checking the validity of our estimates. More specifically, if our estimation procedure is flawed it will not correctly recover the left-right configuration of the European political groups. We compared our estimates to the left-right placement of the groups obtained through expert surveys, published in Benoit and McElroy (2007). These estimates are not ideal for comparison because they measure party positions during the 2004 European Parliament, whereas our estimates are drawn from 2009 European election survey. One important consequence of this is that two right-wing groups that existed in 2004 (the UEN and EDD) no longer exist in 2009, and hence cannot be compared. However, using the 5 political groups that are directly comparable across elections, our 2009 estimates correlate with McElroy and Benoit’s 2004 expert survey estimates at $r = 0.95$.

**INSERT TABLE 5 HERE**

In addition to checking the validity and efficiency of our estimator, we are also interested in assessing the net effect our rescaling. Stated differently, does rescaling actually change our estimates of party locations in a meaningful way compared to the estimation of party locations using simple means? We answer this question in two ways.

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17In fact, such placements were not asked of respondents in the 2009 European Election Study.

18McElroy and Benoit locate both the UEN and EDD to the right of the EPP, and our estimates of the new ECR party place them on virtually the same position as the EPP.

19One obvious extension of our model would be an application to the European integration question on the European Election Survey to generate a second dimension. One concern here is that because parties to a large degree align with European party groups on a left-right dimension (McElroy and Benoit, 2010), the party group membership would not serve as good bridging observations for a common European space. Our intuition on this appears to be correct — in replicating this procedure with the European integration question, there is virtually no difference in locations for every European Party group in our data except the EFD and the EUL-NGL, which were to the extremes on the Euroskeptic and pro-European ends of the scale. Furthermore, our estimates are largely bimodal, with a large group of EFD members on the Euroskeptic mode and all other parties clustered in a larger pro-European mode. Therefore, rather than using party group membership, we tested an alternative set of bridging observations: roll call votes of MEPs on constitutional issues (e.g. treaty reform). The problems here are the definition of a national party position (majority, two-thirds, unanimity?) and missing observations (if MEPs abstain on particular votes). In the end, using roll call votes, which were for the most part heavily lopsided on EU constitutional issues, we were not able to identify more than two “blocs” of a pro- and an anti-European camp of parties. In short, while the technique appears to identify which parties lie at which extremes of the European integration scale, the metric information that can be recovered through joint scaling appears questionable.
Table 5 provides estimates of the country-level rescaling parameters, \( \hat{\alpha} \) (shift) and \( \hat{\beta} \) (stretch). Two important patterns appear in the data. First, in 8 of the 21 cases shown we reject the possibility that the shift parameter \( \alpha \) is equal to 0 at the standard 0.05 level of significance. Similarly, we reject the possibility that the stretch parameter is equal to 0 in 16 of 21 cases. The key to note is that while some countries have a similar ideological distribution of parties, many do not. Secondly, the substantive significance of the changes shown is quite large. Our estimate of the shift for Latvia for example implies that its mean party position is a full standard deviation away from that of Bulgaria, while our estimate of the stretch for the United Kingdom suggests that its parties span only 1/3 of Bulgaria’s ideological range.

A second way to examine the impact of our rescaling procedure is by comparing the recovered coordinates to those obtained from the survey via simple means of left-right placements. In the context of our model, the simple means model not only implies no individual-specific bias and stretch parameters, but also a constant scale as well (i.e. a rating of ‘5’ in Bulgaria means the same thing as a rating of ‘5’ in the United Kingdom). Figure 5 visually represents this comparison with a simple scatterplot accompanied by a regression line of best fit. The two sets of estimates correlate well at \( r = 0.827 \), compared to the earlier reported correlation of \( r = 0.893 \) for our common space scores. However, there are some extreme discrepancies between the two sets of estimates. Chief among these is our common space estimate of the British National Party. Our estimates rank the BNP the most right-wing of the 162 national parties in our data set. However, estimates using simple means suggests that the British National Party is much more mainstream, with 64 of the 162 parties lying to the right of the BNP. Substantively, we view this to be highly unlikely and take this to be further evidence in favor of our technique. To sum up, we have provided repeated evidence that “low tech” measurement strategies such as simply taking the means of party placements have lower validity than our scaling strategy that maps voters and parties in a common ideological space. In the following section we
demonstrate the extra leverage we gain from analyzing truly comparable party and voter placements on the left-right dimension.

