Appendix

James Lo, Sven-Oliver Proksch, and Thomas Gschwend. 2013.
"A Common Left-Right Scale for Voters and Parties in Europe."
Political Analysis.

Figure A-1: **European Parties on a Common Left-Right Scale (2009)**

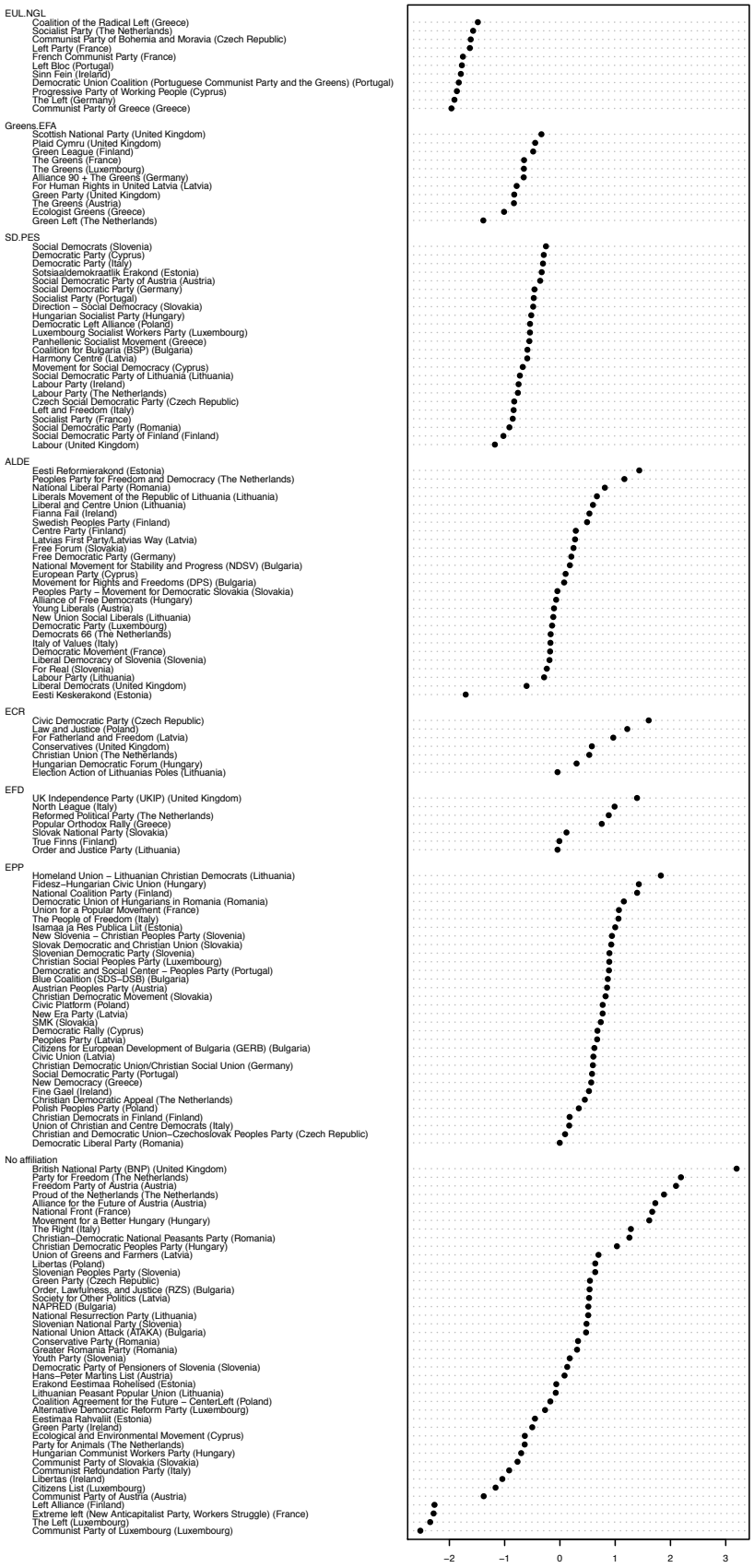
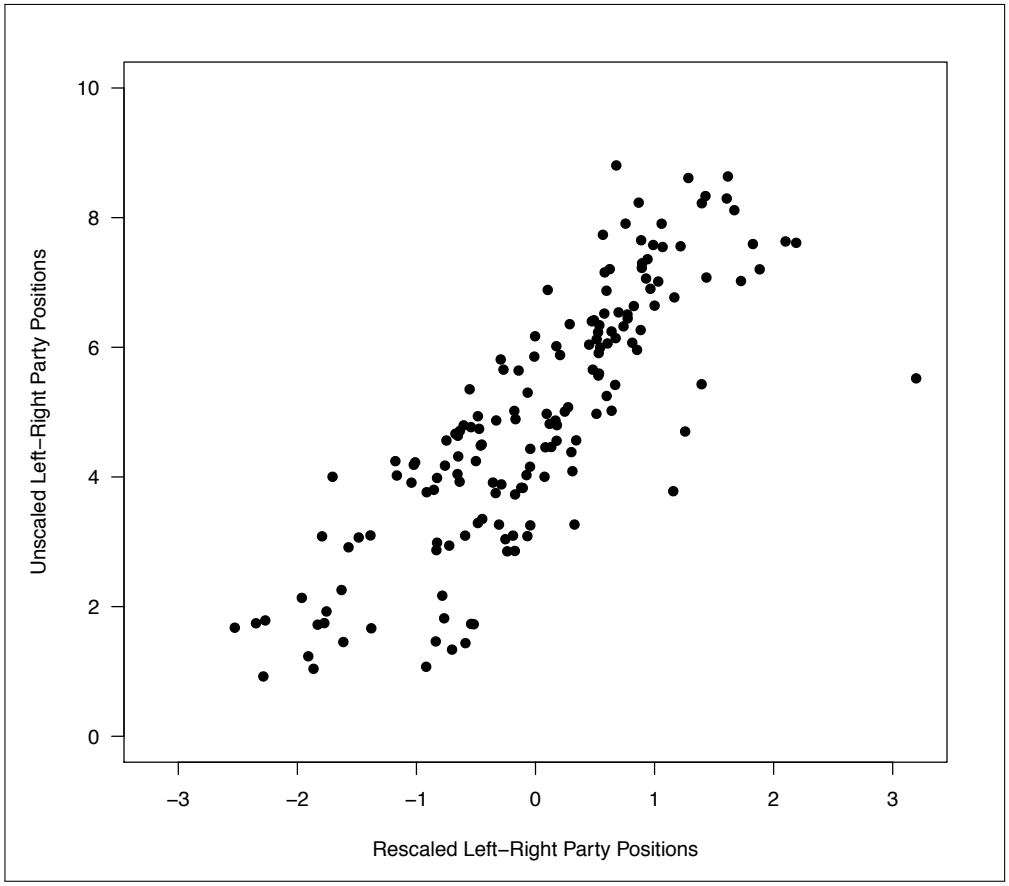


