A P P E N D I X A . V I G N E T T E T E X T A N D E Q U I V A L E N C E

Finally, we are going to present you with descriptions of 3 hypothetical parties and their views towards economic, libertarian/traditional, and EU issues. We would like you to place these hypothetical parties on the following dimensions.

First, we would like you to place hypothetical Parties A, B, and C on the EU dimension.

> **Party A** conceives the European Union as an intergovernmental organization in which member states, not the European Commission or the European Parliament, should be the dominant players. It rejects exiting the EU, but it wishes to reclaim state sovereignty from the EU. *On a 1-7 point scale with 1 being extreme anti-EU and 7 being extreme pro-EU where would you place this party?*

> **Party B** conceives the European Union as a supranational organization that provides Europeans with citizenship and a range of public goods. This party believes the European Commission should become the government of the European Union. *On a 1-7 point scale with 1 being extreme anti-EU and 7 being extreme pro-EU where would you place this party?*

> **Party C** believes that both member states and European institutions should play a vital role in EU policy making.The party is willing to pool national sovereignty in the EU if this is efficient and feasible.European policy should be guided by subsidiarity, the principle that what can be better done at the national/subnational level should not be centralized. *On a 1-7 point scale with 1 being extreme anti-EU and 7 being extreme pro-EU where would you place this party?*

Next, we would like you to place the hypothetical parties on the economic dimension.

Party A advocates a social market economy with an emphasis on social justice, solidarity, and support for a welfare state. However, this party opposes state ownership, defends private property, and resists excessive intervention of the state in the economy. It believes there is a sharp trade-off between welfare spending and economic competitiveness. *On a 0-10 point scale with 0 being extreme left and 10 being extreme right where would you place this party?*

Party B views the equalization of life chances for all citizens as an important goal of government. It favors active government in regulating domestic and international markets, and supports steeply progressive taxes to fund redistributive social programs. *On a 0-10 point scale with 0 being extreme left and 10 being extreme right where would you place this party?*

Party C believes in small government. It favors minimal regulation of domestic and international markets, supports the privatization of many government operations, and opposes high taxes to fund redistributive social programs. *On a 0-10 point scale with 0 being extreme left and 10 being extreme right where would you place this party?*

Finally, we'd like you to place these 3 hypothetical parties on the libertarian/traditional dimension.

Party A frames its policies around principles of social justice, grassroots democracy, and multiculturalism. The party favors same-sex marriage, active euthanasia, and access to safe abortion. *On a 0-10 point scale with 0 being extreme "Libertarian/postmaterialist" and 10 being extreme "Traditional/authoritarian" where would you place this party?*

Party B favors non-discrimination legislation covering gender, race and sexual orientation, but opposes minority quotas. The party sees itself as a pragmatic party that is willing to compromise if this is necessary to achieve its broad goals. *On a 0-10 point scale with 0 being extreme "Libertarian/postmaterialist" and 10 being extreme "Traditional/authoritarian" where would you place this party?*

Party C emphasizes traditional family values, law and order, and the nation. It opposes the legalization of same-sex marriage and the right to die. It believes that the government should be a firm moral authority on social and cultural issues. *On a 0-10 point scale with 0 being extreme "Libertarian/postmaterialist" and 10 being extreme "Traditional/authoritarian" where would you place this party?*

In table 1, we demonstrate vignette equivalence in the CHES, with 90.0% of experts correctly ordering the EU vignettes and 97.6% of the experts correctly ordering gal-tan. Note that 44 of the experts did not place the vignette parties at all, so are excluded below and from the BAM procedure. In addition, the 29 and 7 experts who did not correctly order the vignettes were excluded from the analysis.

TABLE 1 *Vignette Equivalence among the Experts*

EU Vignette Equivalence		
(Correct ordering $A < C < B$)		
Ordering	Frequency	Proportion
$A < C < B$	238	82.9%
$A < C = B$	16	5.6%
$A = C < B$	6	2.1%
Correct	260	90.6%
Incorrect	27	9.4%
GAL-TAN Vignette Equivalence		
(Correct ordering $A < B < C$)		
Ordering	Frequency	Proportion
$A < B < C$	276	95.5%
$A < B = C$	0	0.0%
$A = B < C$	6	2.1%
Correct	282	97.6%
Incorrect	7	2.4%

Appendix B. Bayesian Aldrich McKelvey Model

The BAM model closely resembles a Bayesian factor model, with the primary distinction being how the parameters and the latent variable are indexed. The factor model assumes that there is some latent variable, X, that is specific to a given respondent and that this latent variable is related to observable indicators. The latent variable is related to these observable indicators through parameters α and β (often called factor loadings) that are indexed by the observed indicators. In the BAM model, the indexing is reversed relative to the factor model. This means that the the latent variable X is now indexed by observable indicator and the parameters in the model are now indexed by respondent. For our data, this translates to the position of a party on a specific dimension X_j, where j indexes party, being related to an expert's placement of that party y_{ij}, where i indexes expert, through parameters α_i and β_i. Following the above discussion α and β are the distortion parameters that shift and expand/contract the expert's perception of a party's placement onto the 'true' position of that party.