4.4 Example 2: The Potential Appeal of a Populist Party in Germany

In addition to producing cross-national party estimates, our technique also produces cross-national voter location estimates. To do so, the DIF-corrected voter ideal points obtained via AM scaling are rescaled into the common European space using the same stretch and shift parameters as those applied to the party positions. This presents opportunities for cross-national research not possible with only expert surveys, which scale parties onto a common scale but do not locate voters in the same space. We present a simple motivating example in Figure 8, where we show the distribution of voters and parties on the common scale in the Netherlands and Germany respectively. Our goal in this analysis is to determine reasons why a far-right party such as Geert Wilder’s Party for Freedom (PVV) might enjoy electoral success in the Netherlands, but not in Germany.\textsuperscript{20} In other words, what is the electoral potential for a populist party in Germany given the hypothetical spatial location of such a party?

\textbf{INSERT FIGURE 8 HERE}

Figure 8 provides a partial explanation. On the left panel depicting the voter distribution and party positions in the Netherlands, 7.4% of the electorate had estimated ideal points to the right of Wilders. On the right panel however, we include the location of Wilders’ party in the German political system using the rescaled party positions. We find that only 1.2% of voters in Germany lie to the right of Wilders’ location in the common space. Our estimates therefore suggest that the lower number of voters in the less kurtotic right tail in Germany compared to the Netherlands may be one reason such a party has not appeared in Germany.

\textsuperscript{20}Germany already has extreme-right parties; the NPD received 1.5% and the Republikaner 0.4% of the vote respectively in the 2009 federal election and thus failed to meet Germany’s 5% threshold to win a seat under the proportional representation system (and also are not represented in the EP). In contrast, Wilders won 17% of the vote in the Netherlands and four seats in the European Parliament. The aforementioned German parties were not included in the list of parties to be placed by respondents in the 2009 European Election Study, so we do not have estimates of their left-right position.
In drawing any such inferences however, caution is warranted. We wish to emphasize that our simple account of far-right parties across Europe is, at best, a partial explanation because it omits three very important factors from the analysis. First, our analysis omits any discussion of valence, which would surely impact the probability of vote choice for populist parties in a manner similar to our earlier analysis of valence issues in the United Kingdom.\footnote{Valence coefficients estimated in the manner demonstrated earlier in Table 3 cannot be compared across countries because the reference party will be different in each case.} Secondly, Wilders would not only receive votes to his right, but also to his left. While there is a nationalist party estimated just to his left in the Netherlands (Proud of the Netherlands), there is an enormous gap between Wilders and the next closest party in Germany, the CDU/CSU. This suggests that in the absence of valence considerations, a Wilders-like party could pick up more votes to its left in Germany than in the Netherlands. Finally, our counterfactual also omits strategic considerations — the introduction of a strong far-right party in Germany would lead other parties to reevaluate their own positions, including the possibility that the CDU/CSU might move to the right to reduce the spatial distance between itself and a “German Wilders party”.

5 Discussion and Conclusion

In this paper, we propose a new procedure designed to estimate voter and party locations across Europe in a common ideological space using a readily available data source. Relying on survey data our technique produces estimates that can be compared across countries while correcting for various issues related to scale perception differences. Standard errors of our estimates can be generated easily via the non-parametric bootstrap. Our procedure has three further advantages. First, in contrast to expert surveys our procedure provides party positions of a broader range of parties, specifically party positions for smaller parties that are typically excluded from ratings on expert surveys. All in all, we provide ideological party positions for 162 parties. Second, the comparability of party placements across countries allows scholars to entertain interesting counterfactuals — e.g., why there is no populist party in Germany — that are helpful in addressing substantive
causal questions even in a single case study. Third, scholars of European politics benefit
from our procedure because we provide comparable ideological positions for all European
political groups within the same ideological space, and these ideological positions of the
European political groups are solely a by-product of our estimation. Furthermore, we are
able to validate our estimates in multiple ways. Our estimates correlate strongly with esti-
mates obtained via expert surveys, and estimates of the European political groups exhibit
similar levels of convergent validity. Moreover, the improvement in party estimates that
one gains from fixing various DIF issues is significant — in estimating a valence model
for voters and parties in the United Kingdom, our corrected estimates provide a superior
model fit to party estimates obtained from naive means of voter placements. Thus, mea-
surement strategies that fail to address DIF (i.e. simply taking mean voter placements)
are of lower validity than estimates obtained by our scaling strategy.