Figure A-2: **Comparing Rescaled and Unscaled Party Estimates (2009)**



Note: N=162 national party positions are shown in this comparison. Unscaled left-right party positions are simple means of placements of parties in the EES survey, rescaled positions are our estimates. The two sets of estimates correlate at $r = 0.83$. Outlier to far right is the British National Party, which is the most right-wing party in Europe after rescaling, but ranks 98^{th} when placed using simple means.

Differences of our Scaling Procedure and Groseclose et al. (1999)

We further explain how our scaling procedure differs from the ony by Groseclose et al. (1999). For Groseclose et al., θ_{jkm} are not party scores, but legislator ideal points obtained from the Americans for Democratic Action (ADA). Moreover, Groseclose et al. calculate standard errors for their adjusted ADA scores by inverting the Hessian of the likelihood function. 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 methods lies in the interpretation of θ_m. For Groseclose et al., θ_m is an individual meta-parameter that captures the mean ideal point of the legislator over time in the common space and is largely a "nuisance" parameter. In our application, the estimates for θ_m instead represents the locations of the European political groups on the common left-right scale, a substantively important set of estimates that cannot otherwise be obtained from the EES.

Another Validation: Party System Polarization

We document additional analysis to validate the substantive value of our rescaling approach by aggregating information about voter and party dispersion. The party system literature has a long tradition of examining the polarization of party systems (e.g. Taylor and Herman, 1971; Gross and Sigelman, 1984; Alvarez and Nagler, 2004; Sartori, 2005; Dalton, 2008; Rehm and Reilly, 2010). We choose to calculate one such measure offered in the literature by Alvarez and Nagler (2004). This particular measure was developed to precisely take into account the scale perception issues discussed earlier. For Alvarez and Nagler, the ideological differences between parties become comparable across countries in a measure of "the dispersion of parties in the issue space relative to the dispersion of voters in the same issue space" (Alvarez and Nagler, 2004, p.48). As a result, party system compactness (or, its inverse, polarization) is a function of three separate components. The first is the ideological dispersion of voters, the second is the ideological distance of the parties from a ideological center of gravity, and the third are the vote shares of the parties to take into account the relative size of the parties in the system. This weighted measure of compactness of country k is calculated as follows (Alvarez and Nagler, 2004, p.50):