To be Bayesian, we must specify distributional assumptions for the unknown quantities in the model. We must also specify the distribution of the dependent variables, in this case the expert placements of the parties, y_{ij}. As these placements are 11 point scales, we assume them to be normally distributed with an estimated mean and variance. We then set the mean position of expert i's placement of party j to be equal to the the true position of party j, X_j, as well as the parameters α_i and β_i. Formally, the model is:

$$y_{ij} \sim N(\mu_{ij}, \tau_{ij})$$
$$\mu_{ij} = \alpha_i + \beta_i X_j$$

The unknown quantities, α, β, and X require prior distributions in the Bayesian setup. For this model, we specify uniform priors for α and β and a standard Normal prior for X.

To allow for heteroskedastic errors, we follow Hare et al. (2015) and allow the variance of the expert placements to be a function of both expert and party, τ_i and τ_j, with the total variance in y_{ij} being the product of these 2 terms. The party variance terms are drawn from non-informative conjugate Gamma distributions while the prior for the expert variance terms includes vague conjugate hyperpriors to introduce exchangeability between these parameters. Formally:

$$
\begin{aligned}
\alpha_i &\sim Uniform(-100, 100) \\
\beta_i &\sim Uniform(0, 100) \\
X_j &\sim N(0, 1) \\
\tau_{ij} &= \tau_i \tau_j \\
\tau_j &\sim Gamma(1, .1) \\
\tau_i &\sim Gamma(\nu, \omega) \\
\nu &\sim Gamma(0.1, 0.1) \\
\omega &\sim Gamma(0.1, 0.1)
\end{aligned}
$$

In order to identify the model and to set the scale of the latent variable, we constrain the βs to be positive. This assures that higher values of the latent variable, X, are associated with higher values of the expert placements. Substantively, this means for the economic and gal-tan dimensions, higher values of the latent variable indicate more right-wing (tan) positions whereas for the EU dimension, higher values of the latent variable represent a more pro-EU position.

As an additional identification constraint, we specified prior positions for the vignette party placements that respects the intended ordering of the vignette placements. This is what King et al. (2004) refer to as vignette equivalence and is a requirement of anchoring vignette-based scaling. That is, in order to be included in the model, experts must correctly perceive the ordering of the vignette parties. We require that each party be placed by at least 3 experts in order to be included in the estimation. With these restrictions, we are able to produce a cross-nationally comparable scale for the economic left-right, gal-tan,

and pro/anti-EU integration dimension for 249 parties based on the input of 333 experts. We estimated the model using JAGS via the R package `rjags`. For each dimension, we ran two chains for $20,000$ iterations, discarding the first $5,000$ as a burn-in. The chains show strong evidence of convergence according to the Geweke and Gelman-Rubin diagnostics and visual inpsection of trace and density plots.

After running the BAM procedure for each of the three dimensions for which we have vignette placements, we then sample $1,000$ draws from the posterior distribution of each party's placement on each dimension.

Figures B1–B6 present substantial variation across these parties in terms of their positions on both the left-right and EU dimensions. These plots help us to identify the most extreme parties on these various dimensions across the members of the EU. For example, the Greek KKE party is the most left-wing in terms of economic left-right position whereas the the Slovenian SDS party is the most economically right-wing party. Similarly, the most left-wing parties in terms of social policy are the green parties of Belgium and the UK while the most right-wing in terms of the social dimension are the German NPD party and Britain's UKIP. Finally, in terms of the EU dimension, the liberal parties of Italy and Finland are at the extreme pro-EU end of the scale whereas the Greek KKE and the UK's UKIP have the most anti-EU integration positions. Parties in the BAM rescaled data generally match expectations, lending some face validity to the data.[8]