In future versions of this paper, we intend to build upon our current work in two ways.
First, what do our estimates imply for other studies of comparative political behavior
where the distance between voters and parties is an important predictor? Two theoretical
expectations follow from our results. We expect that the coefficient on the distance
between voters and parties is likely to be larger in cases where common space scores are
used because our estimates will reduce a significant amount of measurement error that is
driven by DIF. Secondly, we expect a slightly improved model fit in such models when
using common spaces scores, which should be reflected in higher log-likelihood scores.
To this end, we are currently replicating a vote choice model developed by Hobolt et al.
(2009) with the 2009 EES data. Our preliminary estimates are largely consistent with the
theoretical expectations outlined here, but because these estimates exclude a significant
amount of data (i.e. the data from Belgium, Denmark, Sweden, and Spain as outlined in
footnote 8), our results are tentative at best at this point.

Our technique to estimate party positions from surveys into a common space can be
adapted in regions outside Europe as long as one is able to find appropriate “bridging
observations” that help to glue together those underlying scales across countries. While
DIF correction via A-M rescaling is relatively straightforward for parties within the same
country, for cross-national rescaling we leverage each party’s affiliation to one European political group as a bridge in order to identify a common ideological space for the chosen context. While the European Union not only has a large number of party groups, it also has a fairly even distribution of membership across party groups within each country. We remain convinced that some adaptation of our technique can produce similar cross-national estimates in other geographic contexts.
References


Table 1: Hypothetical Left-Right placement of three British parties by two voters on 11-point scale:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voter 1</td>
<td>Lab</td>
<td>LD</td>
<td>Con</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voter 2</td>
<td>Lab</td>
<td>LD</td>
<td>Con</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rescaled</td>
<td>Lab</td>
<td>LD</td>
<td>Con</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Shift and Stretch refer to how voter perceptions of the three parties skewed relative to the rescaled position shown below. In both cases, voters perceive the parties in the correct rank order, but with different stretch and mean. Voter 1 sees little ideological distance between the parties and treats them all as being far to the left. Voter 2 also sees the Liberal Democrats as a centrist party, but sees enormous ideological differences between the three major parties. After rescaling, there is some ideological distance between the parties with the Liberal Democrats as a centrist party — this view is substantively consistent with most expert surveys.
<table>
<thead>
<tr>
<th>Country</th>
<th>Respondents</th>
<th>Number Negative</th>
<th>Parties</th>
<th>Reduction in Variance</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>526</td>
<td>59</td>
<td>8</td>
<td>0.16</td>
<td>0.58</td>
</tr>
<tr>
<td>Belgium</td>
<td>715</td>
<td>253</td>
<td>9</td>
<td>0.199</td>
<td>0.51</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>284</td>
<td>31</td>
<td>8</td>
<td>0.173</td>
<td>0.56</td>
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<td>Cyprus</td>
<td>749</td>
<td>40</td>
<td>6</td>
<td>0.092</td>
<td>0.71</td>
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<td>Czech Republic</td>
<td>807</td>
<td>58</td>
<td>5</td>
<td>0.095</td>
<td>0.74</td>
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<td>Denmark</td>
<td>755</td>
<td>74</td>
<td>8</td>
<td>0.083</td>
<td>0.69</td>
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<tr>
<td>Estonia</td>
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<td>6</td>
<td>0.232</td>
<td>0.57</td>
</tr>
<tr>
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<td>875</td>
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<tr>
<td>Greece</td>
<td>764</td>
<td>51</td>
<td>6</td>
<td>0.127</td>
<td>0.67</td>
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<tr>
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<td>12</td>
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<td>0.76</td>
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<td>132</td>
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<td>27</td>
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<td>0.178</td>
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<td>0.43</td>
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<td>Luxembourg</td>
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<td>6</td>
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<td>0.5</td>
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<td>Portugal</td>
<td>773</td>
<td>26</td>
<td>5</td>
<td>0.079</td>
<td>0.77</td>
</tr>
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<td>Romania</td>
<td>357</td>
<td>166</td>
<td>7</td>
<td>1.123</td>
<td>0.3</td>
</tr>
<tr>
<td>Slovakia</td>
<td>551</td>
<td>86</td>
<td>8</td>
<td>0.228</td>
<td>0.52</td>
</tr>
<tr>
<td>Slovenia</td>
<td>685</td>
<td>98</td>
<td>9</td>
<td>0.173</td>
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<td>349</td>
<td>18</td>
<td>12</td>
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<td>0.47</td>
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<td>Sweden</td>
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<td>8</td>
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<td>0.69</td>
</tr>
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<td>The Netherlands</td>
<td>695</td>
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<td>11</td>
<td>0.136</td>
<td>0.55</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>536</td>
<td>238</td>
<td>8</td>
<td>0.566</td>
<td>0.38</td>
</tr>
</tbody>
</table>