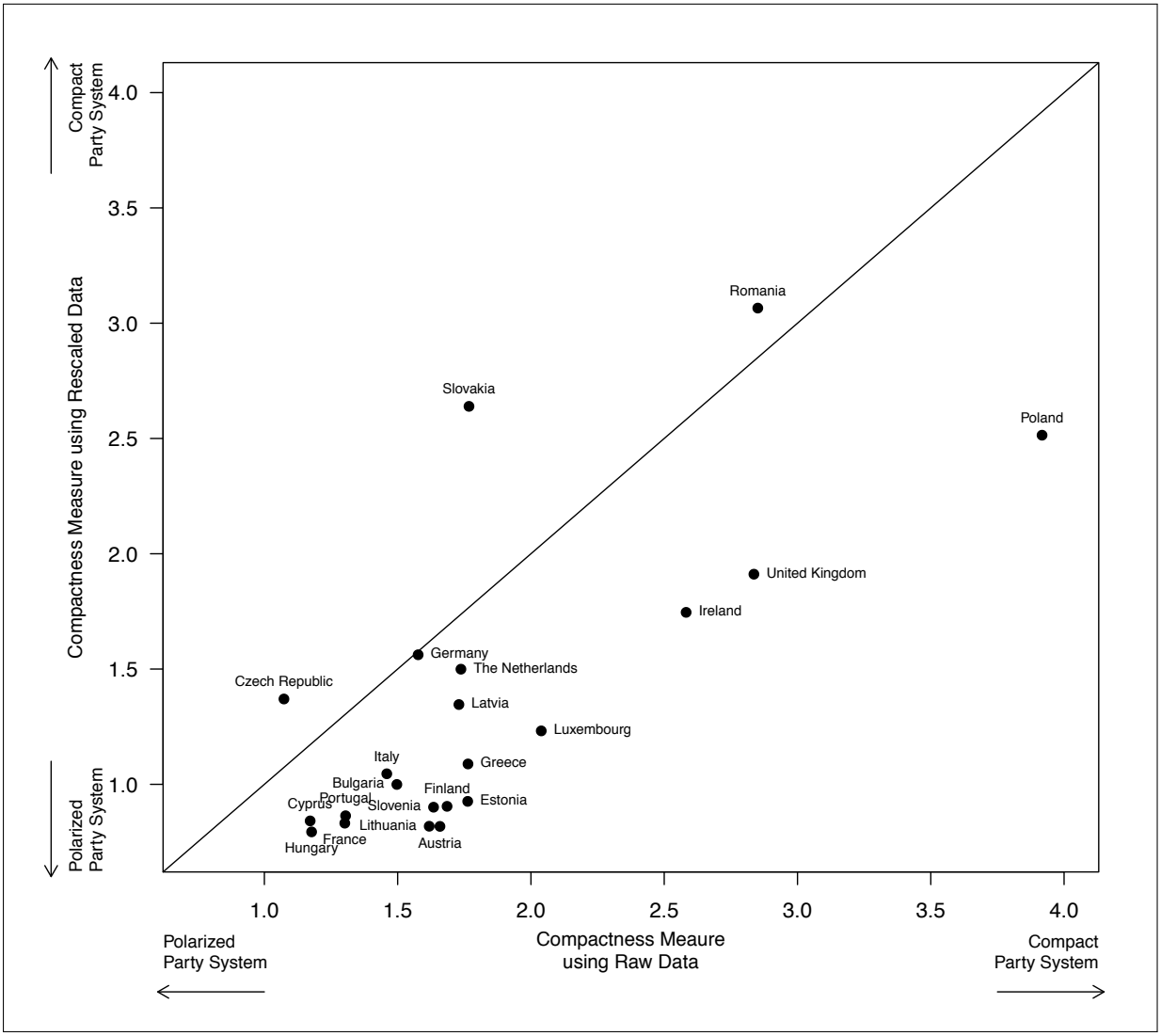
$$\text{COMPACTNESS}_k = \frac{\sigma_k}{\sum_{j=1}^{N} V_j |(P_{jk} - \bar{P}_k)|},$$