---

[8]It is also worth noting that the vignette parties, labeled as *A*, *B*, and *C* are *not* the most extreme parties on any dimension but, rather, the other parties are placed relative to the experts' perception of where the vignette parties fall.
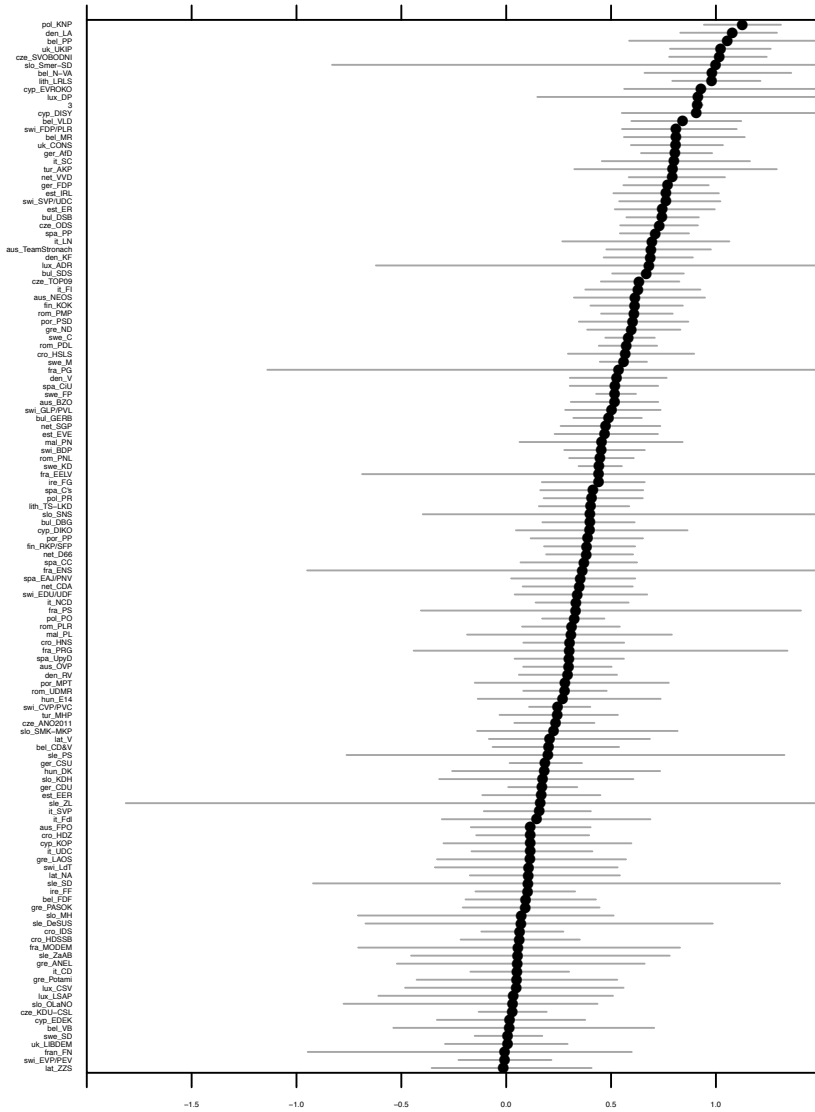
Party Placements with 95% Credible Intervals
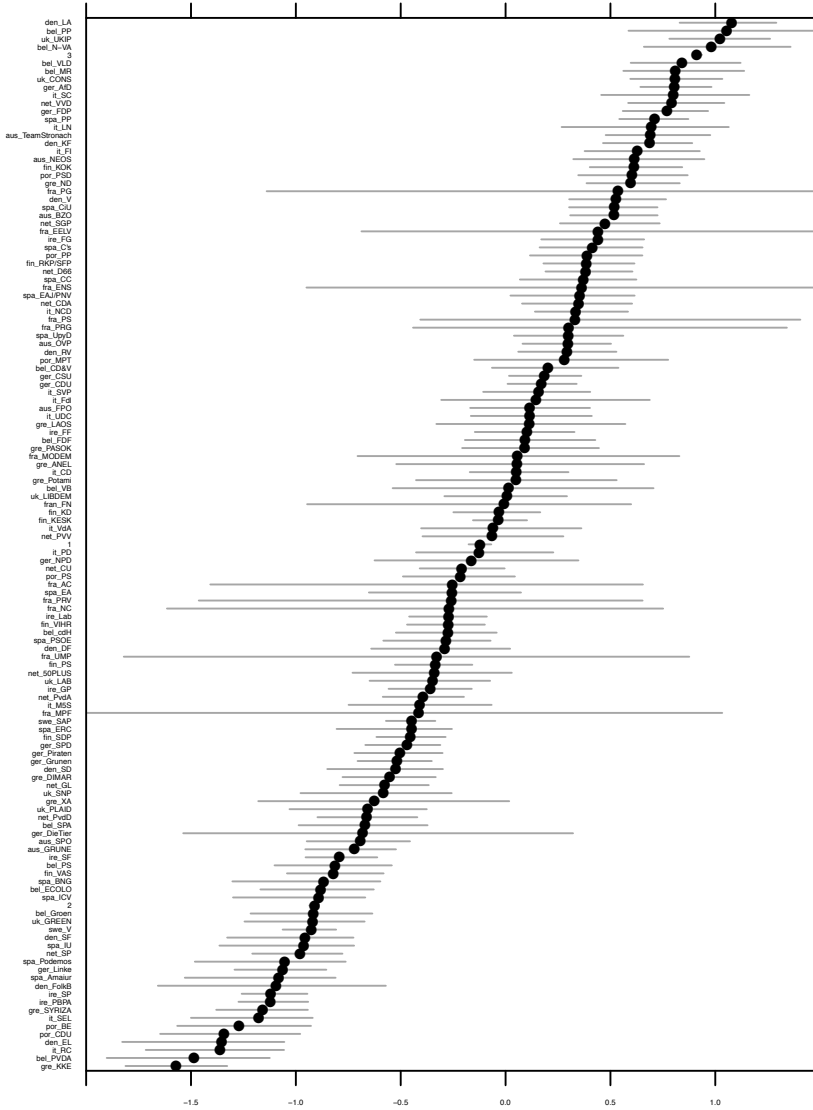
Economic Left–Right: left parties