Note: Negative weighted respondents are those with low political information that perceive a reversed scale. Reduction in Variance measures improvement from scaled over unscaled scores, which can be interpreted as the amount of differential item functioning accounted for by the model.
Table 3: Estimates of Valence Parameters in the UK, 2009 European Elections

<table>
<thead>
<tr>
<th></th>
<th>Unscaled Estimate</th>
<th>AM Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal Democrat Valence</td>
<td>0.891 (0.262)</td>
<td>0.129 (0.207)</td>
</tr>
<tr>
<td>Conservative Party Valence</td>
<td>0.009 (0.421)</td>
<td>0.748 (0.19)</td>
</tr>
<tr>
<td>UKIP Valence</td>
<td>0.831 (0.304)</td>
<td>0.232 (0.220)</td>
</tr>
<tr>
<td>N</td>
<td>218</td>
<td>218</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>-571.1114</td>
<td>-278.3912</td>
</tr>
<tr>
<td>Null Log-Likelihood</td>
<td>-580.598</td>
<td>-288.2430</td>
</tr>
</tbody>
</table>

Note: Valence for the Labour Party is omitted from estimation and fixed at 0. Estimates represent the non-spatial utility that each respondent gets for voting for that party instead of Labour, with standard errors in parenthesis. Unscaled estimates are calculated using mean party placements on left-right scale and unscaled respondent self-placements. The model shows a substantially better fit using scores obtained via the Aldrich-McKelvey estimator. Null log-likelihoods are calculated from the same model with all valence parameters set to 0.
<table>
<thead>
<tr>
<th>Scenario</th>
<th>Unscaled Estimates</th>
<th>Rescaled Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Parties from the S&amp;D that are to the right of the left-most party from the EPP</td>
<td>Austria: SPO, Cyprus: DP, MSD, Germany: SPD, Estonia: SE, Greece: Pasok, Finland: SDP, France: PS, Ireland: Labour, Luxemb.: LSAP, Netherlands: PvDA, Portugal: PS, UK: Labour</td>
<td>None</td>
</tr>
<tr>
<td>(2) Parties from the EPP that are to the left of the right-most party from the S&amp;D</td>
<td>Czech Rep.: KDU-CSL, Italy: Unione di Centro, Poland: PSL, Romania: UDMR</td>
<td>None</td>
</tr>
<tr>
<td>Left-most party in EPP group</td>
<td>Romania: UDMR</td>
<td>Romania: PD-L</td>
</tr>
<tr>
<td>Right-most party in S&amp;D group</td>
<td>Cyprus: DP</td>
<td>Slovenia: SD</td>
</tr>
</tbody>
</table>

Table 4: Cross-National Comparison of Rescaled vs. Unscaled Party Estimates
Table 5: Estimates of country shift and stretch parameters (\(\hat{\alpha}\) and \(\hat{\beta}\)) by country, 2009 European Elections:

<table>
<thead>
<tr>
<th>Country</th>
<th>Shift ((\hat{\alpha}))</th>
<th>Stretch ((\hat{\beta}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>0.06 (0.28)</td>
<td>0.37 (0.18)</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0.91 (0.28)</td>
<td>0.53 (0.15)</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0.36 (0.27)</td>
<td>0.37 (0.13)</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.32 (0.26)</td>
<td>0.41 (0.22)</td>
</tr>
<tr>
<td>Estonia</td>
<td>0.49 (0.20)</td>
<td>0.41 (0.16)</td>
</tr>
<tr>
<td>Greece</td>
<td>0.67 (0.27)</td>
<td>0.33 (0.12)</td>
</tr>
<tr>
<td>Finland</td>
<td>-0.81 (0.28)</td>
<td>0.47 (0.14)</td>
</tr>
<tr>
<td>France</td>
<td>-0.90 (0.28)</td>
<td>0.42 (0.13)</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.00 (0.27)</td>
<td>0.61 (0.24)</td>
</tr>
<tr>
<td>Ireland</td>
<td>-0.92 (0.29)</td>
<td>0.51 (0.15)</td>
</tr>
<tr>
<td>Italy</td>
<td>-0.22 (0.22)</td>
<td>0.51 (0.18)</td>
</tr>
<tr>
<td>Lithuania</td>
<td>-0.06 (0.23)</td>
<td>0.73 (0.19)</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>-0.32 (0.28)</td>
<td>0.91 (0.31)</td>
</tr>
<tr>
<td>Latvia</td>
<td>-1.03 (0.28)</td>
<td>0.38 (0.18)</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>0.05 (0.27)</td>
<td>0.66 (0.22)</td>
</tr>
<tr>
<td>Poland</td>
<td>0.67 (0.26)</td>
<td>0.36 (0.11)</td>
</tr>
<tr>
<td>Portugal</td>
<td>-0.12 (0.25)</td>
<td>0.59 (0.21)</td>
</tr>
<tr>
<td>Romania</td>
<td>0.25 (0.22)</td>
<td>0.73 (0.21)</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0.10 (0.28)</td>
<td>0.97 (0.25)</td>
</tr>
<tr>
<td>Slovakia</td>
<td>0.16 (0.21)</td>
<td>0.39 (0.12)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.17 (0.27)</td>
<td>0.33 (0.17)</td>
</tr>
</tbody>
</table>

Note: \(\alpha\) and \(\beta\) are shift and stretch parameters facilitating comparison across European legislatures. Standard errors in parenthesis. Omitted reference category is Bulgaria, which is fixed to have \(\alpha = 0\) and \(\beta = 1\).
Figure 1: Results of Aldrich-McKelvey Scaling for the United Kingdom, 2009.

Note: Left panel show estimated locations of parties under AM rescaling, along with a density plot of estimated voter locations. Right panel plots estimated party locations recovered under Aldrich-McKelvey to scores obtained from taking the means of party placement scores with regression line. Bars represent 95% confidence intervals of each estimate, and size of points is proportional to vote share in 2009 European Parliament election.
Figure 2: Party Locations along Cumulative Distribution of Voters in United Kingdom, 2009 European Elections.

Note: More than 30% of all voters are to the left of the Labour party, which is the most left-leaning party in the UK. Under perfect spatial voting with no valence or stochastic utility, Labour should win all the votes of that part of the electorate. However, Labour only won 15.7% of the vote in the 2009 European election, which suggests that they are at a valence disadvantage relative to other UK parties, consistent with our valence estimates on Table 2.
Figure 3: The Impact of a Liberal-Democratic shift in the United Kingdom on the probability to vote Labour, 2009 European Elections.

X-axis bounds are the current Labour and Liberal Democrat position. We simulate the probability of a vote for Labour for three individuals — one at the current Labour position (x = -0.363), and two voters to the left of Labour (at x = -1 and x = -2), as the Liberal Democrats move from the current Liberal Democrat position to the current Labour position.
Figure 4: Distribution of Rescaled and Raw Party Positions in the EP, 2009
Figure 5: European Parties in Common Space, 2009 European Elections.
Figure 6: Comparison of Rescaled and Chapel Hill Expert Survey Place-ments, 2006
Figure 7: Comparing Scaled vs. Unscaled Party Estimates, 2009 European Elections.

Note: N=162 national party scores are shown in this comparison. The two estimates correlate at $r = 0.827$. Outlier to far right is the British National Party, which is the most right-wing party in Europe after rescaling, but ranks 98th when placed using simple means.
Figure 8: Party and Voter Distributions in Netherlands and Germany.

Note: Party and voter locations are shown after cross-national rescaling and are therefore comparable across countries. In Germany we include the location of the PVV, the far-right nationalist party run by Wilders in the Netherlands. Only 10 of 868 German voters lie to the right of the PVV, while 51 of 693 respondents in the Netherlands were estimated to be to the right of the PVV.