where σ_k is the standard deviation of voter self-placements on left-right, V_j is the j-th party's share of the vote in the 2009 European elections, P_{jk} is the placement of the j-th party on left-right, and $\bar{P}_k$ is the weighed mean of parties on left-right, where each party is weighted by its vote share. Alvarez and Nagler (2004, p.49) then argue that a large value of compactness "indicates that voters place *themselves* across a wide range of the issue space but the parties are clustered in a very narrow range of the issue space", suggesting a compact ideological space. By incorporating both voter placements and party positions, this measure should be robust to scale perception issues. We examine this by calculating two versions. In the first version, we follow the original approach and input the original survey self-placements and the mean perceptions of the parties on left-right. In the second version, we use rescaled voter placements and rescaled party positions to calculate the measure. We use the EES contextual dataset for the vote shares of the parties (EES, 2011; Czesnik et al., 2010). The total vote share covered in each country ranges between 64.04% in France and 99.99% in Austria and Luxembourg. The average total vote share of the parties is 88.64%. When using the rescaled data, we exclude respondents with negative A-M weights.

Figure A-3 presents a scatterplot of party system compactness using the unscaled and the rescaled data. Because the measure is the ratio of voter dispersion to party dispersion, the measures are comparable and the line on the plot indicates if the two measures are identical. The two sets of measures correlate at 0.73, suggesting a high robustness of this measure. Yet, the plot shows some important differences. For example, while the unscaled data suggest that Poland is the most compact party system relative to voters, this changes when using the rescaled data where Poland has the third most compact system after Romania and Slovakia. At the other end of the scale, the unscaled measure suggests that Czech Republic, Cyprus, and Hungary are the most polarized, whereas the rescaled data suggests

that Austria, Cyprus, and France are. This implies that while Alvarez and Nagler's party system compactness measure appears indeed robust in the majority of cases, rescaling the data does make a small yet potentially substantively significant difference in how party systems are ranked on the compactness dimension.

Figure A-3: **Party System Compactness Measures**



Estimation Details: Spatial Model of Valence in the UK

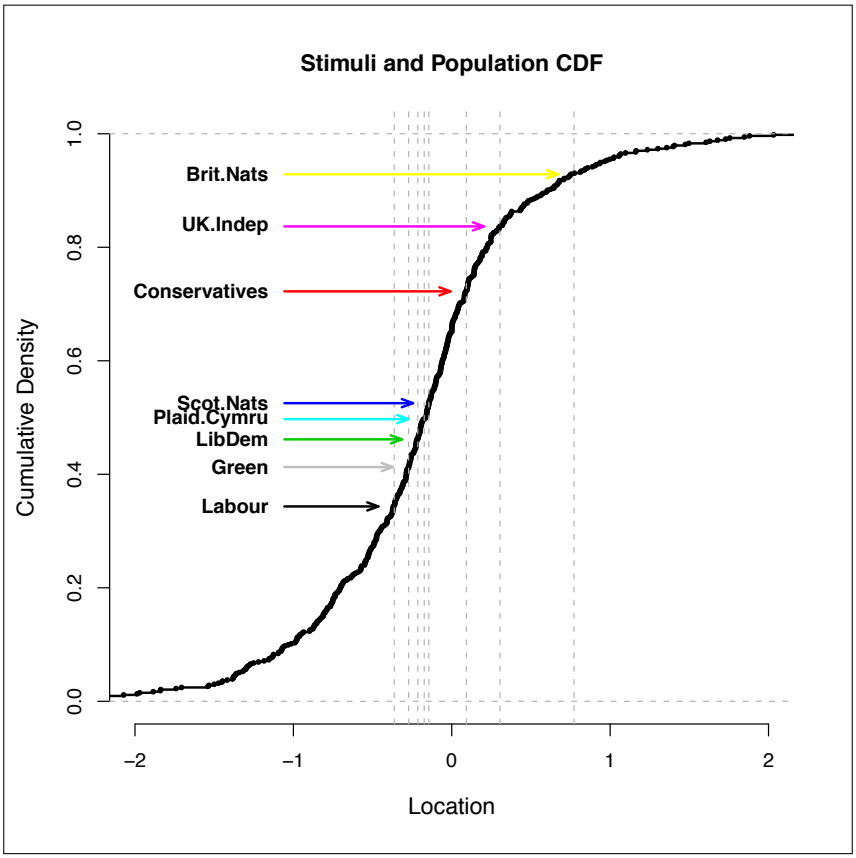
Here we report additional results from the re-scaling of British left-right voter and party placements in the 2009 EES. Substantively, our valence estimates make sense in the context of the spatial mapping of actors that we produce in Figure 1. To illustrate this point more clearly, Figure A-4 replicates 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. Labour 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. 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 2.