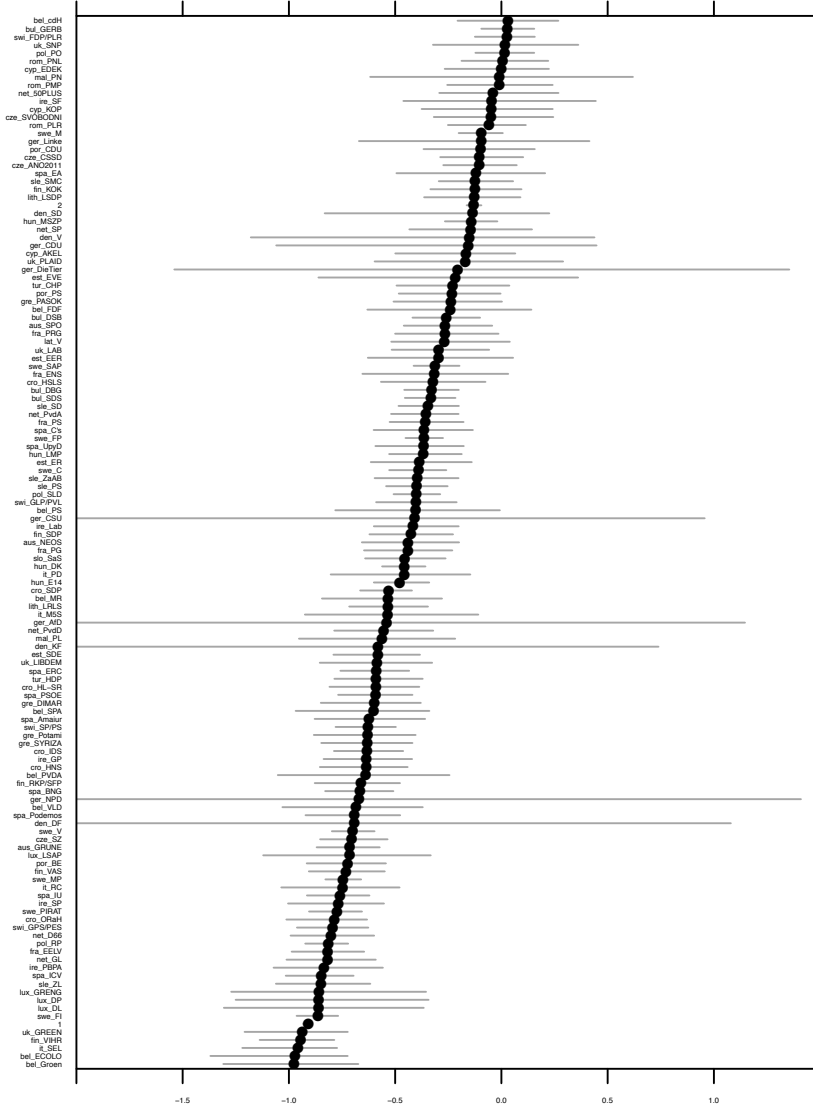*Figure B1.   Economic left-right*

Party Placements with 95% Credible Intervals

Economic Left–Right: right parties

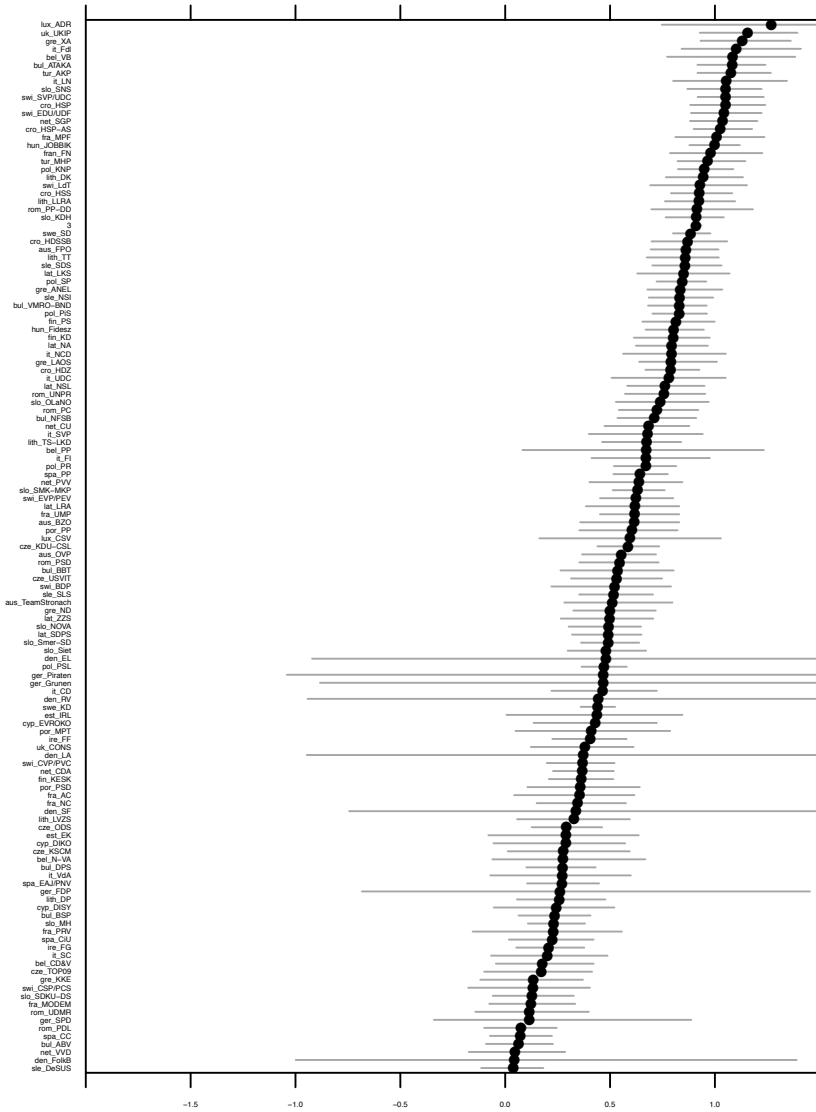*Figure B2.   Economic left-right*

Party Placements with 95% Credible Intervals

Social Left–Right: left parties

Figure B3.   gal-tan

Party Placements with 95% Credible Intervals

Social Left–Right: right parties

Figure B4.   gal-tan
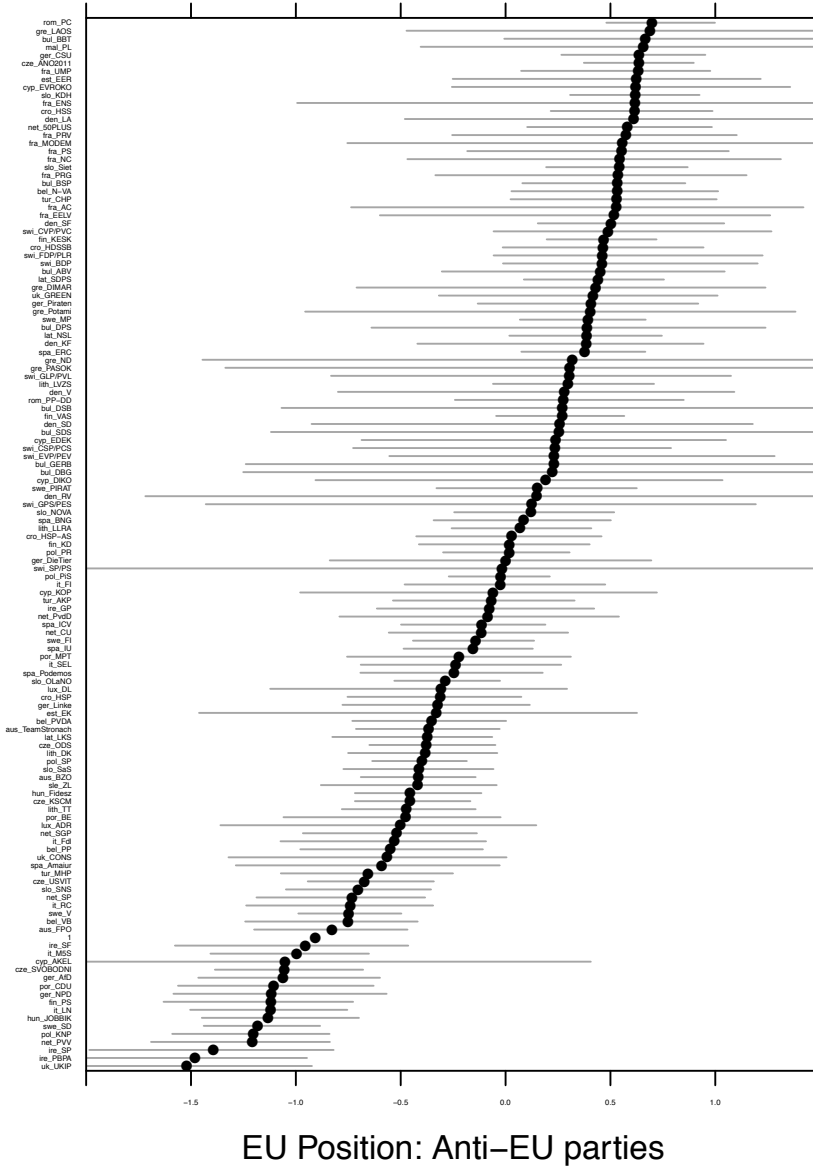
Party Placements with 95% Credible Intervals