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 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 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. 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 A-5 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 A-4 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%

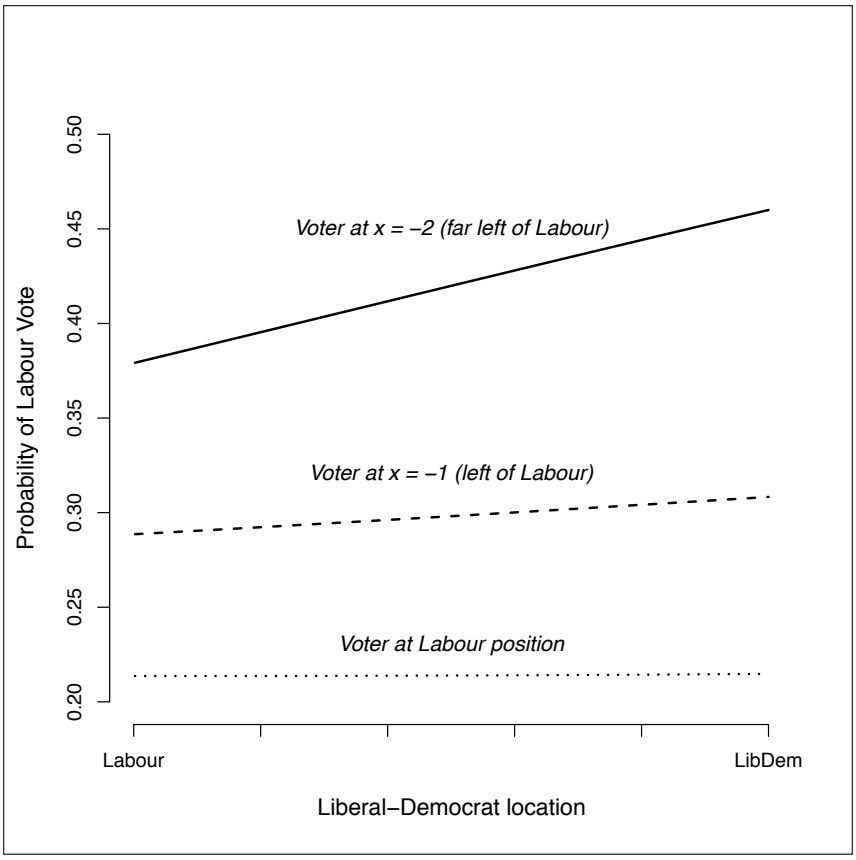
Figure A-4: **Party Locations along Cumulative Distribution of Voters in United Kingdom, 2009 European Elections.**



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.

voting for? A similar fraction are voting for the Liberal Democrats, but importantly, many are voting for the other two 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.

Figure A-5: **The Impact of a Liberal-Democratic shift in the United Kingdom on the probability to vote Labour, 2009 European Elections.**



Note: 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.

Problems of Extending our Approach to the European Integration Dimension

In addition to the left-right dimension, the EES ask respondents to place themselves and parties on a European integration dimension. Theoretically, this creates an opportunity of extending our rescaling approach to this dimension. However, parties to a large degree align with European party groups on a left-right dimension (McElroy and Benoit, 2010). Therefore, 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, 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.

Excluded Observations: Government Defection in the 2009 European Parliament Election

Here we describe which observations were removed from the dataset prior to analysis. First, we excluded all observations with estimated negative AM weights. Second, we excluded all data from France because there are no Benoit-Laver scores on the left-right dimensions available. Third, as explained in the paper we did not include data in our rescaling procedure from Sweden, Belgium, Denmark and Spain due to unresolved data cleaning issues in the EES data. Forth, we excluded all observations from Malta, as its two party system makes the first rescaling step impossible (the two country-specific parameters for Malta are uniquely identified). In sum, these criteria leave us with observations from 21 different countries. Consistent with Hobolt et al. (2009) we consider a party as a governmental party even if it left the government just before the election (e.g., the Hungarian SzDSz left the government in April 2009) while we have to exclude governmental parties if they are not included in ESS (e.g., ADK of Cyprus). See table A-1 below for more details. Finally, while trying to maximize the number of countries in our model, our results are robust to the exclusion of observations from countries such as Latvia, Luxembourg, and Ireland because of concurrent (national or local) elections. It could be argued, that concurrent elections provide incentives for voters that are not comparable with the situation in countries without concurrent elections.