EU Position: Anti−EU parties

Figure B5.   European Integration

Party Placements with 95% Credible Intervals

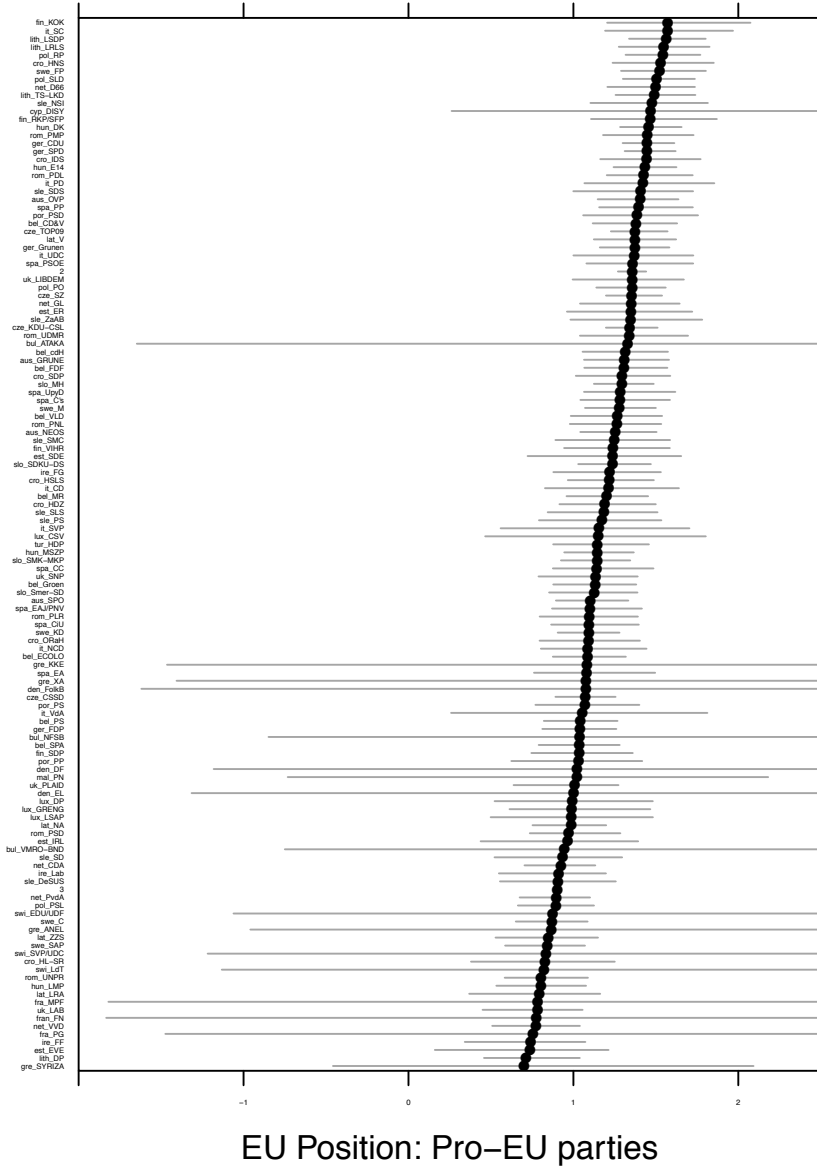

EU Position: Pro–EU parties

Figure B6.   European Integration

In addition to comparing the BAM rescaled measures with the raw CHES scores, we checked the validity of the scores against another commonly used measure of party positions, the MARPOR manifesto data. We are encouraged by the cross-validation exercises that have been performed both on the left-right dimension (Rohrschneider and Whitefield 2012; Bakker et al. 2015), and the European integration dimension (e.g. Hooghe et al. (2010)). The bottom line of these cross-validation exercises is that there is medium-to-high agreement between expert surveys and other measures of party positioning, particularly those based on aggregating public opinion placements.

With that said, we did conduct cross-validity tests. For the BAM gal-tan and MARPOR's lib-cons scale, the correlation is 0.62 (see Figure B7).

Figure B7.   BAM gal-tan and MARPOR lib-con

For the MARPOR EU and BAM EU, the correlation is 0.61. See Figure B8 for the scatterplot.

Figure B8.   BAM EU and MARPOR EU

For both measures, the correlations are strong enough for cross-validation (see articles above for comparison) but not extremely high. Given the differences in the CHES and MARPOR underlying data, these differences are not surprising. In the end, we think these brief checks offer a measure of external validity to go with the cross-national comparability claims made in the article.
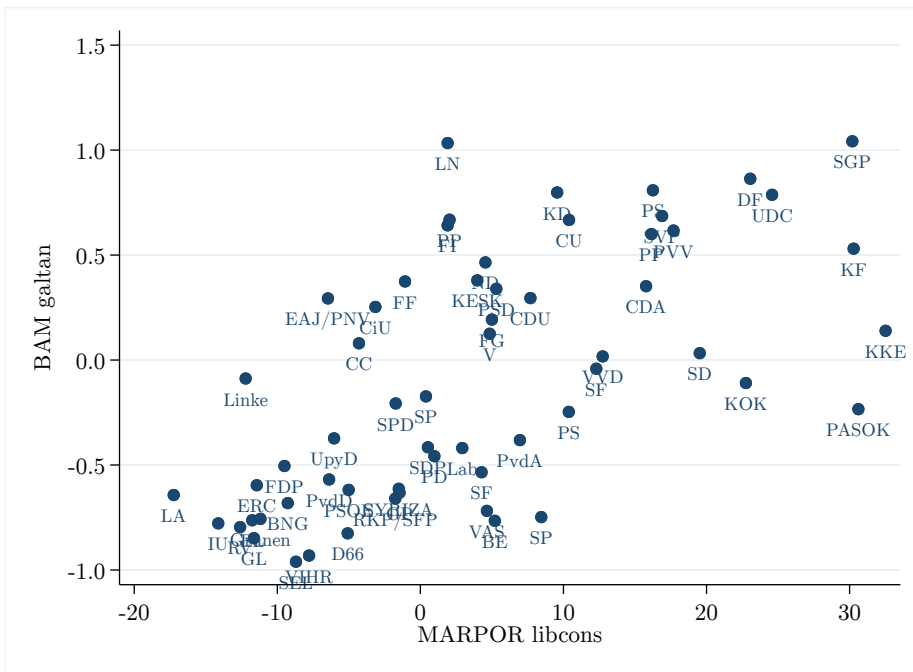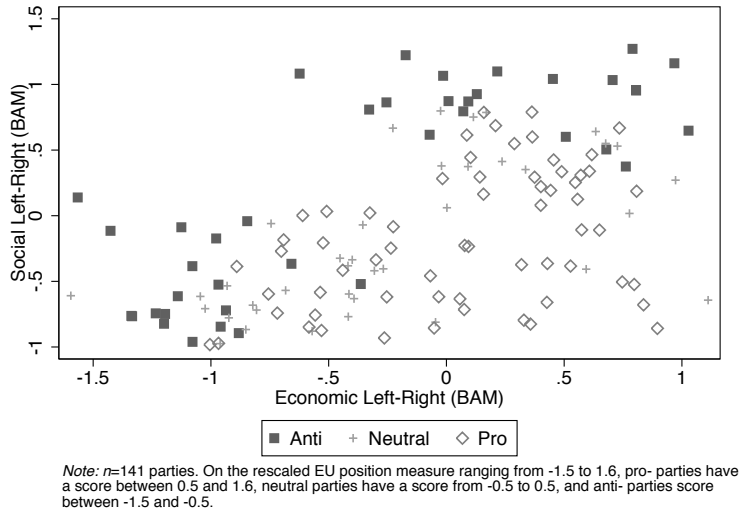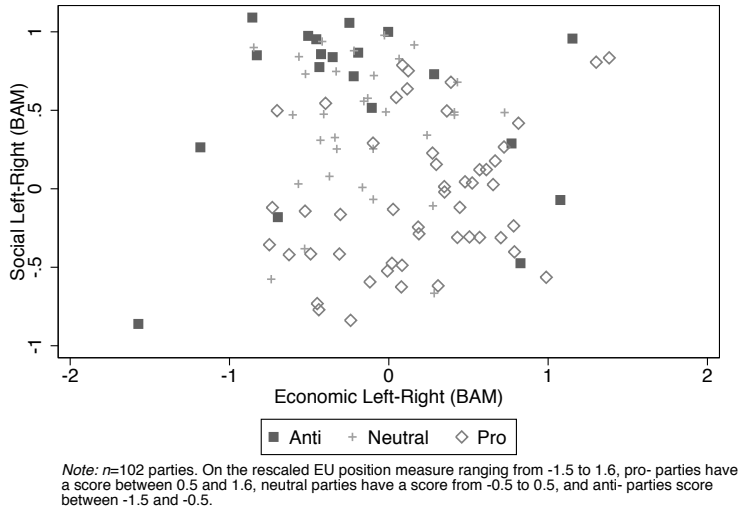
Appendix C. Replication

In this section, we replicate the Marks et al. (2006) analysis and extend it in two ways. First, we directly replicate the analysis for 2014. Second, we conduct the analysis with the raw and rescaled versions of all three dimensions. We find that the model continues to hold for the 2014 data. In addition, the rescaled measures provide more support for the reliability of these findings. For economic left-right, the classic U-curve of support, where extreme parties on the economic left and right are more likely to oppose the EU, still largely explains Euroskepticism, according to the most recent expert survey. In contrast, for gal-tan, the story is simpler, with socially right-wing parties opposed while socially left-wing parties tend to favor the EU.

We start with the Marks et al. (2006) analysis, which emphasized the differences and similarities between east and west on Euroskepticism. In both regions in 2002, extremism mattered, such that parties in the middle on economic left-right supported the EU while the extremes opposed; however, the major difference between the two regions is that in the west, right-wing economic parties were also right-wing on the social dimension (correlation: 0.57) whereas in the east, left-wing parties were more often on the social right-wing (correlation: −0.49). While the correlations and associated patterns have weakened in the ensuing years, the pattern still largely holds in 2014 with the rescaled measures, with a positive correlation (0.40) between economic and gal-tan in the west and a negative correlation (−0.20) in the east.