References

Alvarez, R. and J. Nagler (2004). Party System Compactness: Measurement and Consequences. *Political Analysis 12*(1), 46–62.

Czesnik, M., M. Kotnarowski, and R. Markowski (2010). *EES 2009 Contextual Dataset Codebook: Advance Release Notes 16/5/2010*. www.piredeu.eu.

Dalton, R. (2008). The Quantity and the Quality of Party Systems. *Comparative Political Studies 41*(7), 899.

Döring, H. and P. Manow (2010). *Parliament and government composition database (ParlGov): An infrastructure for empirical information on parties, elections and governments (Version 10/02)*. http://parlgov.org.

EES (2011). European Parliament Election Study, Voter Data, Advance Release (23 June 2011). *www.piredeu.eu*.

Efron, B. and R. Tibshirani (1994). *An Introduction to the Bootstrap*. London: Chapman and Hall.

Fowler, J. and M. Laver (2008). A Tournament of Party Decision Rules. *Journal of Conflict Resolution 52*(1), 68–92.

Groseclose, T., S. Levitt, and J. Snyder (1999). Comparing Interest Group Scores across Time and Chambers: Adjusted ADA Scores for the US Congress. *American Political Science Review 93*(1), 33–50.

Gross, D. and L. Sigelman (1984). Comparing Party Systems: A Multidimensional Approach. *Comparative Politics 16*(4), 463–479.

Hobolt, S. B., J.-J. Spoon, and J. Tilley (2009). A Vote Against Europe? Explaining Defection at the 1999 and 2004 European Parliament Elections. *British Journal of Political Science 39*(1), 93–115.

Martin, A. D. and K. Quinn (2002). Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953-1999. *Political Analysis 10*, 134–153.

McElroy, G. and K. Benoit (2010). Party Policy and Group Affiliation in the European Parliament. *British Journal of Political Science 40*(02), 377–398.

Rehm, P. and T. Reilly (2010). United We Stand: Constituency Homogeneity and Comparative Party Polarization. *Electoral Studies 29*(1), 40–53.

Sartori, G. (2005). *Parties and Party Systems: A Framework for Analysis*. European Consortium for Politcal Research.

Taylor, M. and V. Herman (1971). Party Systems and Government Stability. *American Political Science Review 65*(1), 28–37.

Table A-1: **Descriptive Statistics: Government Defection in the 2009 European Parliament Election**

Country	N	Defectors %	Parties in Government 2009
Austria	474	24.1	SPÖ, ÖVP
Belgium	385	25.7	CDV, PVV, PSC, MR, PS
Bulgaria	130	30.8	DPS, NDSV
Cyprus	391	12.5	AKEL, DIKO, ADK*
Czech Republic	493	10.3	CSSD, ODS, SZ
Denmark	317	32.8	KF, V
Estonia	349	45.8	IRL, ERe, SDE-M
Finland	459	17.0	VIHR, KESK, RKP-SFP, KOK
France	248	13.7	UMP
Germany	516	21.1	CDU/CSU, SPD
Greece	336	22.3	ND
Hungary	252	17.5	MSZP, SzDSz**
Ireland	322	51.6	FF, Greens, PD
Italy	258	8.1	PDL, LN
Latvia	255	53.3	TB/LNNK, TP, ZZS, LPP/LC
Lithuania	207	9.7	LiCS, LRLS, TS-LKD
Luxembourg	353	25.8	CSV, LSAP
Malta	313	10.2	PN
The Netherlands	423	26.0	CDA, CU, PvdA
Poland	346	11.0	PSL, PO
Portugal	275	19.6	PS
Romania	442	13.6	PS-D, PD-L
Slovakia	406	8.1	SMER, SNS, HZDS
Slovenia	431	24.1	ZL-SD, LDS, ZARES, DeSUS
Spain	305	6.2	PSOE
Sweden	458	38.4	KD, M, FP, CP
United Kingdom	311	28.6	Labour

Source: 2009 European Election Study and ParlGov database (Döring and Manow, 2010). All parties which held cabinet seats in June 2009 were treated as government parties. Due to data availability issues regarding the independent variables, only 21 countries of the 27 member states could be considered in the final multivariate analysis (for details, see description in the article and the appendix above).

* ADIK (CY) were not included in the EES survey.

** The Hungarian government was reshuffled in April 2009, as the SzDSz left the coalition, leaving the MSZP to form a minority government.