In Figures C1a and C1b, we present the three dimensional space, with economic and gal-tan on the x and y-axes, while EU support is simply measured as a trichotomous variable.

Note: n=141 parties. On the rescaled EU position measure ranging from -1.5 to 1.6, pro- parties have a score between 0.5 and 1.6, neutral parties have a score from -0.5 to 0.5, and anti- parties score between -1.5 and -0.5.

(a) Western Europe

Note: n=102 parties. On the rescaled EU position measure ranging from -1.5 to 1.6, pro- parties have a score between 0.5 and 1.6, neutral parties have a score from -0.5 to 0.5, and anti- parties score between -1.5 and -0.5.

(b) Central and Eastern Europe

Figure C1.   Left-Right Dimensionality and Positions on European Integration

In the first two columns of Table C1, we first replicate the Marks et al. (2006) model for the Western EU members. For 2002, Column 1 shows that economic right-wing parties are more supportive of the EU than left-wing parties while social right-wing parties are more Euroskeptical. Column 2 shows the effect of extremism. While the social right-wing extremism variable just shows that the Euroskeptic trend is exaggerated on the social right-wing extreme, the economic left-right extremism variable highlights the curvilinear nature, the famous upside down U-curve. In short, the extremes on the economic left and right both oppose the EU.

Columns 3 and 4 extend the 2002 model to the most recent CHES year. The same pattern largely holds for 2014. Extremism matters for both economic and gal-tan. As Marks et al. (2006, 163) explain, "the reason for this is that the European Union is a centrist project." For our purposes, beyond the interesting consistency of the 2002 finding in 2014, even after the many years of Euro crisis, the final two columns are the most significant. Even with our rescaled measures of these three dimensions, the same substantive patterns and correlations are demonstrated in these data. This consistency between the raw, unscaled, measures of dimensionality and our rescaled measures offers more support for the extremism finding in the original paper.

Table C2 presents the same analysis conducted in the Central and Eastern European states. Despite some differences among coefficients between east and west, the broad patterns (signs, significance, etc.) are surprisingly consistent, suggesting that the geographic distinction between the two regions is not as useful for this analysis as it once was.

TABLE C1 *Analyzing Party Position on EU, Western Europe*
Replication and Extension of Marks et al. 2006

	2002 Linear b (S.E.)	2002 Nonlinear b (S.E.)	2014 Linear b (S.E.)	2014 Nonlinear b (S.E.)	BAM Linear b (S.E.)	BAM Nonlinear b (S.E.)
Economic Left-Right	0.29*** (0.02)	0.34*** (0.02)	0.44*** (0.02)	0.38*** (0.02)		
Social Left-Right	−0.38*** (0.02)	−0.44*** (0.02)	−0.41*** (0.02)	−0.45*** (0.02)		
Economic L-R Extremism		−0.16*** (0.01)		−0.12*** (0.01)		
Social L-R Extremism		−0.08*** (0.01)		−0.11*** (0.01)		
Economic L-R BAM					0.61*** (0.03)	0.50*** (0.03)
Social L-R BAM					−0.70*** (0.04)	−0.72*** (0.03)
Economic L-R Extremism BAM						−0.53*** (0.03)
Social L-R Extremism BAM						−0.85*** (0.04)
Constant	6.06*** (0.11)	7.00*** (0.10)	4.86*** (0.11)	6.53*** (0.11)	0.23*** (0.02)	0.68*** (0.03)
R^2	0.18	0.45	0.32	0.53	0.26	0.44
N	1310	1310	1428	1428	1418	1418

Note: $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$. Ordinary Least squares regressions. Weighted by vote.

TABLE C2 *Analyzing Party Position on EU, Central and Eastern Europe Replication and Extension of Marks et al. 2006*

	2002 Linear b (S.E.)	2002 Nonlinear b (S.E.)	2014 Linear b (S.E.)	2014 Nonlinear b (S.E.)	BAM Linear b (S.E.)	BAM Nonlinear b (S.E.)
Economic Left-Right	0.19*** (0.02)	0.16*** (0.02)	0.28*** (0.02)	0.25*** (0.02)		
Social Left-Right	−0.34*** (0.02)	−0.34*** (0.02)	−0.31*** (0.01)	−0.22*** (0.01)		
Economic L-R Extremism		−0.07*** (0.01)		−0.04*** (0.01)		
Social L-R Extremism		−0.06*** (0.01)		−0.10*** (0.01)		
Economic L-R BAM					0.55*** (0.03)	0.53*** (0.03)
Social L-R BAM					−0.42*** (0.03)	−0.30*** (0.03)
Economic L-R Extremism BAM						−0.11** (0.04)
Social L-R Extremism BAM						−0.54*** (0.06)
Constant	6.65*** (0.17)	7.33*** (0.15)	5.81*** (0.13)	6.16*** (0.11)	0.45*** (0.02)	0.60*** (0.02)
R^2	0.49	0.60	0.42	0.54	0.37	0.42
N	833	833	1197	1197	1197	1197

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Ordinary Least squares regressions. Weighted by vote.